

**7-Eleven at Perris Boulevard/Rider Street
Initial Study
Mitigated Negative Declaration No. 2356**

Case Nos.

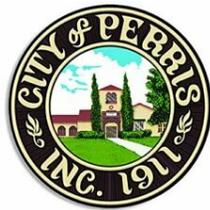
CUP 19-05281

VAR 20-05162

SPA 19-05282

Lead Agency:

City of Perris
Planning Division
101 North "D" Street
Perris, California 92570



Prepared for:

Jack Lee
6761 Solterra Vista Parkway
San Diego, California 92130

Prepared by:

MIG, Inc.
1650 Spruce Street, Suite 106
Riverside, California 92507



Public Review Draft
April 28, 2021

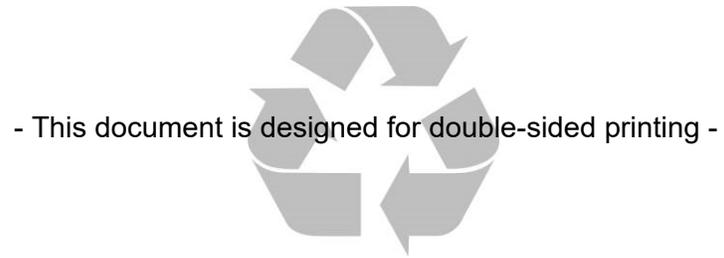


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1 Introduction

The City of Perris (Lead Agency) received an application from Tait and Associates, Inc. (Applicant) for the construction of a new 7-Eleven convenience store, gasoline refueling station, and automated car wash (Project) on a 2.06-acre lot in the City of Perris, California. The application includes a Development Plan Review (DPR), a Variance, a Specific Plan Amendment (SPA) from Business Professional Office to Commercial, and a Conditional Use Permit (CUP). The approval of the application constitutes a *project* that is subject to review under the California Environmental Quality Act (CEQA) 1970 (Public Resources Code §§ 21000, *et seq.*), and the CEQA Guidelines (14 California Code of Regulations §§ 15000, *et seq.*).

This Initial Study was prepared to assess the short-term, long-term, and cumulative environmental impacts resulting from the proposed project. This report was prepared to comply with CEQA Guidelines § 15063, which sets forth the required contents of an Initial Study. These include:

- A description of the project, including the location of the project (See Section 2);
- Identification of the environmental setting (See Section 2.11);
- Identification of environmental effects by the use of a checklist, matrix, or other methods, provided that entries on the checklist or other form are briefly explained to indicate that there is some evidence to support the entries (See Section 4);
- Discussion of ways to mitigate significant effects identified, if any (See Section 4);
- Examination of whether the project is compatible with existing zoning, plans, and other applicable land use controls (See Section 4.10); and
- The name(s) of the person(s) who prepared or participated in the preparation of the Initial Study (See Section 5).

1.1 – Purpose of CEQA

CEQA § 21000 of the California Public Resources Code provides as follows:

The Legislature finds and declares as follows:

- a) The maintenance of a quality environment for the people of this state now and in the future, is a matter of statewide concern.
- b) It is necessary to provide a high-quality environment that at all times is healthful and pleasing to the senses and intellect of man.
- c) There is a need to understand the relationship between the maintenance of high-quality ecological systems and the general welfare of the people of the state, including their enjoyment of the natural resources of the state.
- d) The capacity of the environment is limited, and it is the intent of the Legislature that the government of the state take immediate steps to identify any critical thresholds for the health and safety of the people of the state and take all coordinated actions necessary to prevent such thresholds being reached.
- e) Every citizen has a responsibility to contribute to the preservation and enhancement of the environment.
- f) The interrelationship of policies and practices in the management of natural resources and waste disposal requires systematic and concerted efforts by public and private interests to enhance environmental quality and to control environmental pollution.
- g) It is the intent of the Legislature that all agencies of the state government which regulate activities of private individuals, corporations, and public agencies which are found to affect the quality of the environment, shall regulate such activities so that major consideration is given to preventing

Introduction

environmental damage while providing a decent home and satisfying living environment for every Californian.

The Legislature further finds and declares that it is the policy of the state to:

- h) Develop and maintain a high-quality environment now and in the future, and take all action necessary to protect, rehabilitate, and enhance the environmental quality of the state.
- i) Take all action necessary to provide the people of this state with clean air and water, enjoyment of aesthetic, natural, scenic, and historic environmental qualities, and freedom from excessive noise.
- j) Prevent the elimination of fish or wildlife species due to man's activities, ensure that fish and wildlife populations do not drop below self-perpetuating levels, and preserve for future generations representations of all plant and animal communities and examples of the major periods of California history.
- k) Ensure that the long-term protection of the environment, consistent with the provision of a decent home and suitable living environment for every Californian, shall be the guiding criterion in public decisions.
- l) Create and maintain conditions under which man and nature can exist in productive harmony to fulfill the social and economic requirements of present and future generations.
- m) Require governmental agencies at all levels to develop standards and procedures necessary to protect environmental quality.
- n) Require governmental agencies at all levels to consider qualitative factors as well as economic and technical factors and long-term benefits and costs, in addition to short-term benefits and costs, and to consider alternatives to proposed actions affecting the environment.

A concise statement of legislative policy, with respect to public agency consideration of projects for some form of approval, is found in CEQA § 21002, quoted below:

The Legislature finds and declares that it is the policy of the state that public agencies should not approve projects as proposed if there are feasible alternatives or feasible mitigation measures available which would substantially lessen the significant environmental effects of such projects, and that the procedures required by this division are intended to assist public agencies in systematically identifying both the significant effects of proposed projects and the feasible alternatives or feasible mitigation measures which will avoid or substantially lessen such significant effects. The Legislature further finds and declares that in the event that specific economic, social, or other conditions make infeasible such project alternatives or such mitigation measures, individual projects may be approved in spite of one or more significant effects thereof.

1.2 – Public Comments

Comments from all agencies and individuals are invited regarding the information contained in this Initial Study. Such comments should explain any perceived deficiencies in the assessment of impacts in the Initial Study. Materials related to the preparation of this Initial Study are available for public review in person or on the City's website at <https://www.cityofperris.org/departments/development-services/planning/environmental-documents-for-public-review>. To request an appointment to review these materials, please contact:

Nathan Perez, Senior Planner
Development Services Department, Planning Division
135 North "D" Street
Perris, California 92570
(951) 943-5003 ext. 279

All written comments received during the 30-day public review period for the Initial Study/Mitigated Negative Declaration (No. 2356) will be considered by the City of Perris prior to adoption.

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2 Project Description

2.1 – Project Title

7-Eleven at Perris Boulevard/Rider Street Project

2.2 – Lead Agency Name and Address

City of Perris
Planning Division
101 North “D” Street
Perris, California 92570
(951) 943-5003

2.3 – Contact Person and Phone Number

Nathan Perez, Senior Planner
(951) 943-5003 ext. 279

2.4 – Project Location

The Project site is located at 23 East Rider Street at the southeast corner of North Perris Boulevard and East Rider Street in the City of Perris, Riverside County, California (See Exhibit 1, Regional Context Map and Exhibit 2, Project Vicinity Map). The Project site is bounded by residential uses to the south and east, commercial uses to the west, and vacant land to the north.

- Latitude 33° 49' 46.63" North, Longitude 117° 13' 31.43" West
- APN: 300-300-026

2.5 – Project Sponsor’s Name and Address

Jack Lee
6761 Solterra Vista Parkway
San Diego, California 92130

2.6 – General Plan Land Use Designation

Existing: Perris Valley Commerce Center Specific Plan: Business/Professional Office (BPO)
Proposed: Perris Valley Commerce Center Specific Plan: Commercial (C)

2.7 – Zoning District

Existing: Perris Valley Commerce Center Specific Plan: Business/Professional Office (BPO)
Proposed: Perris Valley Commerce Center Specific Plan: Commercial (C)

2.8 – Project Description

The proposed Project includes the development of a new 7-Eleven convenience store, gasoline fueling station, and automated car wash on a 2.06-acre site (APN# 300-300-026) at the northwest corner of

Project Description

Perris Boulevard and Rider Street (see Exhibit 3, Conceptual Site Plan). The proposed convenience store building would be 3,227 square feet in area and 25-feet in height, while the proposed automated car wash building would be 991 square feet and 24-feet in height (see Exhibit 4, Project Elevations). The proposed gasoline refueling station would consist of six (6) fuel dispensers and a total of 12 pumps (2 pumps per fueling dispenser). The fueling station would be covered with a 17-foot tall canopy that is 2,720 square feet in area. Access to the site will be provided via two separate driveways: one at the southwest corner of the site along Perris Boulevard and the other at the northeast corner of the site along Rider Street. Both driveways will be 35-feet wide and will be restricted to right-in/right-out turning movements. The Project includes 37 passenger vehicle parking stalls, including two accessible stalls and one electric vehicle stall. The Project includes a 25-foot building setback and an 8-foot tall decorative concrete masonry unit (CMU) block wall along the southern and eastern property lines. The Project also includes landscape setbacks on all four sides, totaling 24,372-square feet of landscaping and covering approximately 27.1% of the site. The proposed Project includes two monument signs: one at the southwest edge of the site along Perris Boulevard and another along the north-central edge of the site along Rider Street.

The gasoline fueling station includes two underground storage tanks ranging in size from 12,000 to 24,000 gallons for gasoline storage and an above-ground “Healy” clean air separator tank that prevents excess emissions and product loss by controlling gasoline storage tank pressure. Other appurtenances related to the operation of the proposed Project include air and water supply tanks, vacuum stations, a bike rack, and a trash enclosure. The Project also includes lateral utility connections for electricity (Southern California Edison), natural gas (SoCal Gas), and water/sewer (Eastern Municipal Water District). Stormwater on the site will be controlled by drainage features and an on-site infiltration/storage basin.

The proposed convenience store, gasoline refueling station, and car wash would operate 24 hours a day, seven days a week and would include off-site sale of alcohol subject to a Type 20 ABC License, which is typical for convenience store and fueling station operation. The 24-hour operation and fueling station use require a Conditional Use Permit (CUP 19-05281). In addition, because Municipal Code Section 19.65.030(d)(1) (Development Standards) prohibits the sale of alcohol within 1,000 feet of a church, school, park, or playground, and New Creation Church is located approximately 260 feet north of the Project site at 57 Business Park Drive, the Project includes a Variance (VAR 20-05162) to waive/reduce the distance requirements. Finally, the Project is requesting a Specific Plan Amendment (SPA 19-05282) to the Perris Valley Commerce Center Specific Plan (PVCCSP) to change the underlying land use on the site from Business/ Professional Office (BPO) to Commercial (C).

Construction of the proposed Project would last approximately 8 months. The table below summarizes the proposed Project’s construction phasing and the typical pieces of heavy-duty, off-road construction equipment that would be required during each phase.

Construction Activity	Duration (Days)^(A)	Typical Equipment Used^(B)
Site Preparation	3	Dozer, Backhoe
Grading	6	Excavator, Grader, Dozer, Backhoe
Building Construction	220	Crane, Forklift, Generator, Backhoe, Welder
Paving	10	Paver, Roller, Paving Equipment
Architectural Coating	10	Air Compressor
Source: MIG, Inc. 2020		
(A) Days refers to total active workdays in the construction phase, not calendar days.		
(B) The typical equipment list does not reflect all equipment that would be used during the construction phase. Not all equipment would operate eight hours per day each workday.		

2.9 – Surrounding Land Uses

The Project site is bounded by residential uses (mobile homes) to the south and east, by light industrial uses to the west, and by vacant land to the north designated for light industrial uses. Surrounding uses are summarized in Table 1 (Surrounding Land Uses).

Table 1
Surrounding Land Uses

Direction	General Plan Designation	Zoning District	Existing Land Use
Project Site	PVCCSP - Business/ Professional Office (BPO)	PVCCSP - Business/ Professional Office (BPO)	Vacant
North	PVCCSP - Light Industrial (LI)	PVCCSP - Light Industrial (LI)	Vacant
South	R-10000	R-10000	Mobile Homes
East	R-10000	R-10000	Mobile Homes
West	PVCCSP - Light Industrial (LI)	PVCCSP - Light Industrial (LI)	Manufactured Home Center

2.10 – Environmental Setting

The Project is located on a vacant site in a mostly developed area of the City of Perris, Riverside County, California. The Project site is surrounded by residential uses to the east and south and light industrial uses to the west and north, and the area is built-out and urbanized. The site is bound to the west by Perris Boulevard, to the south and east by mobile homes, and to the north by Rider Street. There is a manufactured home business to the west of the site on the opposite side of Perris Boulevard and vacant land designated for light industrial uses to the north of the site on the opposite side of Rider Street. Interstate 215 is located approximately 1.1 miles to the west of the Project site. The Project site is relatively flat, with an elevation ranging between approximately 1,455 to 1,460 feet above mean sea level (AMSL). The Project site is undeveloped and comprised of non-native grasses and four small trees. Two of the trees are eucalyptus trees, and the other two are Brazilian peppercorn trees. The site does not contain any scenic resources and is not currently being used for agricultural purposes.

2.11 – Required Approvals

The City of Perris is the only land use authority for this project requiring the following approvals:

- Adoption of the Mitigated Negative Declaration for the Project pursuant to CEQA requirements.
- Development Plan Review of site plans and architectural renderings.
- Specific Plan Amendment from Business/ Professional Office (BPO) to Commercial (C).
- Conditional Use Permit for 24-hour operation and fueling station use.
- Variance for sale of off-site alcohol.
- Public Convenience and Necessity Finding for Alcohol.

2.12 – Other Public Agency Whose Approval is Required

- Riverside County Airport Land Use Commission

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Source: Google Maps

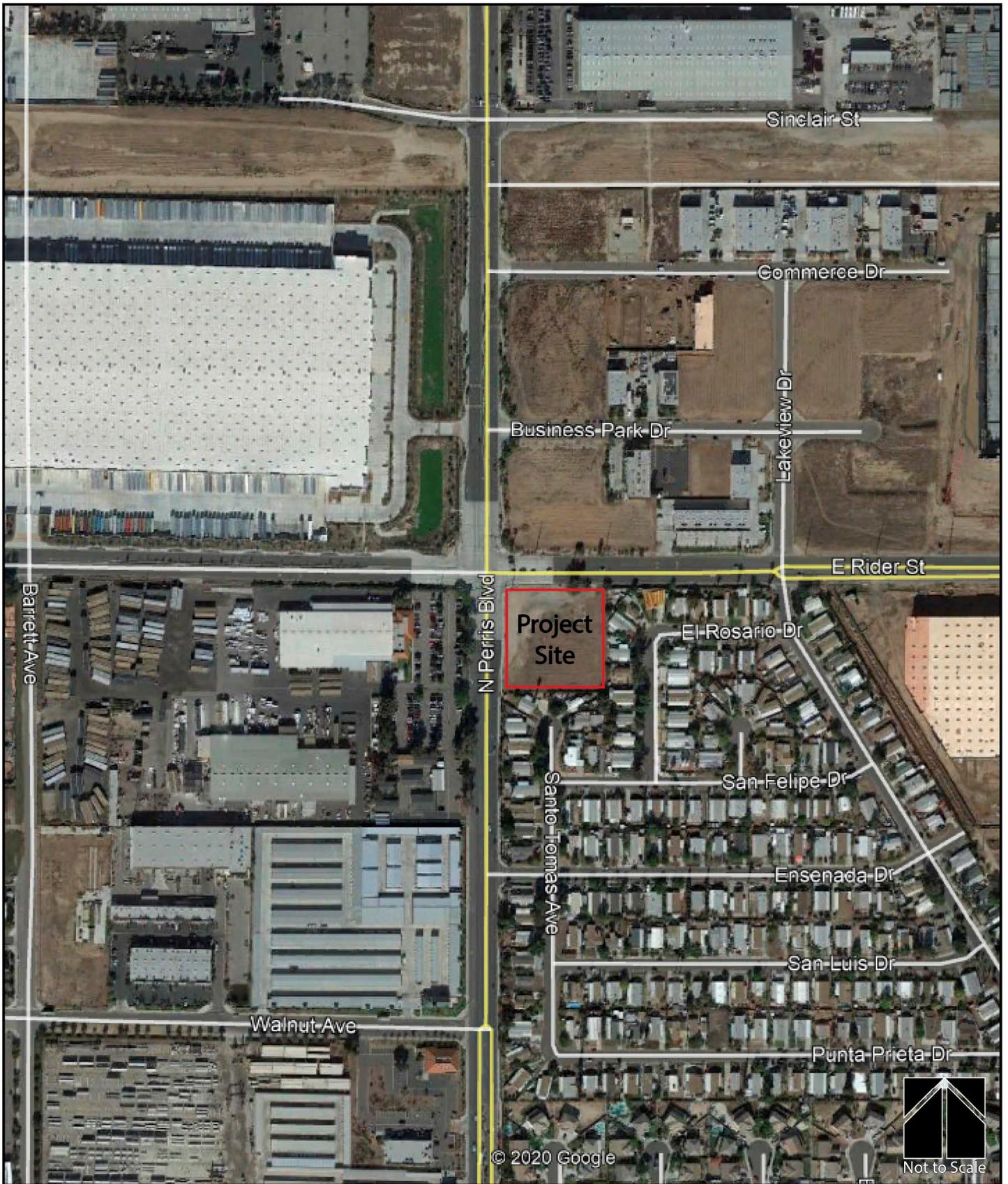
Exhibit 1 Regional Context Map

Rider/Perris 7-Eleven Project
 Perris, California

<http://www.migcom.com> • 951-787-9222



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Source: Google Earth

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Exhibit 2 Project Vicinity Map

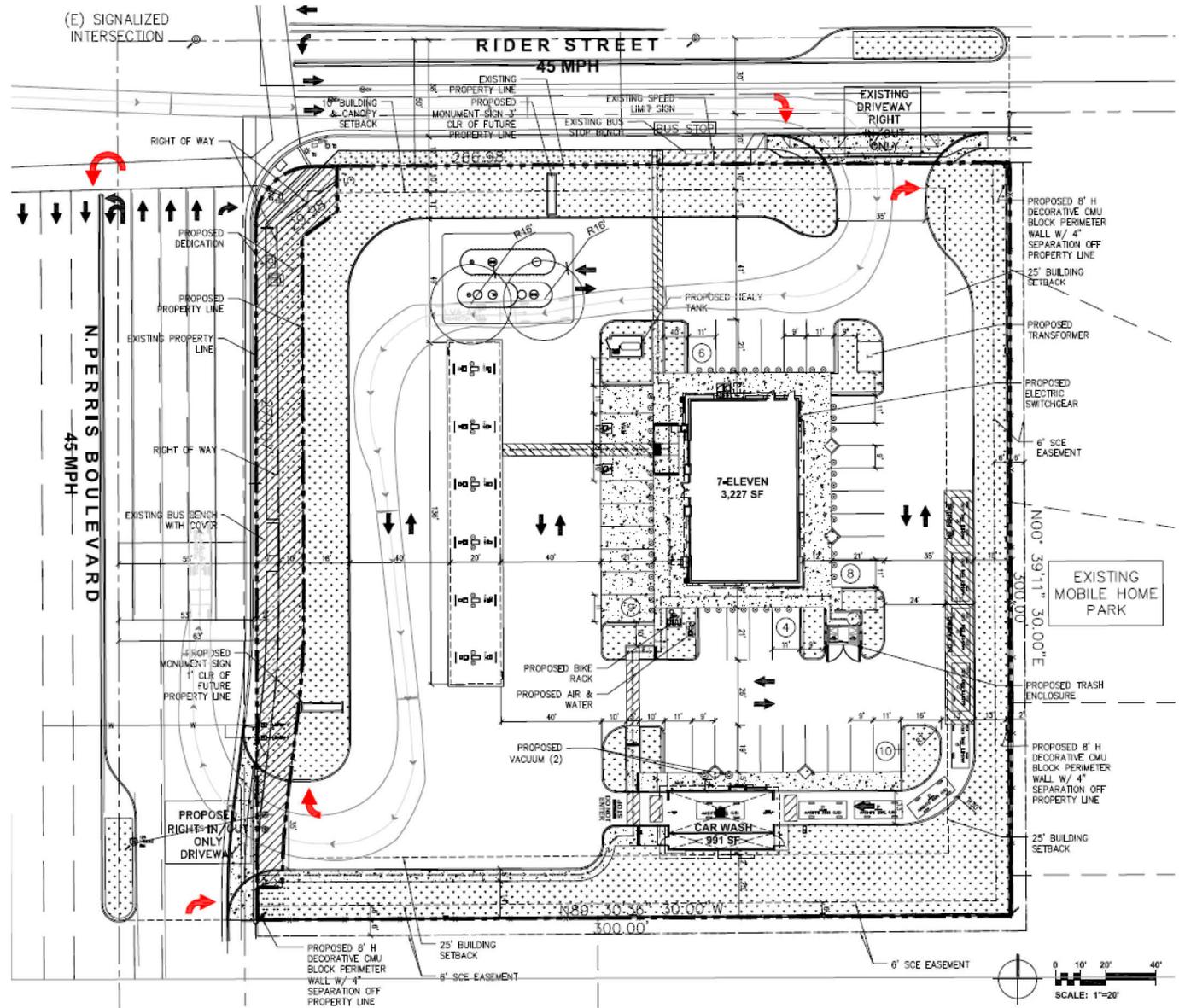
Rider/Perris 7-Eleven Project
San Bernardino, California



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BUILDING INFORMATION:	
GROSS ACREAGE:	±89,888 (2.06 ACRES)
NET ACREAGE:	±84,846 (1.95 ACRES)
DEDICATION ACREAGE:	±5,092 (0.11 ACRES)
PROPOSED BUILDING AREA:	3,227 SF
CANOPY AREA:	2,720 SF
PROPOSED CAR WASH AREA:	991 SF
BUILDING HEIGHT:	ALLOWABLE BUILDING HEIGHT: 35'
LOT COVERAGE:	7.7% (6,938 SF)
LANDSCAPING LOT COVERAGE:	27.1% (24,372 SF)
REQUIRED BUILDING SETBACKS	
FRONT	10' FT
REAR	25' FT (IF ADJACENT RES. 25' IS REQUIRED)
SIDE 1 INTERIOR	25' FT (IF ADJACENT RES. 25' IS REQUIRED)
SIDE 2 STREET	10' FT
REQUIRED LANDSCAPING SETBACKS	
FRONT	10' FT
REAR	10' FT
SIDE 1	10' FT
SIDE 2 (STREET)	10' FT
PARKING REQUIREMENTS:	
PARKING REQUIRED:	16 (1 STALLS PER 250 SF)
PARKING PROVIDED:	37 STALLS (INCL. 1 ACCESSIBLE, 1 EV STALL & BIKE RACKS)
UTILITY INFORMATION:	
ELECTRICAL:	SOUTHERN CALIFORNIA EDISON (SCE)
GAS:	SOCAL GAS
WATER:	EASTERN MUNICIPAL WATER DISTRICT (EMWD)
STORM DRAIN:	N/A
SEWER:	EASTERN MUNICIPAL WATER DISTRICT (EMWD)

SITE LEGEND			
	EXISTING PROPERTY LINE		ACCESSIBLE PARKING SPACE
	PROPOSED PROPERTY LINE		(E) UTILITY POLE
	RIGHT OF WAY		(E) FIRE HYDRANT
	BUILDING & CANOPY SETBACK		(E) STREET LIGHT
	PATH OF TRAVEL		
	STANDARD A.C. PAVING		CONCRETE PAVING/SIDEWALK
	LANDSCAPE AREA		AREA TO BE DEDICATED
	OFF SITE PLANTING		



Source: Tait and Associates

<http://www.migcom.com> • 951-787-



Exhibit 3 Conceptual Site Plan

Rider/Perris 7-Eleven Project
Perris, California

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EXTERIOR ELEVATION - NORTH (FACING RIDER ST.) SCALE: 1/4" = 1'-0"



EXTERIOR ELEVATION - WEST (STOREFRONT FACING N. PERRIS BLVD.) SCALE: 1/4" = 1'-0"

MATERIAL SAMPLES



FINISHES

- 1 1/2" EXTERIOR CEMENT PLASTER OVER 3.4# EXP. DIAMOND MESH OVER "TYVEK" COMMERCIAL WRAP OVER 15# BUILDING PAPERS
MFR: LA HABRA STUCCO
A LIGHT DASH MACHINE APPLY
- 2 ALUMINUM STOREFRONT FRAME SYSTEM
FINISH: CLEAR ANODIZED #14
MFR: KAWNEER
- 3 1X6 COMPOSITE WOODING SIDING
FINISH: GRAPHITE
MFR: FIBERON HORIZON
- 4 STONE VENEER 'QUICKSTACK'
FINISH: ANTIQUE CREAM
MFR: CORONADO STONE
- 5 ALUMINUM CANOPY
FINISH: CLEAR ANODIZED
MFR: MAPES, INC
- 6 METAL ELECTRICAL SWITCHGEAR CABINET
FINISH: T.B.D.
MFR: T.B.D.
- 7 PARKING BOLLARD PLASTIC COVER
FINISH: BROWN - PANTONE PQ-440C
MFR: T.B.D.
- 8 METAL GRILLE + GARDEN TRELLEIG
FINISH: CLEAR ANODIZED
MFR: T.B.D.

MATERIAL SAMPLES



Source: Tait and Associates

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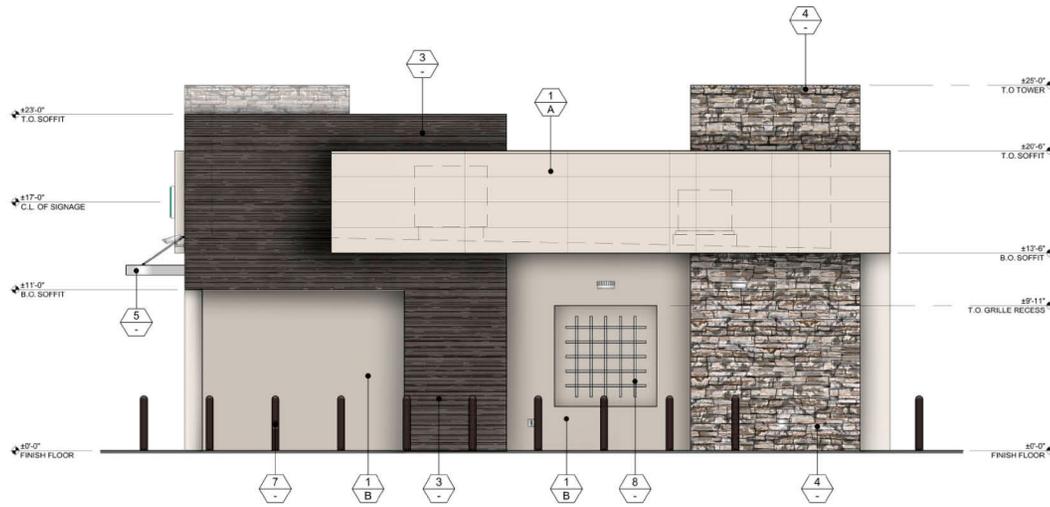


Exhibit 4 Project Elevations

Rider/Perris 7-Eleven Project
Perris, California

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EXTERIOR ELEVATION - SOUTH SCALE: 1/4" = 1'-0"



EXTERIOR ELEVATION - EAST SCALE: 1/4" = 1'-0"

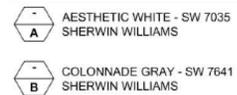
MATERIAL SAMPLES



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MFR: T.B.D.
- 8 METAL GRILLE - GARDEN TRELLIS
FINISH: CLEAR ANODIZED
MFR: T.B.D.

MATERIAL SAMPLES



Source: Tait and Associates

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Exhibit 4 Project Elevations Cont.

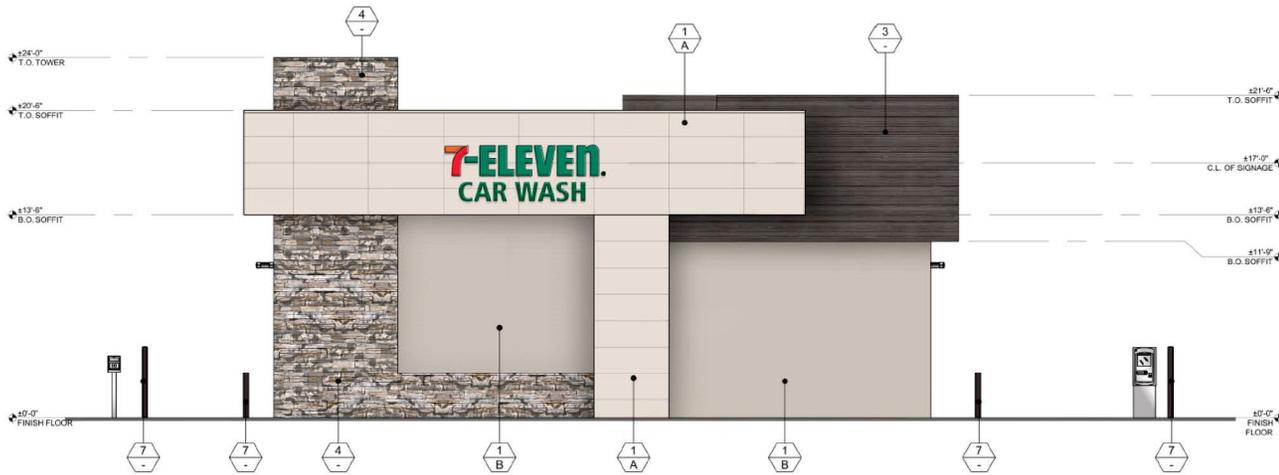
Rider/Perris 7-Eleven Project
Perris, California

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CAR WASH EXTERIOR ELEVATION - NORTH (FACING RIDER ST.) SCALE: 1/4" = 1'-0"



CAR WASH EXTERIOR ELEVATION - WEST (FACING N. PERRIS BLVD.) SCALE: 1/4" = 1'-0"

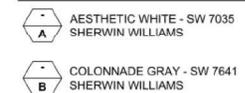
MATERIAL SAMPLES



FINISHES

- 1. 5/8" EXTERIOR CEMENT PLASTER OVER 3.4# EXP. DIAMOND MESH OVER "TYVEK" COMMERCIAL WRAP OVER 15# BUILDING PAPERS
MFR: LA HABRA STUCCO
A LIGHT DASH MACHINE APPLY
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MFR: KAWNEER
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MFR: T.B.D.
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FINISH: CLEAR ANODIZED
MFR: T.B.D.

MATERIAL SAMPLES



Source: Tait and Associates

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Exhibit 4 Project Elevations Cont.

Rider/Perris 7-Eleven Project
Perris, California

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EXTERIOR ELEVATION - SOUTH SCALE: 1/4" = 1'-0"

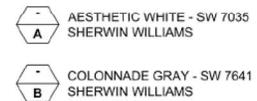
MATERIAL SAMPLES



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MFR: T. B. D.

MATERIAL SAMPLES



EXTERIOR ELEVATION - EAST SCALE: 1/4" = 1'-0"

Source: Tait and Associates

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Exhibit 4 Project Elevations Cont.

Rider/Perris 7-Eleven Project
Perris, California

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3 Determination

3.1 – 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.

<input type="checkbox"/>	Aesthetics	<input type="checkbox"/>	Agriculture Resources	<input type="checkbox"/>	Air Quality
<input type="checkbox"/>	Biological Resources	<input type="checkbox"/>	Cultural Resources	<input type="checkbox"/>	Energy
<input type="checkbox"/>	Geology /Soils	<input type="checkbox"/>	Greenhouse Gas Emissions	<input type="checkbox"/>	Hazards & Hazardous Materials
<input type="checkbox"/>	Hydrology / Water Quality	<input type="checkbox"/>	Land Use / Planning	<input type="checkbox"/>	Mineral Resources
<input type="checkbox"/>	Noise	<input type="checkbox"/>	Population / Housing	<input type="checkbox"/>	Public Services
<input type="checkbox"/>	Recreation	<input type="checkbox"/>	Transportation/Traffic	<input type="checkbox"/>	Tribal Cultural Resources
<input type="checkbox"/>	Utilities / Service Systems	<input type="checkbox"/>	Wildfire	<input type="checkbox"/>	Mandatory Findings of Significance

3.2 – Determination

<input type="checkbox"/>	I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
<input checked="" type="checkbox"/>	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.
<input type="checkbox"/>	I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
<input type="checkbox"/>	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.
<input type="checkbox"/>	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.

Name: Nathan Perez, Senior Planner

Date

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4 Evaluation of Environmental Impacts

4.1 – Aesthetics

Except as provided in Public Resources Code Section 21099, would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect on a scenic vista?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within view from a state scenic highway?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public view 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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Applicable PVCCSP Standards and Guidelines and Mitigation Measures

The PVCCSP includes Standards and Guidelines relevant to aesthetics/visual character and lighting. These Standards and Guidelines summarized below are incorporated as part of the Project and are assumed in the analysis presented in this section. The chapters/section numbers provided correspond to the PVCCSP chapters/sections.

ON-SITE DESIGN STANDARDS AND GUIDELINES (Chapter 4.0 of the PVCCSP)

The Perris Valley Commerce Center Specific Plan Design Standards and Guidelines (Guidelines) intend to create eco-friendly, high-quality developments to establish a regional character that identifies the community. The Perris Valley Commerce Center Specific Plan area is highly sought after due to rapid regional growth, available land, a locally available employee base, proximity to major transportation

routes and the March Inland Global Port facility. The Perris Valley Commerce Center Specific Plan seeks to unify the area's character and develop a business community that fosters long-term economic success. Through the utilization of an established set of Guidelines, it is the City's intent to strike a balance between the creation of mixed-use developments that are aesthetically pleasing, while respecting the basic industrial/commercial use and function of the Perris Valley Commerce Center Specific Plan.

These Guidelines are the main tool used by the City of Perris to evaluate development projects subject to discretionary review. In processing development proposals, Perris uses these guidelines to evaluate proposed site design, architecture, landscaping, and other special features such as plazas, lighting, site amenities, and the use of green technologies as clearly defined herein. Project standards and guidelines can be found in the following sections of this Specific Plan:

- Section 4.0 On-Site Design Standards and Guidelines
- Section 6.0 Landscape Standards and Guidelines
- Section 7.0 Commercial Standards and Guidelines
- Section 12.0 Airport Overlay Zone

Perris Valley Commerce Center On-Site Development Standards (Chapter 4.1 of the PVCCSP)

In order to ensure the orderly, consistent, and sensible development of the Perris Valley Commerce Center Specific Plan, land use standards and design criteria have been created for each land use category. A summary of the standards applicable to Aesthetics for commercial sites within the Specific Plan area is provided below.

General On-Site Project Development Standards and Guidelines (Chapter 4.2.1 of the PVCCSP)

Uses and Standards Shall Be Developed In Accordance with the Specific Plan

Properties within the Perris Valley Commerce Center Specific Plan shall be developed in general conformance with the Land Use Plan (Figure 2.0-1).

Uses and Standards Shall Be Developed In Accordance With City of Perris Codes

Uses and development standards will be in accordance with the City of Perris Municipal Code Chapter 19 (Zoning/Land Use Ordinance) as amended by the Perris Valley Commerce Center Specific Plan zoning ordinance, and further defined by the Specific Plan objectives, design guidelines, as well as future detailed development proposals including subdivisions, development plans, and conditional use permits. If there are any conflicts between the Specific Plan and the City of Perris Municipal Code, the Specific Plan will supersede. If the Specific Plan is silent on particular subjects, the City shall refer to the Municipal Code for guidance.

Development Shall Be Consistent with the Perris Valley Commerce Center Specific Plan

Development of properties governed by the Perris Valley Commerce Center Specific Plan area shall be in accordance with the mandatory requirements of all City of Perris ordinances, including state laws, and shall conform substantially to the Perris Valley Commerce Center Specific Plan, as filed in the office of the City of Perris Development Services Department, unless otherwise amended.

No Changes to Development Procedures Except as Outlined in the Specific Plan

Except for the Specific Plan Development Standards/Design Guidelines adopted with the Perris Valley Commerce Center Specific Plan, no portion of the Specific Plan which purport or propose to change, waive, or modify any ordinance or other legal requirement for development shall be considered to be part of the adopted Perris Valley Commerce Center Specific Plan.

Subdivision Map Act

Lots created pursuant to the Perris Valley Commerce Center Specific Plan, and subsequent tentative maps, shall be in conformance with the development standards of the zoning applied to the property and all other applicable City standards, as well as the Subdivision Map Act.

Water Quality Management Plan

Most developments are required to implement a Water Quality Management Plan (WQMP) in accordance with the most recently adopted Riverside County MS4 NPDES Permit (Board Order R8-2010-0033). Approval by the City of a WQMP plan requires submittal of a document with supporting data which includes at a minimum, a site "Post-Construction BMP Plan," and treatment control facility sizing calculations. Site design, based on Low Impact Design (LID) elements and Source Control BMP's, must be incorporated into the site design. If these two types of BMP's do not sufficiently manage hydromodification and treat expected pollutants, then treatment control facilities must be implemented in order to assure proper flow management and pollutant treatment. Treatment control BMP's are in accordance with Riverside County Storm Water Best Management Practice Hand Book. The Regional Water Quality Board continuously updates impairments as studies are completed, the most current version of impairment data should be reviewed prior to preparation of Preliminary or Final WQMP document.

Uses Affecting March Air Reserve Base

The following uses shall be prohibited within the specific plan:

- Any use which would direct a steady light or flashing light of red, white, green, or amber colors associated with airport operations toward an aircraft engaged in an initial straight climb following takeoff or toward an aircraft engaged in a straight final approach toward a landing at an airport, other than an FAA-approved navigational signal light or visual approach slope indicator.
- Any use which would cause sunlight to be reflected toward an aircraft engaged in an initial straight climb following takeoff or toward an aircraft engaged in a straight final approach toward a landing at an airport.
- Any use which would generate excessive smoke or water vapor or which would attract large concentrations of birds, or which otherwise may affect safe air navigation within the area.
- Any use which would generate electrical interference that may be detrimental to the operation of aircraft and/or aircraft instrumentation.
- Any use which would obstruct Federal Aviation Regulations, Part 77 Conical Surface. (This is also a standard of condition of approval on City projects).
- All retention and water quality basins shall be designed to dewater within 48 hours of a rainfall event.

Avigation Easements

Prior to recordation of a final map, issuance of building permits, or conveyance to an entity exempt from the Subdivision Map Act, whichever occurs first, the landowner shall convey an avigation easement to March Air Reserve Base/March Global Port through the March Joint Powers Authority (MJPA). Provide and disclose a "Notice of Airport in Vicinity" to building tenants.

Accident Potential Zones

All proposed projects that lie within Accident Potential Zones must comply with Airport Overlay Zone Standards. Refer to Section 12.0 for special Airport Overlay Zone development standards and guidelines.

Residential Buffer

The Perris Valley Commerce Center Specific Plan has two established residential zones. Refer to Figure 4.0-16 for locations and Section 4.2.8 for Residential Buffer Development Standards and Guidelines.

Crime Prevention Measures

Development projects should take precautions by installing on-site security measures. Security areas include, but are not limited to, entry areas for automated teller machines (ATM's), display areas and bus stops. It is recommended that these areas provide for 30-feet of candlepower. Security and safety of future users of facilities constructed within the Perris Valley Commerce Center Specific Plan should be considered in the design concepts for each individual development proposal such as:

- Sensored lights that automatically operate at night.
- Installation of building alarm, fire systems and video surveillance.
- Special lighting to improve visibility of the address.
- Graffiti prevention measures such as vines on wall, and anti-graffiti covering.
- Downward lighting through development site.

Trash and Recyclable Materials

Development of all Perris Valley Commerce Center Specific Plan sites shall contain enclosures (or compactors) for collection of trash and recyclable materials subject to water quality and best management practices. All trash enclosures shall comply with City of Perris Standards and with applicable City of Perris recycling requirements.

Waste Hauling

Construction and other waste disposal shall be hauled to a city approved facility.

Construction of Infrastructure May Be Financed

Construction of required infrastructure (such as sewer and water lines, storm drains, and roads) may be financed through the establishment of a financing district (e.g., Assessment District, Community Facilities District, or Road and Bridge Benefit District). Refer to Section 13.

Easements on MWD Property

The use of Metropolitan's fee rights-of-way by governmental agencies for public street and utility purposes is encouraged, provided that such use does not interfere with MWD's use of the property, the entire width of the property is accepted into the agency's public street system and fair market value is paid for such use of the right-of-way. The Director of MWD's Right-of-Way and Land Division Department should be contacted concerning easements for landscaping, street, storm drain, sewer, water or other public facilities proposed within MWD's fee properties. A map and legal description of the requested easements must be submitted. Also, written evidence must be submitted that shows the city or county will accept the easement for the specific purpose into its public system. The grant of the easement will be subject to MWD's rights to use its land for water pipelines and related purposes to the same extent as if such grant had not been made. Please note, if entry is required on the property prior to issuance of the easement, an entry permit must be obtained.

Site Layout for Commercial Zones (Chapter 4.2.2 of the PVCCSP)

Building Orientation/Placement (Chapter 4.2.2.1 of the PVCCSP)

Building Frontages/Entrances

Accentuate public streets by locating building frontages and their entrances toward public right-of-way as shown in Figure 4.0-1. Buildings should be oriented so that entrances and entry access points are easily identified from a distance by pedestrians and/or vehicular traffic. Reinforce entries with architectural material, and landscape features so they are clearly identifiable. Loading areas and employee parking lots should be located at the side and rear of buildings when possible.

Promote Walkability

Promoting walkability and circulation is encouraged through placement of buildings and pedestrian circulation facilities.

Projects within 100 Feet of Extended Runway Centerline

Buildings shall be designed to avoid placement within 100 feet of the extended runway centerline of the airport. This strip should be devoted to parking, landscaping and outdoor storage.

Distinct Visual Link

Establish a distinct visual link in multi-building complexes by using architecture, landscape, site design elements and pedestrian connections to unify the project.

Create Diversity and Sense of Community

Avoid long, monotonous building facades and create diversity and a sense of community by clustering buildings around courtyards, plazas, and landscaped open spaces.

Utilize Building for Screening

Utilize building placement, accented walls, or unique design to effectively screen views of loading docks, storage areas, and/or outdoor work areas that would otherwise be visible to public view.

Vehicular Access and On-Site Circulation (Chapter 4.2.2.2 of the PVCCSP)

Site design should address the intended functions of the facility beginning with safe, definable site access that creates a sense of arrival.

Establish Truck Routes

Truck routes are required for trucks having a maximum gross weight of 5 tons. These routes (Figure 3.0-3) should avoid conflicts with established communities and be separated from passenger vehicles where possible.

Driveway Spacing

Refer to Table 4.0-2 for appropriate driveway spacing.

Minimize Vehicular Conflict

Site access should promote safety, efficiency, convenience, and minimize conflict between employee/customer vehicles and large trucks by creating separate access points when possible as shown in Figure 4.0-2.

Access Points Easily Identifiable

Entry drives should be easily identifiable through the use of enhanced landscaping and special pavements (accent colors, textures, and patterns). Landscaped medians should be provided on major project entrances as shown on Figure 4.0-3. Signage should also be used to identify customer and service entrances. Driveways used exclusively for deliveries or loading activities are excluded.

Shared Access

The City encourages shared driveway access whenever possible. Reciprocal ingress/egress access easements shall be provided for circulation and parking to facilitate ease of vehicular movement between properties and to limit the number of vehicular access points to adjoining streets.

Emergency Vehicle Access

Design of primary drive aisles must allow for emergency vehicle access. Typically, this requirement is a minimum of 20 feet. However, applicants are encouraged to check with the City's Fire Marshall.

Visual Link to Building and Entry

A well designed entry should offer a visual link to the building and entry through the use of business signs, paving, and landscaping.

Primary Entry Drive/Location of Building

The primary entry drive should be oriented toward the main entrance of the building as shown in Figure 4.0-4.

Entry Median

A landscaped center median shall be provided at the primary entrance for sites requiring 100 or more parking spaces.

Landscape Parkways/Sides of Entry

Landscaped parkways shall border both sides of all entry drives to create a sense of arrival.

Dual Axle Entrances

Entrances used primarily or solely by dual axle vehicles shall provide a minimum 50' radius curb returns.

Avoid Back-up onto Public Streets

To avoid back-up onto public streets, entry drive approaches shall avoid conflict points such as parking stalls, internal drive aisles, or pedestrian crossings. Final determination of the driveway approach length shall be determined by the Planning Manager and the City Engineer after consideration of the project site design.

Minimize Interactions

Minimize interactions between trucks, cars and pedestrians by having separate circulation. The placement of loading areas and dock facilities should minimize the interaction between trucks and visitor/customer automobiles. Access to loading and delivery areas should be separated from parking areas to the greatest extent feasible.

Consideration of Large Truck Maneuverability

The design and location of loading facilities should take into consideration the specific dimensions required for the maneuvering of large trucks and trailers into and out of loading positions at docks or in stalls and driveways.

Pedestrian Access and On-Site Circulation (Chapter 4.2.2.3 of the PVCCSP)

Avoid Conflicts Between Pedestrian and Vehicular Circulation

Provide a system of pedestrian walkways that avoid conflicts between vehicle circulation through the utilization of separated pathways for direct pedestrian access from public rights-of-way and parking areas to building entries and throughout the site with internal pedestrian linkages as shown in Figure 4.0-5.

Adequate Vehicle Spacing For Drive-Through Service

Businesses with drive-through service shall provide adequate stacking to accommodate eight (8) vehicles in the drive-through lane from the prior to each pick-up window to avoid conflict with on-site circulation.

Primary Walkway

Primary walkways should be 5 feet wide at a minimum and conform to ADA/Title 24 standards for surfacing, slope, and other requirements.

Pedestrian Linkages to Public Realm

A minimum five-foot wide sidewalk or pathway, at or near the primary drive aisle, should be provided as a connecting pedestrian link from the public street to the building(s), as well as to systems of mass transit, and other on-site building(s).

Parking and Loading (Chapter 4.2.2.4 of the PVCCSP)

Refer to Chapter 19.69 of the City of Perris Zoning Ordinance for parking and loading standards.

Shared Parking

Shared parking with adjacent neighboring uses is encouraged provided minimum parking requirements are met and uses have alternating peak hour parking demands. Refer to Chapter 19.69 of the City of Perris Zoning Ordinance for shared parking standards.

Avoid Long Continuous Drive Aisles

Large parking lots should avoid long, continuous drive aisles to limit the opportunity for highspeed vehicular travel. Where long drive aisles best serve a site, they should utilize curves and stop signs or textured pavement at strategic locations in place of speed bumps.

Pass-Through Aisles

Parking aisles should include pass through aisles if their length exceeds thirty (30) stalls.

Screening Parking Lot

Parking lots should be screened from public view through the use of berms, low walls and/or plant materials.

Ends of Parking Aisle

The ends of all parking aisles and rows shall be protected by a landscaped island or finger. Landscape fingers should be provided on average every ten contiguous parking spaces. The parking island/finger shall be a minimum of 8' wide including a 12" concrete step-out on both sides as depicted in Figure 4.0-6 with the end stalls a minimum of 11' wide.

Bicycle Racks

Facilities with 200 or more required parking spaces shall provide a bicycle parking area to accommodate no less than 5 locking bicycles. Facilities with 500 or more required parking spaces shall provide bicycle

parking to accommodate no less than 15 locking bicycles. Bicycle parking shall be located near main entrances of buildings, adjacent to landscape areas.

Motorcycle Parking

Facilities with 200 or more required parking spaces may provide a motorcycle parking area with an overall dimension of 7 feet in length and area not less than 56 square feet. Facilities with 500 or more required parking spaces shall provide a motorcycle parking area with an overall dimension of 7 feet in length and area not less than 70 square feet. For every two motorcycle spaces, credit for one parking space shall be given.

ADA Compliant Parking

All parking lots and parking areas shall be ADA compliant.

Loading Area Placement

Consideration should be given to the placement of loading areas away from sensitive receptors (schools, residences, hospitals, etc.), public gathering areas or other uses that might be impacted by noise and associated loading activities, as well as locating away from public view. Additional setback requirement has been provided for projects adjoining residential uses (Table 4.0-1 and Figure 4.0-16). In other cases where placement of loading facilities cannot be accommodated away from these areas, additional setbacks, sound walls, screening or combination thereof may be required.

Screening (Chapter 4.2.2.5 of the PVCCSP)

Screen Loading Docks

When possible, loading areas should be located on the side or rear of a site and shall be screened from public view. When loading areas are located in the Visual Overlay Zone (Fig. 4.0-17), special consideration to the visible aesthetics of screen walls, fences and landscaping should be considered.

Screening Methods

Acceptable screening methods include building offsets, connecting wing walls, perimeter site walls and fences, landscaping and berming. Such screen walls should be architecturally integrated with building by design, color, and material. Screen walls shall be of the same design and materials as primary buildings and a minimum of 6 feet high so as to sufficiently screen loading docks. Screen walls exceeding 8 feet in height shall be softened with earthen berms and dense landscape as noted in Figure 4.0-7.

Screening of Outdoor Storage Areas, Work Areas, Etc.

The screening of outdoor storage areas, outdoor work areas (where permitted), and mechanical equipment with walls that utilize the same building materials and architectural design of the buildings is required. Soften screen walls with earth berms and dense landscaping as depicted in Figure 4.0-7. The intent is to keep walls as low and unobtrusive as possible while performing their screening and security functions.

Outdoor Storage (Chapter 4.2.2.6 of the PVCCSP)

No Outdoor Storage Permitted Other Than as Specified

Outdoor storage is limited to the General Industrial Zone of the Perris Valley Commerce Center. No other outdoor storage will be permitted, with the exception of accessory uses for outdoor storage directly associated with and incidental to the primary use occupying less than 10% of the site or floor area.

Architecture (Chapter 4.2.3 of the PVCCSP)

Scale, Massing and Building Relief (Chapter 4.2.3.1 of the PVCCSP)

Scaling in Relationship to Neighboring Structures

Scaling of buildings in relationship to neighboring structures and adjacent developments should be considered to promote compatible design.

Variation in Plane and Form

Provide variation in plane and form of buildings and resulting adjacent spaces both inside and out with the use of recesses, varied roof lines, pop-outs, positioning and relationships of buildings in all areas visited by the general public and/or office areas.

Project Identity

Building and site development shall incorporate an architectural component that provides an identity to the Project.

Do Not Rely on Landscaping

Building design should not rely on landscaping to soften, buffer or otherwise provide relief for massive building form, but rather it should be used to accent superior architectural designs.

Distinct Visual Link

Establish a distinct visual link in multi-building complexes by using architectural and site design elements to unify the Project.

Break Up Tall Structures

Break up tall structures, 20 feet and greater, by providing different treatments to the lower, middle, and top stories that define these three parts.

Avoid Monotony

Avoid monotony and repetition in building elevations and the street scene by incorporating varying building heights, massing, roof lines, design elements, color variation, reveal lines, window treatments, texture and materials, building placement, and landscape.

Avoid Long, Monotonous and Unbroken Building Facades

Avoid long, monotonous and unbroken building facades that repeat the same design element several times along the same elevation without intermittent variations. Building design shall avoid long, uninterrupted facade plain or blank walls. The exterior wall facades shall be varied in depth, direction, and/or significant projections. Facades greater than one hundred (100) feet in length, shall incorporate projections or recesses with a depth of five to ten feet. Such articulation shall cumulatively account for at least twenty (20) percent of the length of the facade. No uninterrupted length of any facade shall exceed one hundred (100) horizontal feet.

Provide Vertical or Horizontal Offsets

Provide vertical or horizontal offsets in the wall surfaces including columns, projections, and recesses.

Fenestration

Fenestration shall be used for functional and programmatic requirements and shall be designed to break up the visual size of the building facade. Door and window openings shall be recessed 2 to 4 inches to

further articulate the facade. Buildings which include uses that do not lend themselves to fenestration (e.g., loading areas, warehouse and storage functions) should be designed so that these uses are screened from the public right-of-way.

Architectural Elevations and Details (Chapter 4.2.3.2 of the PVCCSP)

Primary Building Entries

Provide defined recognizable building entrances. Primary building entries should be highlighted through the massing of the building, as well as special architectural materials and/or design features.

Elements of a Building

Elements should relate logically to each other, as well as to surrounding buildings in order to enhance the given or potential characteristics of a particular building and area.

Large Sites with Multiple Buildings

Develop and adhere to a consistent design character and style that provides complementary buildings, ancillary structures, and landscape elements in conjunction with these standards.

Discernable Base, Body and Cap

Principal buildings over 20 feet in height should strive to have a clearly discernable base, body, and cap. The cap shall consist of a cornice, parapet, awning canopy or eave. The base and cap shall be clearly distinguishable from the body through changes in color, material, pattern, profile or texture.

Visual Relief

Articulating details should include doorway or entry surrounds, windows, balconies, details such as horizontal bands, recessed or textured design elements, accent windows, awnings, accenting cornice treatments, exposed expansion joints, reveals, change in texture, or other methods of visual relief.

Building Relief

Building relief shall be provided along all facades visible from streets and highways, areas accessible to and visible by the public.

Downspouts

Downspouts should be internalized to avoid external damage and shall drain under walkways to landscape areas, underground storm drain and loading docks to avoid slip hazards.

Roofs and Parapets (Chapter 4.2.3.3 of the PVCCSP)

Integral Part of the Building Design

Roofs should be an integral part of the building design and overall form of the structure and should relate to the general design and nature of other roofs along the street, as well as harmonize with the surrounding development.

Overall Mass

Building roofs should be designed to reduce the overall mass of a structure.

Varied Roof Lines

The use of varied roof lines is encouraged. Permitted roof styles include gable, vaulted, and hip roofs. Flat roofs are permitted if sufficiently disguised through the use of parapet walls. Superficial application of artificial roof elements, such as a mansard, to disguise a flat roof, should not be used. This does not preclude roof top equipment wells when set behind conventional roof forms.

Form and Materials

Roof forms and materials should be stylistically consistent with the overall design theme of the building.

Avoid Monotony

The monotony of long and large unbroken roofs shall be avoided through the use of gables, dormers, height offsets, or other architectural variations.

Variation in Parapet Height

Variation in parapet height should be used in conjunction with wall relief or as any distinctive feature to break a long horizontal parapet line.

Flat Roof and Parapets

Special attention should be given to the finish of parapets when buildings have flat roofs. Parapets should be finished with cornices, other horizontal decoration and/or clean edges with no visible flashing, depending on the architectural style of the buildings. Distinction must be achieved with enhancements more substantial than a paint band.

Conceal Roof Mounted Equipment

Parapet walls and roof systems shall be designed to conceal all roof-mounted mechanical equipment from view to adjacent properties and public rights-of-way.

Public Art (Chapter 4.2.3.4 of the PVCCSP)

Public art is often used as a means of creating consensus and civic pride. It is a means in which to engage a broad and diverse spectrum of people. Typically, public art is used to recognize the city and/or its components by use of historic monuments or displays that illustrate an envisioned environment to establish an identity. Public art adds value to both public and private development as well as infrastructure by creating a sense of community. Public art can provide education but also attracts people closer to the object to promote social gathering and interaction. Public art becomes an identifiable point amongst the urban environment.

Professional Artist/Location

Public art should be created by a recognized, professional artist and shall be subject to approval by the Development Services Department. Selection criteria shall include artistic merit, broad experience as a professional artist, references, experience applicable to the type of project and interest in and understanding of the City and surrounding area. Public art should be properly located so as to receive proper recognition by the viewing public.

Color and Materials (Chapter 4.2.3.5 of the PVCCSP)

Facades

The use of low reflectance, subtle, neutral, or earth tone colors as the predominant colors on the facade is encouraged.

Building Trim and Accent Areas

Building trim and accent areas may feature brighter colors, including primary colors. Applied paint over brick or stone on any part of a building facade or other site elements is discouraged.

Metal Siding

Metal siding as the primary sheathing of the facade is prohibited where visible from the public. Metal may be used as an architectural treatment or aesthetic accent in the form of awnings, trellises, exposed structural beams, and accent relief features such as columns for canopies.

High Quality Natural Materials

The use of high quality natural building materials such as brick, stone, tinted/textured concrete (tilt-up) are appropriate. The following is a list of permitted materials for the building base, body, and cap. Other materials not specifically mentioned may be permitted on a case-by-case basis.

- Building Base: Brick, native stone, manufactured stone or decorative concrete masonry units.
- Building Body: Wood, brick, native stone, manufactured stone, concrete, glass, or stucco. Imitation wood siding, sheet metal, corrugated metal, or other similar metal panels, are considered inappropriate and should be avoided. Mirrored or highly reflective glass is prohibited. Spandrel glass may be used to conceal floor systems.
- Building Cap: The building cap shall consist of materials introduced on the base and/or body of the building. Cornices and parapets shall be distinguishable from the building body by design and profile. Awnings, canopies, and eaves shall generally incorporate alternate color and materials.

Furnishings (Chapter 4.2.3.6 of the PVCCSP)

Site Furnishings

Site furnishings such as benches, tables, trash receptacles, planters, tree grates, kiosks, drinking fountains, and other pedestrian amenities should be integral elements of the building and landscape design, and placed in plazas, at building entrances, open spaces and other pedestrian areas to create a more pedestrian friendly environment. Site furnishings exceeding three feet in height should not block pedestrian access or visibility to plazas, open space areas and/or building entrances and should be made of durable, weather-resistant and vandal-resistant materials. Site furnishings should be depicted on all site plans and landscape plans.

Newspaper Racks, Phone Booths, ATM and Vending Machines

Newspaper racks, phone booths, ATM machines, and reverse vending machines should be incorporated into the site design and, to the extent possible, compatible with the design, colors, or style of the structure. Exterior placement of vending machines is discouraged.

Lighting (Chapter 4.2.4 of the PVCCSP)

Furnishings (Chapter 4.2.4.1 of the PVCCSP)

Safety and Security

All projects shall consider proper lighting for safety and security purposes.

Lighting Fixtures Shield

All lighting fixtures shall be fully shielded with cut-off fixtures so that there is no glare emitted onto adjacent properties or above the lowest part of the fixture. Parking area lighting shall be provided pursuant to Section 19.02.110.A.

Foot-candle Requirements Sidewalks/Building Entrances

Sidewalks shall have a minimum of 2 foot-candlepower of light across their surface. Building entrances and parking lots shall have a minimum of 1 foot-candlepower of light. Lighting standards shall be energy

efficient. Based on Mt. Palomar Observatory's Dark Sky Ordinance, all projects will be conditioned to use low pressure sodium.

Outdoor Lighting

All outdoor lighting and utilities, including spotlights, floodlights, electrical reflectors and other means of illumination for signs, structures, landscaping, and similar areas, shall be made of metal, unbreakable plastic, recessed, or otherwise designed to reduce the problems associated with damage and replacement of fixtures. Fixtures shall be vandal proof. Fixtures should be anchored with concrete footing if low voltage lighting is used.

Decorative Lighting Standards (Chapter 4.2.4.2 of the PVCCSP)

Decorative Lights

Although the primary purpose for lighting is nighttime safety and security, when used creatively it can enhance the appearance of a structure, draw attention to points of interest, and define open spaces and pathways. The effective use of lighting will achieve its objective without disturbing adjacent development, roadways, or residences.

Complimentary Lighting Fixtures

Lighting should contribute to the overall character of the surrounding community, site architecture, or other site features. The fixtures should complement the furnishings, as well as other lighting elements used throughout and surrounding the site, such as pedestrian pathway lighting, and lighting used in adjacent site amenities and the public right-of-way. Any illumination, including free standing or wallmounted lighting, for security, loading docks, parking areas, or internal roads shall utilize fullcut-off fixtures, and be directed downward and away from adjoining properties and public rightof- way (i.e., bulb/source is not visible above the horizontal plane) as depicted in Figure 4.0-14.

Monumentation Lighting

Lighting for entry monumentation should illuminate the sign graphics and gently wash the components of the signage with light.

Compatible with Architecture

Lighting should be architecturally compatible with the building and site design. These lights should be low profile and in scale with the setting and can include post lights and light bollards.

Up-Lighting

Up-lighting, such as building washes or roof lighting, is not permitted in the Airport Overlay Zone due to its proximity to March Global Port and with respect to Mt. Palomar Observatory's Dark Sky Ordinance. A limited amount of up-lighting will be allowed at the discretion of the Development Services Department in all other areas of the Perris Valley Commerce Center when used for the purpose of highlighting building entries and specimen landscaping.

Down-Lighting

Where appropriate, design down-lighting on exterior elevations and landscaping as part of the overall architectural style of the building, accenting, highlighting interesting architectural and landscape architectural features.

Accent Lighting

The use of accent lighting is encouraged but should be combined with functional lighting to highlight special focal points, building/site entrances, public art and special landscape features.

High Intensity Lighting

Sites requiring high intensity lighting where high visibility and color retention are important, such as automotive sales lots, are required to switch to an alternative low level lighting of these areas from 11 p.m. until daylight.

Parking Lot Lighting (Chapter 4.2.4.3 of the PVCCSP)

Parking Lot Lighting Required

Parking areas shall have lighting which provides adequate illumination for safety and security.

Foot-candle Requirements Parking Lot

Parking lot lighting fixtures shall maintain a minimum of 1-foot candlepower across the surface of the parking area.

Avoid Conflict with Tree Planting Locations

Parking lot lights shall be located such that they do not conflict or displace intended tree planting locations.

Pole Footings

Pole footings in traffic areas shall be designed and installed such that they protect the light standard from potential vehicular damage. Above grade footing should not exceed 24" in height and should not obstruct walkways.

Front of Buildings and Along Main Drive Aisle

Front of buildings and along main drive aisle shall provide 10-foot candlepower.

Signage Program (Chapter 4.2.5 of the PVCCSP)

Sign Program (Chapter 4.2.5.1 of the PVCCSP)

The purposes of a sign program are to establish uniform sign design guidelines and sign area allocations for all uses and/or buildings on a site, and incorporate specific sign exceptions approved pursuant to City of Perris Zoning Ordinance Chapter 19.75.

Multiple Buildings and/or Tenants

Commercial, offices, industrial complexes, and similar facilities with multiple buildings and/or tenants shall submit a 'sign program' for the placement of on-site signs according to a compatible design that is common to all structures and uses. An application for a sign program shall be approved by the Planning Division.

Major Roadway Zones/Freeway Corridor

Commercial, offices, industrial complexes, and similar facilities with multiple buildings and/or tenants will be required to include the Perris Valley Commerce Center Logo in their main signage, as well as projects located along the Major Roadway Zones or Freeway Corridor as discussed in Section 4.2.9 and reflected in Figure 4.0-17. Projects along the Freeway Corridor will be required to include the City of Perris Logo or name in the main signage.

Location

Location of signs shall be no closer than 5-feet from the property line and shall be located in a landscaped planter equal to or greater than the area of the sign.

Direct On-Site Traffic Circulation

On-site traffic circulation signage should be organized to effectively direct vehicles to appropriate parking areas.

Monument Signs

Monument signs shall also include the street address number, located such that visibility is not impaired by mature landscaping. They should also incorporate colors, materials and design of primary buildings.

Address Identification Signage

Address Identification Signs shall be twelve-inches high and located on the upper corner of the building wall facing each applicable public right-of-way, pursuant to Section 19.75.

Neon Signage

Neon signage shall only be permitted in commercial zones and must comply with airport restrictions for lighting. See Section 12.0.

Prohibited Signs

Other than Grand Opening Signs as permitted in Municipal Code Section 19.75.090.D, no banners, flags, pennants, balloons, tethered inflatable, signs within public right-of-way, projecting signs or off-site directional signs shall be permitted.

Walls and Fences (Chapter 4.2.6 of the PVCCSP)

Specific Purpose

Walls and fences are generally used for security purposes and to screen areas from public view. Although walls may be necessary, their design should provide variety and visual interest. If there is not a specific purpose for their use, they should not be utilized.

Materials

Walls and fences should be designed and constructed of materials similar to and compatible with the overall design character and style of the development. Permitted materials include split-face masonry, stone veneer, brick, slump, block, wrought iron or tubular steel, as well as a combination of wrought iron and tubular steel with masonry columns. Vinyl fencing is only acceptable in residential zones.

Avoid Long Expanses of Monotone Fence/Wall Surfaces

Long expanses of fence or wall surfaces should be architecturally designed to prevent monotony. Design features should include:

- Varied heights, wall plain offsets, and angles.
- Pilasters or distinctive elements.
- Accent capping, trim, reveals.
- Changes of material and finishes where appropriate.
- Trellis/vine panels, landscape pockets

Most Walls Not Permitted within Street Side Landscaping Setback

Most walls are not permitted within street side landscaping setback areas except for low-profile parking lot screen walls or garden walls. These walls will be limited to a street side visible height of 30 inches. When security fencing is required along the street side landscape setback area, it should be constructed of wrought iron, tubular steel or similar material supported by masonry columns.

Height

Effectively soften screen wall height and mass with earthen berms and dense landscaping as shown in Figure 4.0-15. The intent is to give walls the appearance of being as low and unobtrusive as possible while performing their screening and security functions. The height of screen walls along street frontages should not exceed the maximum height necessary to effectively serve their purpose and should not appear to exceed a height of 8 feet when viewed from the public right-of-way unless otherwise approved by the City Planning Division, and in no case shall the wall/structure itself exceed 12 feet.

Gates Visible From Public Areas

Gates for pedestrian and vehicular access to restricted areas that are visible from public areas (i.e., parking lots, drive aisles) shall be constructed of solid durable material, wrought iron, tubular steel, or similar material when needed to serve the needs of security or screening.

Prohibited Materials

No chain-link (with or without grapestake or vinyl inserts), barbed wire, wire, integrated corrugated metal, electronically charged or plain exposed plastic concrete/PCC fences are permitted.

Utilities (Chapter 4.2.7 of the PVCCSP)

Utility Connections and Meters

All utility connections and meters shall be coordinated with the development of the site and should not be exposed, except where deemed appropriate or necessary by the building official. To the greatest extent possible, these utility connections should be integrated into the building or the architectural design.

Pad-Mounted Transformers and Meter Box Locations

Pad-mounted transformers and/or meter box locations shall be screened from view from surrounding properties and public rights-of-way. Utilities shall be located underground, unless waived by the City Engineer.

Electrical, Telephone, CATV and Similar Service Wires and Cables

All electrical, telephone, CATV and similar service wires and cables which provide direct service to the property being developed, within the exterior boundary lines of such property, shall be installed underground.

Electrical Transmission Lines

Electrical transmission lines 66kv and less shall be installed underground.

All Equipment Shall be Internalized

All equipment shall be internalized into the building design to the greatest extent possible. When unfeasible, they shall be screened and not prominently visible from public rights-of-way.

Residential Buffer Development Standards and Guidelines (Chapter 4.2.8 of the PVCCSP)

There are two existing residential communities located within the boundary of the Perris Valley Commerce Center and one that abuts the Specific Plan boundary as depicted in Figure 4.0-16. To recognize and blend with those communities, a Residential Buffer Zone has been established for proposed industrial, commercial and business professional office development abutting existing or proposed residential development.

50-Foot Setback

A 50-foot setback is required for commercial, industrial and business professional office developments immediately abutting existing residential property lines. Other allowed uses and facilities within the 50-foot setback include landscape areas, water quality basins and conveyances, vehicle travel aisles, passenger car parking and any feature deemed unobtrusive to the neighboring residential use by the Development Services Department.

Hours of Operation

Depending on the type of use and activities proposed by the industrial, commercial or professional/office development, the Development Services Department may impose restrictions on hours of operation for construction, as well as business operation.

Direct Lighting Away from Residential

All project lighting must be directed away from residential areas.

Screening

Proposed industrial, commercial or professional/office developments will need to screen operation for residential view through landscape and/or wall screening.

Sound Walls

Sound walls may be required to mitigate potential operational noise impacts from proposed industrial, commercial or professional/office development, as well as be constructed in the first phase of development to help shield residents from construction noise.

Other Restrictions May Be Required Based on Actual Use

Depending on proposed use, an Air Quality Study and/or Health Risk Assessment may be required to determine project viability located adjacent to residences.

Visual Overlay Zone Development Standards and Guidelines (Chapter 4.2.9 of the PVCCSP)

The first view of the Perris Valley Commerce Center will be afforded to motorists traveling along the Interstate-215 Freeway and along major roadways within the Commerce Center as reflected in Figure 4.0-17. The City's goal is to provide travelers with the impression of a high caliber, well planned industrial community. This sense of quality shall be reinforced when traveling through the landscaped thoroughfares. These guidelines are provided to enhance the "Visual Zone" along Interstate-215 and major roadways inside and adjacent to the Commerce Center. These zones include the field of vision from the roadway to the buildings within the Commerce Center. An emphasis will be placed on these "Visual Zones" to ensure the aesthetic enhancements for these crucially important areas.

Freeway Corridor (Chapter 4.2.9.1 of the PVCCSP)

The Guidelines are designed to create a sense of arrival into the Perris Valley Commerce Center. The corridor is defined as 100-feet from the Interstate-215 Freeway right-of-way.

Orientation

Placement of buildings should be oriented toward the freeway to the greatest extent possible.

Architectural Enhancements

360 degree architectural enhancements are required for all buildings abutting the freeway (or frontage road) that do not orient toward the freeway.

Rear Building Elevations

Rear building elevations visible from the freeway corridor should provide “decorative” roof elements around the entire building. Roof elements may be combined with wall or other roof elements which will work together on all sides of the building.

Outdoor Storage

Outdoor storage is not permitted unless fully enclosed and screened from freeway view.

Screening

Screening walls need to be combined with landscaping.

Anti-Graffiti Protection

All walls, building sides, and fences shall be covered with anti-graffiti coating.

Signage

Major signage along the freeway corridor shall include the City of Perris logo or name. Monument signs throughout the remaining areas of the Specific Plan shall use the PVCC logo.

Lighting

Decorative accent lighting designed according to PVCC standards is highly encouraged.

Windows

Avoid window materials that have reflective quality when positioned at freeway level or higher.

Wall/Fences

Any walls or fences visible from the freeway shall be decorative in nature, as well as functional.

Billboards

No billboards are permitted in the Freeway Corridor. No building permit shall be issued for any new development or expansion of an existing development on any site upon which an existing billboard is located.

Line of Sight Study

The City may require a Line of Sight Study be provided for any development project within the Freeway Overlay Zone to determine that the views from the Freeway Corridor meet the City’s visual goal.

Major Roadway Visual Zones (Chapter 4.2.9.2 of the PVCCSP)

It is important to note that it is not the intent of this design perspective to de-emphasize the importance of architectural treatment on all sides of a building. The intent is to enhance the public right-of-way. This viewshed and public areas with the most visibility and access shall be considered the “Visual Zone” as depicted in Figure 4.0-18. Site design should strive to place considerable attention to aesthetics in the visual zone. The visual zones are for Primary and Secondary Arterials, as well as Expressways. While parking in front of buildings should be limited to the greatest extent possible, when buildings must be oriented to face a public roadway with parking, berms and enhanced landscape treatments should be used creating a greater aesthetic appearance.

Quality Architectural Presence

A quality architectural presence should be established with an emphasis on layout, finish materials, site accenting elements, and landscaping.

Full Building Articulation and Enhancement

Full building articulation and enhancement is required on any facades visible from the street as shown in Figure 4.0-19.

Integrated Screenwall Designs

Screenwall designs shall be integrated with accent landscaping.

Enhanced Landscape Setback Areas

Landscaped setback areas must incorporate enhancements that include accent accessories such as boulders, trellises, or garden walls, beyond basic plant material.

Enhanced Entry Treatment

Primary entry drives shall have a distinct landscape statement, landscaped median and enhanced paving.

Entry Point

Entry plazas and/or significant architectural features or public art shall be used as a focal point.

Screening, Loading and Service Areas

Screening or offset views into loading/service area or locate service areas away from street frontages to the rear of the property, next to truck loading.

Limit or Eliminate Landscaping Along Side or Rear Setbacks

To achieve greater front yard landscaping, landscaping along side or rear setbacks may be limited unless necessary to screen and buffer loading activity areas from adjacent non-industrial use or public view. Overall percent of landscaping required must be provided, but may be consolidated towards the Visual Zone areas.

Uplight Trees and Other Landscape

Trees and other landscape features shall be illuminated by concealed "uplight" fixtures along major collector roads. All fixtures shall be located, shielded and aimed so that light is not cast toward adjacent properties, streets or transmitted into the sky.

Landscaped Accent Along Building Foundation

Accent landscaping shall be used along building foundation.

Heavily Landscape Parking Lot

If adjacent to major roadway street frontage, parking lots shall be heavily landscaped.

Limited Parking Fields

Parking fields shall be limited between street frontage and building to the greatest extent possible as shown in Figure 4.0-20.

LANDSCAPE STANDARDS AND GUIDELINES (Chapter 6.0 of the PVCCSP)

On-Site Landscape General Requirements (Chapter 6.1 of the PVCCSP)

Unspecified Uses

All areas not devoted to parking, drive isles, buildings or operational areas shall be landscaped and permanently maintained.

Perimeter Landscape

All buildings should have perimeter landscape, except where loading docks, plazas and entries would interrupt planting. Landscape areas shall be provided on all sides of buildings visible to the public.

Street Entries

Street entries into development sites shall be designed with landscaping and/or architectural features that project a high quality image for the development.

Slopes

Cut slopes are level areas in the landscape formed by cutting into a slope and adding a retaining wall to create stability while fill slopes are the surface formed from earth deposited to build a road or trail. Cut slopes that are equal to or greater than three (3) feet in vertical height and fill slopes equal to or greater than five (5) feet in vertical height, shall be planted with a ground cover to protect the slope from erosion and instability. Slopes exceeding three (3) feet in vertical height shall be planted with shrubs spaced not more than ten (10) feet on center or with trees spaced not to exceed 30 feet on center, or with a combination of shrubs and trees at equivalent spacing, in addition to the groundcover.

Main Entries, Plaza, Courtyards

Trees and shrubs should be used near the main entries of buildings, pedestrian plazas, and courtyards. Large specimen trees are encouraged.

Maintenance Intensive/Litter Producing Trees Discouraged

Trees that produce litter, are shallow rooted or have other maintenance intensive characteristics are not encouraged for use in parking areas, pedestrian plazas, or courtyards.

Avoid Interference with Project Lighting/Utilities/Emergency Apparatus

Landscaping should not interfere with the lighting of the project area or restrict access to utilities (i.e. electrical boxes, meters, etc.) or emergency apparatus (i.e. fire hydrants or fire department connections).

Scale of Landscape

Landscaping should be kept in scale with adjacent buildings and shall be maintained at an appropriate size at maturity.

Planters and Pots

The use of planters and pots in the building recesses and adjacent to the exterior walls is encouraged. Pot and planter materials should complement the architectural style, texture, and color of the building and should be properly irrigated and drained.

MWD Trail Buffer

Properties immediately south of the trail (from Indian Avenue to Webster Avenue) and to the north (from Indian Avenue to the Perris Valley Storm Channel) are encouraged to provide a minimum 10-foot landscape buffer strip planted with large trees to compliment the trail and provide shade. Refer to Figure 5.0-6.

On-Site Landscape Screening (Chapter 6.1.1 of the PVCCSP)

Plant Screening Maturity

Plant materials specified to be used for screening purposes such as trash enclosure, transformers or loading areas, should reach maturity within three years of installation.

Screenwall Planting

Screenwalls shall be made more aesthetically pleasing with the incorporation of plant material and vines.

Trash Enclosures

Trash enclosures shall be visually enhanced by screening and softening with landscaping and overhead trellis treatment.

Landscape in Parking Lots (Chapter 6.1.2 of the PVCCSP)

Minimum 50% Shade Coverage

Shade trees shall be provided within the vehicular parking areas and should attain a minimum 50% shade coverage of the parking area when the trees reach maturity (approximately 15 years). Parking lot shade trees shall be of an evergreen variety capable of producing a large canopy to achieve this shade requirement.

Planter Islands

Planter islands shall have a minimum width of eight (8) feet curb to curb, bounded on the outside by a 6-inch high concrete curb (or its equivalent). Curb break and wheel stops may be substituted where landscaped swales adjacent to the paving are intended for water quality management purposes. Refer to Figure 4.0-6.

Parking Lot Screening

Parking lots shall be screened from the public rights-of-way to a height of 36 inches by use of primary structures or combination of earthen berms, shrubs, and garden walls as depicted in Figure 6.0-1. If walls are incorporated into the design, they must be aesthetically compatible with the project design and no taller than 36 inches within the setback area, as measured from ground surface to top of wall.

One Tree per Six Parking Spaces

A minimum of one tree per six parking spaces shall be provided within the parking lot and its immediate perimeter as shown in Figure 6.0-2.

Concrete Curbs, Mow Strips or Combination

Landscaping in parking lots or along drive aisles must be protected or delineated with six-inch concrete curbs, concrete mow strips, or the combination of both, as approved by the City of Perris. This requirement may be waived or modified as necessary, to mitigate water quality management requirements.

Planter Rows Between Opposing Parking Stalls or Diamond Planters

Planter rows between opposing parking stalls or diamond planters with a minimum inside width of 5-feet shall be allowed for tree plantings capable of providing 50% shade coverage of the parking area, as required. Rock or mulch coverings are encouraged in diamond planters. Planter rows between opposing parking stalls or along perimeter landscape buffers may be designed as vegetated swales for utilization as infiltration trenches for run-off, as a method of pollutant mitigation to manage water quality. These areas may be designed without curbs where wheel stops are provided.

Pedestrian Linkages

Parking areas should be designed with pedestrian walkways which link the building to the street sidewalk system creating an extension of the pedestrian environment. This can be accomplished by using design features such as walkways with enhanced paving, trellis structures, and/or landscape

treatment. Walkways should not only link the building to the street, but should link the parking areas to the buildings such that pedestrians do not have to walk in the vehicle lanes to get to building entrances.

On-Site Plant Palette (Chapter 6.1.3 of the PVCCSP)

Landscape plant palette for the Perris Valley Commerce Center should be consistent with Section 6.2 Off-Site Landscape. The plant palette was selected to complement and enhance the thematic setting for the community, appropriateness to climatic and soil conditions, ease of maintenance and water conservation. Plants other than those listed below, may be used to satisfy design or horticultural needs consistent with the Project's objectives. If approved by the City of Perris, plants shall be consistent with California Friendly Landscape and meet all minimum City of Perris Water Conservation Requirements as defined in Development Code Chapter 19.70, Landscaping, including but not limited to:

- Use of drought-tolerant plants.
- Use of landscaped areas designed to retain irrigation water.
- Use of satellite-based irrigation timers.
- Use of automatic irrigation systems.
- Use of plant groupings with similar irrigation requirements to reduce over-irrigation.
- Extensive use of mulch in landscaped areas.
- Installation of drip irrigation systems, where appropriate.
- Limit use of turf for active purposes only.
- Limit use of impervious surfaces.

Off-Site Landscape General Requirements (Chapter 6.2 of the PVCCSP)

Streetscape Landscape (Chapter 6.2.1 of the PVCCSP)

Streetscapes in the Perris Valley Commerce Center are vital in creating a community identity, a visual hierarchy in the street classifications, theme, unification, and quality. These public areas will be the only community spaces threading through the community and will serve as unifying elements that enhance the vehicular and pedestrian experiences. The design concept for the streetscapes is to provide regimented, identifiable, and generously landscaped greenbelts that soften views of the buildings and parking facilities while providing an enjoyable experience. To ensure the visual and spatial continuity within this Perris Valley Commerce Center and aid in the identification of street classifications, the landscape design and plant material for the streetscapes has been set forth in this Perris Valley Commerce Center Specific Plan. The plant material specified is native and appropriate non-native drought tolerant species. Trees of varying textures and heights, shrubs, decorative grasses, and groundcover will be used to buffer and separate adjacent land uses, reduce maintenance requirements, and conserve resources.

Expressway

The Expressway is a 184-foot right-of-way (Figure 6.0-3) that boasts a 25-foot wide landscape parkway with a non-curb adjacent 8-foot wide meandering sidewalk. It includes a landscaped 14-foot wide raised center median. The parkway shall be formally planted with evergreen trees contrasting with the informal meandering planting and shrubs providing a screen of the adjacent walls, parked cars and/or buildings. The raised median shall retain a formal appearance in the application of both the plant materials and hardscape features. Drought tolerant ground cover and native stone will be used as an alternative to turf. These tree and screening elements require coordination and design integration with bioswale designs. The landscape design shall consist of the following plant materials:

Botanical Name	Common Name	Size/Spacing
<i>Trees</i>		
Washingtonia filifara	California Fan Palm	As per plan
Cercidium floridum	Blue Palo Verde	As per plan
<i>Shrubs</i>		
Dasylyrion wheeleri	Desert Spoon	As per plan
<i>Ground Cover</i>		
Helictotrichon sempervirens	Blue Oat Grass	As per plan
Tulbaghia violacea	Society Garlic	As per plan

Arterial

The Arterial roadway is a 128-foot right-of-way (Figures 6.0-4 and 6.0-5) which includes a 14-foot wide raised median. The parkway is 17-foot wide and includes a non-curb adjacent 6-foot wide sidewalk. The landscape area along arterial roadways shall be formally planted with alternating groups of deciduous and evergreen canopy trees located on both sides of the sidewalk. The parkway area beneath the trees shall be planted with drought-tolerant ground covers. These tree and screening elements require coordination and design integration with adjacent bioswale designs, as necessary. The landscape design shall consist of the following plant materials:

Botanical Name	Common Name	Size/Spacing
<i>Trees</i>		
Lagerstroemia indica x fauriei 'Tuscarora'	Tuscarora Crape Myrtle	15" gallon
Olea eropaea 'Monher'	Majastic Beauty Fruitless Olive	24 " Box
Syagrus romanzoffiana	Queen Palm	24" Box
<i>Shrubs</i>		
Grevillea x 'Noell'	Noell Grevillea	5 gallon
Lantana x 'New Gold'	New Gold Lantana	1 gallon
Nandina domestica	Heavenly Bamboo	1 gallon
'Wood's Dwarf'	Wood's Dwarf	
Officinalis Rosmarinus	Rosemary	1 gallon
'Huntington Carpet'	Huntington Carpet	
Tulbaghia violacea 'Tricolor'	Tricolor Society Garlic	1 gallon
<i>Ground Cover</i>		
Tachelospermum jasminoides 'Variegata'	Variegated Star Jasmine	1 gallon

Secondary Arterial (with Raised Median)

The Secondary Arterial roadway has a 14-foot wide raised median within a 94-foot right-of-way (Figures 6.0-6). The parkway is 12-feet wide and includes a non-curb adjacent 6-foot wide sidewalk. The landscape area along secondary arterial roadways shall be planted with formal alternating groups of deciduous canopy tree specimens. The parkway area beneath the trees shall be planted with drought-tolerant ground covers and shrubs. These tree and screening elements require coordination and design integration with adjacent bioswale designs, as necessary. The raised median shall retain a formal appearance in the application of both the plant materials and hardscape features. The landscape design shall consist of the following plant materials:

Botanical Name	Common Name	Size/Spacing
<i>Trees</i>		
Brachychiton populnea	Botte Tree	24" Box, 2" Cal., 20' On Center
Lagerstroemia indica x fauriei 'Tuscarora'	Tuscarora Crape Myrtle	15" gallon
Prunus blireana	Blireana Flowering Plum	15" gallon
<i>Shrubs</i>		
Lantana camara 'Robpatrai'	Patriot Rainbow Compact Lantana	5 gallon
Lantana x 'New Gold'	New Gold Lantana	1 gallon
Rhaphiolepis umbellate	Dwarf Yedda Hawthorn	1 gallon
<i>Ground Cover</i>		
Pennistemen setaceum 'Rubrum'	Purple Fountain Grass	1 gallon

Secondary Arterial (with Striped Median)

As an alternative to the raised median design, the Secondary Arterial roadway may be developed with a 12-foot striped median within a 94-foot right-of-way (Figures 6.0-7). The parkway is 15-foot wide with a non-curb adjacent 6-foot wide sidewalk. The landscape area along secondary arterial roadways shall be planted with formal alternating groups of deciduous canopy trees specimens. The parkway area beneath the trees shall be planted with droughttolerant shrubs and ground covers. These tree and screening elements require coordination and design integration with adjacent bioswale designs when necessary. The landscape design shall consist of the following plant materials:

Botanical Name	Common Name	Size/Spacing
<i>Trees</i>		
Lagerstroemia indica x fauriei 'Tuscarora'	Tuscarora Crape Myrtle	15" gallon
Prunus blireana	Blireana Flowering Plum	15" gallon
<i>Shrubs</i>		
Lantana camara 'Robpatrai'	Patriot Rainbow Compact Lantana	5 gallon
Lantana x 'New Gold'	New Gold Lantana	1 gallon
Rhaphiolepis umbellate	Dwarf Yedda Hawthorn	1 gallon
<i>Ground Cover</i>		
Tachelospermum asiaticum	Asian Jasmine	1 gallon

Major Collector

The Major Collector roadway has a 12-foot striped median within a 78-foot right-of-way (Figures 6.0-8). The parkway includes a 5-foot wide landscape area, 6-foot wide curb adjacent sidewalk, a 12-foot drive lane and a 10-foot parking area. The landscape area along the major collector roadways shall be formally planted with evergreen canopy tree specimens. These tree and screening elements require coordination and design integration with adjacent bioswale designs, as necessary. The landscape design shall consist of the following plant materials:

Botanical Name	Common Name	Size/Spacing
<i>Trees</i>		
Geijera parviflora	Australian Willow	24" box, 20' On Center
<i>Shrubs</i>		
Photinia fraseri	Fraser's Photinia	5 gallon
<i>Decorative Grasses</i>		
Muhlenbergia lindheimeri	Lindheimer's Muhly	1 gallon
<i>Ground Cover</i>		
Lantana sellowiana	Trailing Lantana	1 gallon

Collector Road

The Collector roadway has a 66-foot right-of-way (Figures 6.0-9). This includes a 44-foot paved surface, 5-foot wide landscape area and a curb adjacent 6-foot wide sidewalk. The landscape area along the collector roadways shall be planted with evergreen canopy trees. Native boulders from the area shall be placed intermittently in the landscape along the sidewalk. These tree and screening elements require coordination and design integration with adjacent bioswale designs, as necessary. The landscape design shall consist of the following plant materials:

Botanical Name	Common Name	Size/Spacing
<i>Trees</i>		
Platanus x acerfolia	London Plane Tree	24" Box, 2" Cal. 30' On Center
<i>Shrubs</i>		
Yucca flaccida 'Gold Garland'	Gold Garland Yucca	5 gallon
<i>Decorative Grasses</i>		
Pennisetum alopecuroides 'Hameln'	Dwarf Fountain Grass	1 gallon
<i>Ground Cover</i>		
Lantana sellowiana	Trailing Lantana	1 gallon

Local Road

The Local Roadway has a 60-foot right-of-way (Figures 6.0-10), with a 4-foot wide landscape area and a 6-foot wide curb adjacent sidewalk. The landscape area along the local roadways shall be planted with London Plane Trees. Native boulders from the area shall be placed intermittently in the landscape along the sidewalk. These tree and screening elements require coordination and design integration with adjacent bioswale designs, as necessary. The landscape design shall consist of the following plant materials:

Botanical Name	Common Name	Size/Spacing
<i>Trees</i>		
Platanus x acerfolia	London Plane Tree	24" Box, 2" Cal. 30' On Center
<i>Decorative Grasses</i>		
Pennisetum alopecuroides 'Hameln'	Dwarf Fountain Grass	1 gallon
Pennistemen orientale	Karley Rose Fountain Grass	1 gallon

Community Entries/Special Roadways (Chapter 6.2.2 of the PVCCSP)

Specific gateways and intersections within the Perris Valley Commerce Center have been identified to reinforce its boundaries and provide a sense of arrival. These features will reinforce the design theme for the community through a consistent or complimentary blend of hardscape, plant materials, and entry monumentation. Please refer to Figure 5.0-4 for specific locations of gateways and key intersections.

The gateways are strategically located at key intersections near the boundary of the specific plan area. The design for these gateways will include a consistent application of elements, all within the street rights-of-way, such as landscaping, signage on one or both sides of the street, banners, fencing/walls and lighting at these key entrances into the community.

Gateway Monumentation

Monuments at key intersections will help to identify entrance into the Perris Valley Commerce Center Specific Plan area as depicted in Figure 6.0-12.

Lighting Posts

Lighting for the public right-of-way will be consistent throughout the PVCC. The design of the light posts and fixtures will be architecturally compatible with the theme of the community. The intent is to provide continuity throughout the specific plan area and create visual interest in the landscape. Light posts shall be constructed of metal and include the PVCC logo. The logo will be constructed from flat cutout painted aluminum and be attached to the light standard with stainless steel straps. A Banner Program will add color and texture to create a festive environment.

Banner Program

Two major roadways within the specific plan (Ramona Expressway and Perris Boulevard) will be accented with banners as depicted in Figure 6.0-11.

Gateway Entries

There will be six primary gateways into this community. These include three west of Highway 215 (Harley Knox Boulevard, Ramona Expressway, and Placentia Avenue), two north/south gateways on Perris Boulevard, and one on Ramona Expressway. Accent palms, deciduous and evergreen trees, with flowering shrubs and groundcovers will help to frame the entry monumentation. Four of the six gateways will have the landscape and monumentation only on the community side of the intersection (two corners) giving the appearance of a gated entry. The remaining two gateways (Harley Knox Boulevard and Placentia Avenue) will only receive these improvements on the southwest and northeast corners respectively, because they fall in the corners of the community (Figures 6.0-13 thru 6.0-20).

Interior Intersections

All monumentation for the interior of the community will vary in size subject to the classification of the street(s) that intersect. If streets of different classifications intersect, the monumentation requirements will be based on the larger classification. Actual monumentation should be as depicted in Figure 6.0-12.

Planting Guidelines (Chapter 6.3 of the PVCCSP)

All areas required to be landscaped shall be planted with groundcovers, shrubs, or trees selected from the Plan Palette Section 6.1.3. The material shall be planted in the following sizes and shall be in accordance with all City of Perris standards and minimum requirements:

- Trees: Twenty-five percent (25%) of the site trees (excluding all street and screen trees) provided shall be a minimum 24-inch box size. The balance of the trees shall have a minimum size of 15 gallons.
- All 15-Gallon Trees shall be staked with two pressure-treated lodge pole tree stakes that are eight-feet in length and two-inches in width. An equivalent staking material may be used in the same dimensions if approved by the Planning Department.
- All 24-Box Trees shall be staked with two pressure-treated lodge pole tree stakes that are eight-feet in length and two-inches in width. An equivalent staking material may be used in the same

dimensions if approved by the Planning Department. Larger trees shall be guywired per City of Perris standards.

- Larger Specimen Trees are encouraged for entry points, pedestrian plazas and courtyards.
- Shrubs: The majority of all shrubs used shall have a minimum size of 5 gallons. Smaller shrubs may be used where rapid growth characteristics warrant.

Plant Maintenance

All specimen trees shall be fine pruned after planting to allow for both vehicular and pedestrian safety.

Plant Material Requirements and Purpose

All planting areas shall be designed to be consistent with plant material horticultural requirements and work with the purpose of the planting (i.e. aesthetics, screening, wind, etc.).

Structures Wrapped by Landscaping

Exterior building sides (excluding screen loading type areas) should be grounded by landscaping. A minimum landscape strip of five-feet should be provided between parking, sidewalks, and other paved areas adjacent to the structure.

Turf and Ground Cover Areas to be Cross Ripped

All future turf and ground cover areas are to be cross ripped to a depth of six-inches both ways through the use of a rototiller or equivalent machine. All soil amendments shall be blended in and rototilled to a depth of six-inches.

Deep Root Barriers

Deep root barriers of 24" or greater, shall be installed where trees are planted within five-feet of any building, curb, gutter, utility, or paved surface or within 10-feet of a public right-of-way or sidewalk.

Erosion Control

Refer to the City of Perris Standards, City of Perris Municipal Zoning Code, Chapter 19.70, Section 19.70.040, Landscape Design Guidelines. Prior to the installation of plant material, soil samples from representative slopes and flat areas shall be obtained by the landscape contractor and tested for agronomic suitability in order to determine proper planting and maintenance requirements for proposed plant materials with pre-planting and post-planting recommendations.

Positive Drainage to Street or Collection Device

All landscape areas shall have positive drainage to the street or collection devices.

Concrete Gutters/Swales Are Prohibited Landscape Areas

Concrete gutters/swales are prohibited as drainage devices in landscaped areas. A series of low points and underground drainage systems shall be provided where surface conveyance of runoff would damage and/or erode planting areas or cross sidewalks.

Irrigation and Water Conservation (Chapter 6.4 of the PVCCSP)

Refer to City of Perris Municipal Zoning Code, Chapter 19.70.020, "Water Conservation Requirements for New or Rehabilitated Landscapes."

COMMERCIAL DESIGN STANDARDS AND GUIDELINES (Chapter 7.0 of the PVCCSP)

Definition of Commercial (Chapter 7.1 of the PVCCSP)

Commercial (C)

This zoning designation provides for retail, professional office, and service oriented business activities which serve the entire City, as well as the surrounding neighborhoods. This zone shall be applicable to and correlate with the General Plan Land Use designations of Community Commercial and Commercial Neighborhood. Allowable uses within the commercial designation include those uses derived from commercial uses in the City of Perris Municipal Code Chapter 19, as set forth in Table 2.0-2 of the Perris Valley Commerce Center Specific Plan. Land Use definitions can be found in Section 2.4.

Commercial Development Standards and Guidelines (Chapter 7.2 of the PVCCSP)

Refer to Table 4.0-1 of the Perris Valley Commerce Center Specific Plan for development standards and guidelines with the following exceptions and/or additions:

Commercial Site Layout (Chapter 7.2.1 of the PVCCSP)

Vehicular Access and On-Site Circulation (Chapter 7.2.1.1 of the PVCCSP)

Adequate Vehicle Spacing For Drive-Thru's

Businesses with drive-thru service(s) shall provide adequate stacking to accommodate eight (8) vehicles prior to each pick-up window to avoid conflict with on-site circulation.

Pedestrian Access and On-Site Circulation (Chapter 7.2.1.2 of the PVCCSP)

Internal Pedestrian Walkways

Internal walkway should provide connection between building entries, plazas, and courtyards within the project and be covered when possible.

Paving For Walkways Visible from Public Rights-of-Way/Public Access

Enhanced paving is preferred in areas visible from public rights-of-way or utilized for public access to define business entries, pedestrian walkways, and within plazas and patios.

Walkways through Parking Lots

Pedestrian walkways through commercial development parking lots should be accented with special design features such as raised, colored and/or textured pavement, a widened roadway, or a combination of the preceding.

Pedestrian Access Between Buildings/Parking Areas/Amenities On/Off-Site

Pedestrian walkways should be embellished and defined by landscaping, trees, lighting, textured paving, and/or trellises.

Parking and Loading (Chapter 7.2.1.3 of the PVCCSP)

Parking Requirements

Refer to City of Perris Zoning Ordinance, Chapter 19.69.

Disperse Parking Areas

When possible, disperse parking into multiple smaller lots or separated parking blocks as opposed to one large lot so that cars are not the dominant visual element of the site from the street.

Limited Store Front Parking

To promote visibility of the business, store parking should be limited as shown in Figure 7.0-1. Should store front parking be provided, landscaping treatments shall be required to provide a more visually appealing store front and parking should be limited to the greatest extent possible.

Parking and Loading (Chapter 7.2.1.4 of the PVCCSP)

Plazas Required for Over 100,000 S.F. Commercial Centers

Commercial centers over 100,000 square feet require a plaza of at least one (1) square foot per 100 square feet of building area.

Commercial Plaza Elements

Plazas and open space areas provide a friendly and inviting vision and environment by incorporating some of the following elements:

- Enhanced visitor area(s) (i.e., a plaza, patio, courtyard, linear promenade, terrace, or usable landscaped area) scaled accordingly to the size and demands of the particular user or facility.
- Architectural features and site furniture, adhering to a consistent theme.
- Seating, such as benches, tables and chairs, and/or low seating walls.
- Enhanced paving using a combination of textures and patterns, site walls including tree grates.
- Decorative light fixtures and pedestrian scale, bollards and other accent lighting. Enhanced walkway lighting shall not act as sole lighting.
- Landscaping of special interest, landscape buffering, screen walls, trellises, pergola structures and large scale canopy trees.
- Public art or other focal point amenity. Public art is highly encouraged and incentivized by the City. Refer to Section 14.0 for additional incentive information.

Plaza Locations

Plazas should be oriented toward the public view whenever possible as shown in Figure 7.0-2, and placed in areas where high levels of pedestrian activity is likely to occur. They should complement the associated facilities and draw attention to the primary business entry and/or serve as a common area for multiple businesses, adjacent to building entrances, in food service areas, or between building clusters.

Higher Level of Design Treatments

Enhanced plazas and open space areas should exhibit a higher level of design treatments that incorporate seating, water features, sculptures, trash receptacles, ash urns, pedestrian scaled lighting enhancements, and other furnishings as appropriate for the specific user.

Shelter and Buffer Plazas

Plazas should be sheltered and buffered as much as possible from the sun, noise and traffic of adjacent streets, trash receptacles, parking, loading areas, or other incompatible land uses.

Outdoor Seating Area (Over 10,000 S.F. Building Area)

Outdoor seating areas accessible to patrons shall be provided for retail and food service areas over 10,000 square feet of building area.

Separate Employee Break Areas

Site design layout is encouraged to separate employee break areas from the public plaza areas.

Connection to Adjacent Amenities

Site design should include provisions for pedestrian access when adjacent to area wide open space, trails, parks, or other community amenities.

Outdoor Storage (Chapter 7.2.1.5 of the PVCCSP)

Shopping Cart Storage Material

Businesses which utilize shopping carts shall provide designated storage areas within most parking aisles. Tubular holding structures shall be prohibited.

Shopping Cart Storage Screening

Outside shopping cart storage areas shall be screened through the use of walls and/or raised planters constructed as an element of the building.

Outdoor Storage Restrictions

Other than noted above, no other outdoor storage is permitted in the Commercial Zone.

Outdoor Display (Chapter 7.2.1.6 of the PVCCSP)

Extension of Indoor Display Areas

Outdoor display areas shall be designed as an extension of typical indoor display areas through the use of such space defining elements as perimeter landscaping, distinctive placement areas, enhanced surface treatment, or decorative security fencing. The design of these areas shall maintain adequate pedestrian circulation outside of the vehicular travel area.

Approval with Site Plan

Outdoor display areas shall be included and approved by the City with the site plan approval.

Water Quality Site Design (Chapter 7.2.1.7 of the PVCCSP)

Runoff From Truck Docks

Runoff from truck docks must be treated for pollutants of concern prior to discharge from the site.

Truck-wells

Truck-wells are discouraged due to potential clogging of sump-condition storm drain inlets. If used, runoff-needs to run through landscape before discharging from site.

Architecture (Chapter 7.2.2 of the PVCCSP)

Scale, Massing and Building Relief (Chapter 7.2.2.1 of the PVCCSP)

Project Identity

Building and site development shall incorporate an architectural component that provides an identity for the project.

Building Entrances

Provide defined and recognizable building entrances to ensure they can be differentiated from other façade enhancements. Vary items such as roof lines and building materials to discern between a window and an entry.

Attractive Facades

Attractive facades should be provided through careful detailing, especially at the base of buildings, along eaves, parapets and around entries and windows.

Avoid Single, Large Dominant Building Mass

A single, large, dominant building mass shall be avoided to the extent feasible. Specifically, horizontal masses shall not exceed a height to width ratio of 1:3 without substantial variation in massing that includes a change in height and projecting or recessed offsets.

Recess Second or Subsequent Floors

Recess second or subsequent floors, include balconies or outdoor space.

Architectural Elevations and Details (Chapter 7.2.2.2 of the PVCCSP)

Primary Building Entries

Primary building entries should be highlighted through the massing of the building, as well as special architectural materials and/or design features. Greater height can be used to highlight and accentuate entries in the form of tower elements, tall voids, or entry meeting plazas.

Geometric Variation

This element is highly encouraged to break the monotony of the common rectangular box form by incorporating a variation of elements that include, but are not limited to: rounded and clipped corners; trapezoidal and cylindrical entry towers; concave/convex wall projections; freeform or multi-faceted building footprints.

Windows and Storefronts

Windows and storefronts should be designed as defined, offset, openings within a solid wall rather than large unbroken expanses of a flush wall and window pane. Large-scale openings in walls with inserted glass walls may be appropriate for entry conditions from plazas. Highlighting windows is encouraged through the use of projections, trim or lentil elements.

Color and Materials (Chapter 7.2.2.3 of the PVCCSP)

Windows Glazing

Window glazing used in commercial development should permit views into the establishment. Use of highly reflective and spandrel glass is strongly discouraged.

Furnishings (Chapter 7.2.2.4 of the PVCCSP)

Newspaper Racks, Phone Booths, ATM and Vending Machines

Newspaper racks, phone booths, ATM machines, and reverse vending machines should be incorporated into the site design and, to the extent possible, compatible with the design, colors, or style of the structure. Exterior placement of vending machines is discouraged.

Lighting (Chapter 7.2.3 of the PVCCSP)

Low wattage down-lighting should be used on commercial buildings, provided that all exterior lighting complies with Riverside County Ordinance No. 655 regulating light pollution and its detrimental impact on astronomical observation and research.

Signage (Chapter 7.2.4 of the PVCCSP)

Perris Valley Commerce Center Logo

Any sign program along a major roadway shall include signage at main and secondary entrances, as well as at major intersections, that include the Perris Valley Commerce Center logo.

Live-Work Units (Chapter 7.3 of the PVCCSP)

The City will consider proposals for Live-Work units for proposed and existing commercial uses. All mixed use proposals shall be handled in accordance with standard provisions for conditional uses. Consultation with the City is required to ensure feasibility before commencement. Attention shall be given to insure minimal impacts to adjacent uses and the feasibility of implementing proposed project. The Development Services Department will provide consideration for design criteria including but not limited to the following:

Architectural Design

Architectural design should transition away from a traditional residential design and reflect a professional appearance.

Defined Building Entrances

A separate entrance shall be provided for residence and for work unit.

Landscaping

Landscaping shall be professional in appearance and transitioning away from a traditional residential landscape appearance.

Lighting

Security lighting shall be provided.

Parking

Parking shall be based upon existing parking requirements as set forth by the Perris Municipal Code, except that reductions may be appropriate if demonstrated by a Parking Study.

Number of Units Permitted

Not more than sixty-four (64) live-work units will be permitted to be developed within any given quarter-mile (160-acre) areas. Live-work units are not permitted within the Airport Overlay Zone, except at a maximum number of one such unit for each legally established lot, in lieu of a conventional residence.

No mitigation measures for aesthetics are included in the PVCCSP EIR (programmatic EIR).

a) **Less than Significant Impact.** Scenic vistas can be impacted by development in two ways. First, a structure may be constructed that blocks the view of a vista. Second, the vista itself may be altered (i.e., development on a scenic hillside). The natural mountainous setting of the Perris Valley area is critical to its overall visual character and provides scenic vistas for the community. Topography and a lack of dense vegetation or urban development offer scenic views throughout the City, including to and from hillside areas. Scenic features include gently sloping alluvial fans, rugged mountains and steep slopes, mountain peaks and ridges, rounded hills with boulder outcrops, farmland, and open space. Scenic vistas provide views of these features from public spaces.

The City of Perris General Plan describes the project vicinity as a flat, broad basin with rolling foothills to the east and west of the basin. Significant scenic vistas that may be viewed from the proposed Project site include the Russell Mountains and Bernasconi Hills within the Lake Perris State Recreation Area,

located about two miles northeast of the project site. Terri Peak (elevation 2,569 feet), which is part of the Russell Mountains, can be seen from the Project site. Views immediately west of the Project site consist of light industrial uses and decorative trees, views immediately to the north consist of vacant land, and views immediately to the south and east are of mobile homes and decorative trees. There is a large industrial warehouse located immediately to the northwest of the Project site at the northwest corner of Perris Boulevard and Rider Street. Structures in the City of Perris and in the vicinity of the proposed Project consist of low-rise buildings that partially preserve views of nearby mountains and hills.

The Project site is not considered to be within or to comprise a portion of a scenic vista; therefore, the proposed Project would not alter existing scenic vistas. The Project vicinity is comprised of mostly light industrial, commercial, and residential uses as well as vacant land. The proposed convenience store, car wash, and gasoline fueling station would be consistent with the structures and land use found in this area. The allowable building height in the Project area is 35 feet. The proposed convenience store would be 25-feet at its highest point, the proposed car wash would be 24 feet at its highest point, and the proposed fueling station canopy would be 17½-feet at its highest point. The proposed Project would not block any scenic vista; therefore, impacts would be less than significant.

b) **No Impact.** The Project site is located on undeveloped land within an area comprised of light industrial, commercial, and residential uses as well as vacant land. The Project site is not adjacent to an officially designated state scenic highway as identified by the California Scenic Highway Mapping System.¹ The site is also not identified in the Perris General Plan Conservation Element as being located within or adjacent to a “scenic route” or “view corridor”. However the site is identified in the PVCCSP as being located along a “Major Roadway Visual Zone” .² An emphasis is placed on these zones to ensure the aesthetic enhancements for these areas. It is important to note that it is not the intent of this design perspective to de-emphasize the importance of architectural treatment on all sides of a building. The intent is to enhance the public right-of-way. This viewshed and public areas with the most visibility and access shall be considered the “Visual Zone” as depicted in Figure 4.0-18 of the PVCCSP. Site design should strive to place considerable attention to aesthetics in the visual zone. While parking in front of buildings should be limited to the greatest extent possible, when buildings must be oriented to face a public roadway with parking, berms and enhanced landscape treatments should be used creating a greater aesthetic appearance. The Project will adhere to the design guidelines and standards of the PVCCSP, and compliance with these standards will be ensured through the development review and approval process. The Project site is undeveloped and comprised of non-native grasses and four small trees. Two of the trees are eucalyptus trees, and the other two are Brazilian peppercorn trees. None of the trees are mature, nor are they considered a scenic resource. There are no rock outcroppings on the Project site or in the Project vicinity, and there are no structures on the site. Therefore, the Project would not damage any scenic resources within a State Scenic Highway. No impact will occur.

c) **Less than Significant Impact.** Development of the proposed Project could result in a significant impact if it resulted in substantial degradation of the existing visual character or quality of the Project site and its surroundings. Degradation of visual character or quality is defined by substantial changes to the existing site appearance through the construction of structures that are poorly designed or conflict with the project site’s existing surroundings.

Construction of the proposed Project would result in short-term impacts to the existing visual character and quality of the area. Project construction activities would require the use of equipment and storage of materials within the Project site. However, construction activities are temporary and will not result in any permanent visual impact. The Project site is located in an urbanized area. The Project site is zoned for Business and Professional Office (BPO) which does not permit 24-hour operation or off-site sale of

alcohol; however, the Project includes a Specific Plan Amendment to Commercial (C) to allow for the proposed use. Therefore, the proposed Project would not conflict with applicable zoning. The existing visual character of the Project site and the surrounding area is defined by light industrial, commercial, and residential development as well as vacant land. Impacts would be less than significant.

d) **Less than Significant Impact.** Excessive or inappropriately directed lighting can adversely impact night-time views by reducing the ability to see the night sky and stars. Glare can be caused by unshielded or misdirected lighting sources. Reflective surfaces (i.e., polished metal) can also cause glare. Impacts associated with glare range from a simple nuisance to potentially dangerous situations (i.e., if glare is directed into the eyes of motorists). Sources of daytime glare are typically concentrated in commercial areas and are often associated with retail uses. Glare results from development and associated parking areas that contain reflective materials such as hi-efficiency window glass, highly polished surfaces, and expanses of pavement.

There are lighting sources adjacent to the site, including free-standing street lights, light fixtures on buildings, and pole-mounted lights. The proposed Project includes exterior street lighting and interior lighting. Light spillover and glare would be avoided by requiring that light be designed to project downward and create glare on adjacent properties per the requirements of Municipal Code Section 19.02.110 (Lighting). Section 19.02.110 of the Municipal Code requires all lighting, including security lighting, to be directed away from adjoining properties and the public right-of-way. In addition, Municipal Code Section 19.44.070 (Performance Standards) requires all lighting fixtures to be fully shielded with cut-off fixtures so that there is no glare emitted onto adjacent properties. Lighting from the proposed Project will be shielded and pointed away from the residential uses to the south and east. Compliance with the Municipal Code standards for lighting and glare would ensure that lighting and glare impacts would be less than significant.

4.2 – Agriculture and Forest 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 Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state’s inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104 (g))?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Result in loss of forest land or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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 or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Applicable PVCCSP Standards and Guidelines and Mitigation Measures

No Standards and Guidelines or mitigation measures related to agriculture and forestry resources are included in the PVCC SP or associated with the PVCCSP EIR.

a) **No Impact.** The California Department of Conservation (DOC) Office of Land conservation publishes Farmland Conversion Reports every two years as part of its Farmland Mapping Program (FFMP); these reports document land-use conversion by acreage for the majority of the counties in California. The FMMP produces maps and statistical data used for analyzing impacts on California's agricultural resources. Agricultural land is rated according to soil quality and irrigation status; the best quality land is called Prime Farmland. The proposed Project is located on a vacant site that has been previously developed, and the surrounding parcels are comprised of light industrial, commercial, and residential uses. There are no signs the site has been historically used for agriculture. The map of Important Farmland in California (2014) prepared by the Department of Conservation identifies the site as being *Urban and Built-Up Land*.³ The site is not designated as being *Prime Farmland*, *Unique Farmland*, or *Farmland of Statewide Importance*. The Project site is identified as D-Urban and Built Up Land in Figure 4.1-1 (Important Farmlands) of the PVCCSP EIR. The Project site is not located within the Perris Valley Agricultural Preserve No.1 as identified in Figure 4.1-2 (Agricultural Preserves) of the PVCCSP EIR. Further, the Perris Valley Commercial Center Specific Plan designates the Project site as Business Park/Professional Office (BPO), which does not include agricultural uses. The proposed Project would not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use. Therefore, no impacts would occur.

b) **No Impact.** The Project site is identified as D-Urban and Built Up Land in Figure 4.1-1 (Important Farmlands) of the PVCCSP EIR. The Project site is not located within the Perris Valley Agricultural Preserve No.1 as identified in Figure 4.1-2 (Agricultural Preserves) of the PVCCSP EIR. No Williamson Act contracts are active for the Project site.⁴ Further, the Perris Valley Commercial Center Specific Plan designates the Project site as Business Park/Professional Office (BPO), which does not include agricultural uses. Therefore, there would be no conflict with existing zoning for agricultural use or a Williamson Act contract. No impact would occur.

c) **No Impact.** Public Resources Code § 12220(g) identifies forest land as *land that can support 10-percent native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish, and wildlife, biodiversity, water quality, recreation, and other public benefits*. The Project site and surrounding properties are not currently being managed or used for forest land as identified in Public Resources Code § 12220(g). The Project site has already been disturbed and is surrounded by development or surface street features on all sides. Therefore, the development of this Project would have no impact on any timberland zoning.

d) **No Impact.** The Project site is vacant, disturbed land with limited non-native vegetation, including grasses and four non-mature trees. Thus, there would be no loss of forest land or conversion of forest land to non-forest use as a result of this Project. No impact would occur.

e) **No Impact.** The Project site is a vacant site within an urbanized environment. The Project is surrounded by light industrial, commercial, and residential uses and some vacant land. None of the surrounding sites contain existing forest uses. The development of this proposed Project would not change the existing environment in a manner that would result in the conversion of forest land to non-forest use. No impact would occur.

4.3 – Air Quality

Where available, the significance criteria established by the applicable air quality management district 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 Incorporated	Less Than Significant Impact	No Impact
a) Conflict with or obstruct implementation of the applicable air quality plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Expose sensitive receptors to substantial pollutant concentrations?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Applicable PVCCSP Standards and Guidelines and Mitigation Measures

No PVCCSP Standards and Guidelines are specifically relevant to this air quality analysis.

The proposed Project is required to adhere to PVCCSP Mitigation Measures MM Air-1 through Mitigation Measure MM Air-14 and Mitigation Measure MM Air-18 through Mitigation Measure MM Air-21. PVCCSP EIR Mitigation Measure MM Air-1 requires implementing development projects to analyze project-specific air quality impacts from construction using the latest available technology in conjunction with the SCAQMD and requires incorporation of appropriate mitigation measures to reduce potentially significant regional or local air quality impacts to less than significant. PVCCSP EIR Mitigation Measure MM Air-2 requires each individual implementing development project to submit a traffic control plan prior to the issuance of a grading permit in order to reduce traffic congestion during construction. PVCCSP EIR Mitigation Measure MM Air-3 requires each individual implementing development project to comply with SCQAMD Rule 403 dust control measures. PVCCSP EIR Mitigation Measure MM Air-4 requires building and grading permits to include a restriction that limits idling of construction equipment on site to no more than five minutes. PVCCSP EIR Mitigation Measure MM Air-5 requires electricity from power poles to be used during construction activities rather than temporary diesel or gasoline-powered generators to reduce the associated emissions. PVCCSP EIR Mitigation Measure MM Air-6 requires the developer of each individual implementing development project to require, by contract specifications, the use of alternative fueled off-road construction equipment in compliance with SCAQMD Rule 2449. PVCCSP EIR Mitigation Measure MM Air-7 requires ozone precursor emissions from mobile construction equipment to be controlled by maintaining equipment engines in good

condition and in proper tune per manufacturers' specifications to the satisfaction of the City of Perris' Building Division. PVCCSP EIR Mitigation Measure MM Air-8 requires each individual implementing development project to apply paints using either high volume low pressure (HVLP) spray equipment with a minimum transfer efficiency of at least 50 percent or other application techniques with equivalent or higher transfer efficiency. To reduce VOC emissions associated with architectural coating, PVCCSP EIR Mitigation Measure MM Air-9 requires the project designer and contractor to reduce the use of paints and solvents by utilizing pre-coated materials, materials that do not require painting, and coatings and solvents with a VOC content lower than required under SCAQMD Rule 1113. PVCCSP EIR Mitigation Measure MM Air-10 requires implementing development projects to analyze project-specific air quality impacts from operation using the latest available technology in conjunction with the SCAQMD and requires incorporation of appropriate mitigation measures to reduce potentially significant regional or local air quality impacts to less than significant. PVCCSP EIR Mitigation Measure MM Air-11 requires signage to be posted at loading docks and all entrances to loading areas prohibiting all on-site truck idling in excess of five (5) minutes. PVCCSP Mitigation Measure MM Air-12 requires electrical hookup units where transport refrigeration units (TRUs) are in use to allow TRUs with electric standby capabilities to use them. In order to promote alternative fuels and help support "clean" truck fleets, PVCCSP Mitigation Measures MM Air-13 requires the developer/successor-in-interest of each implementing development project to provide building occupants and businesses with information related to SCAQMD's Carl Moyer Program or other state programs that restrict operations to "clean" trucks. PVCCSP Mitigation Measure MM Air-14 requires each implementing development project to designate parking spaces for high-occupancy vehicles and provide larger parking spaces to accommodate vans used for ride sharing. PVCCSP EIR Mitigation Measure MM Air-18 requires the Riverside Transit Agency to be contacted prior to the approval of each implementing development project to determine if the RTA has plans for the future provision of bus routing within any street that is adjacent to the project that would require bus stops at the project access points. In order to reduce energy consumption from individual implementing development projects, PVCCSP EIR Mitigation Measure MM Air-19 requires applicable project plans to include installation of energy-efficient street lighting throughout project sites. PVCCSP Mitigation Measure MM Air-20 requires each implementing development project to implement, at a minimum, an increase in each building's energy efficiency 15 percent beyond Title 24, and reduce indoor water use by 25 percent. PVCCSP EIR Mitigation Measure MM Air-20 requires each individual implementing development project to implement, at a minimum, use of water conserving appliances and fixtures within all new residential developments. PVCCSP Mitigation Measure MM Air-21 requires each implementing development project to implement, at a minimum, use of water conserving appliances and fixtures within all new residential developments.

An *Air Quality Analysis Memorandum* was prepared for the proposed Project by MIG, Inc., dated September 11, 2020 (See Appendix A). The Memorandum estimates the potential air quality emissions for the proposed Project and evaluates Project emissions against applicable South Coast Air Quality Management District (SCAQMD)-recommended California Environmental Quality Act (CEQA) significance thresholds for construction and operation.

a) **Less than Significant Impact.** A project that conflicts with or obstructs the implementation of the South Coast Air Quality Management District's (SCAQMD) South Coast Air Basin 2016 Air Quality Management Plan (AQMP) could hinder the implementation of the AQMP, delay efforts to meet attainment deadlines, and/or interfere with SCAQMD efforts to maintain compliance with, and attainment of, applicable air quality standards. Pursuant to the methodology provided in Chapter 12 of the SCAQMD *CEQA Air Quality Handbook*, consistency with the AQMP is affirmed if the project (SCAQMD, 1993):

- 1) Is consistent with the growth assumptions in the AQMP; and

- 2) Does not increase the frequency or severity of an air quality standards violation or cause a new one.

The proposed Project would not induce population growth, and the employment induced by the Project would be well within that accounted for in the Southern California Association of Governments 2016 Regional Transportation Plan / Sustainable Communities Strategy (2016 RTP/SCS), which forms the growth assumptions for the AQMP.ⁱ Therefore, the proposed Project would not conflict with the first consistency criterion. As described in the preceding analysis, the proposed Project would not exceed the construction or operational air quality thresholds maintained by the SCAQMD. Accordingly, the proposed Project would not conflict with or obstruct the implementation of the SCAQMD 2016 AQMP (SCAQMD, 2017b).

b) **Less than Significant Impact.** A project may have a significant impact if project-related emissions would exceed federal, state, or regional standards or thresholds or if project-related emissions would substantially contribute to existing or project air quality violations. The proposed project is located within the South Coast Air Basin (Basin), where efforts to attain state and federal air quality standards are governed by the SCAQMD. Both the State of California and the federal government have established health-based ambient air quality standards (AAQS) for seven air pollutants (known as criteria pollutants). These pollutants include ozone (O₃), carbon monoxide (CO), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), inhalable particulate matter with a diameter of 10 microns or less (PM₁₀), fine particulate matter with a diameter of 2.5 microns or less (PM_{2.5}), and lead (Pb). The state has also established AAQS for additional pollutants. The AAQS are designed to protect the health and welfare of the populace within a reasonable margin of safety. Where the state and federal standards differ, California AAQS (CAAQS) are more stringent than the national AAQS (NAAQS). The U.S. Environmental Protection Agency (U.S. EPA), California Air Resources Board (CARB), and the SCAQMD assess the air quality of an area by measuring and monitoring the amount of pollutants in the ambient air and comparing pollutant levels against NAAQS and CAAQS. Based on these comparisons, regions are classified into one of the following categories:

- **Attainment.** A region is “in attainment” if monitoring shows ambient concentrations of a specific pollutant are less than or equal to NAAQS or CAAQS. In addition, an area that has been re-designated from nonattainment to attainment is classified as a “maintenance area” for 10 years to ensure that the air quality improvements are sustained.
- **Nonattainment.** If the NAAQS or CAAQS are exceeded for a pollutant, the region is designated as nonattainment for that pollutant. It is important to note that some NAAQS and CAAQS require multiple exceedances of the standard in order for a region to be classified as nonattainment. Federal and state laws require nonattainment areas to develop strategies, plans, and control measures to reduce pollutant concentrations to levels that meet or attain standards.
- **Unclassified.** An area is unclassified if the ambient air monitoring data are incomplete and do not support a designation of attainment or nonattainment.

Air pollution levels are measured at monitoring stations located throughout the Basin. Table 2, *South Coast Air Basin Attainment Status*, summarizes the Basin’s attainment status for the NAAQS and CAAQS.

ⁱ The 2016 RTP/SCS accounted for 17,100 new jobs being formed in the City between 2012 and 2040 (SCAG, 2016).

**Table 2
South Coast Air Basin Attainment Status**

Pollutant	Attainment Status ^(A)	
	NAAQS	CAAQS
O ₃ (1-hr)	Nonattainment	Nonattainment
O ₃ (8-hr)	Nonattainment	Nonattainment
PM ₁₀ (24-hr and Annual)	Attainment	Nonattainment
PM _{2.5} (24-hr)	Nonattainment	--
PM _{2.5} (Annual)	Nonattainment	Nonattainment
CO	Attainment (Maintenance)	Attainment
NO ₂ (1-hr)	Attainment	Attainment
NO ₂ (Annual)	Attainment (Maintenance)	Attainment
SO ₂	Attainment	Attainment
Lead	Partial Nonattainment	Attainment
Visibility Reducing Particles	--	Unclassified
SO ₄	--	Attainment
H ₂ S	--	Attainment

Source: SCAQMD, 2018

(A) This table summarizes the Basin’s attainments status for the NAAQS and CAAQS (as of September 2018). This table does not prevent comprehensive information regarding the CAAQS and NAAQS. Each CAAQS and NAAQS has its own averaging time, standard unit of measurement, measurement method, and statistical test for determining if a specific standard has been exceeded. Refer to the table source for detailed information on the NAAQS and CAAQS.

The proposed Project would generate both short-term construction emissions and long-term operational emissions. The SCAQMD adopts rules that establish permissible air pollutant emissions levels for a variety of businesses, processes, operations, and products to subject to Federal and State air quality requirements. In general, the proposed Project and its potential emissions sources would be subject to the following State and SCAQMD rules:

- **SCAQMD Rule 401 (Visible Emissions)** prohibits discharge into the atmosphere from any single source of emission for any contaminant for a period or periods aggregating more than three minutes in any one hour that is as dark or darker in the shade than that designated as No. 1 on the Ringelmann Chart, as published by the U.S. Bureau of Mines.
- **SCAQMD Rule 402 (Nuisance)** prohibits discharges of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property.
- **SCAQMD Rule 403 (Fugitive Dust)** prohibits emissions of fugitive dust from any grading activity, storage pile, or other disturbed surface area if it crosses the project property line or if emissions caused by vehicle movement cause substantial impairment of visibility (defined as exceeding 20 percent capacity in the air). Rule 403 requires the implementation of Best Available Control Measures and includes additional provisions for projects disturbing more than five acres and those disturbing more than fifty acres.
- **SCAQMD Rule 461 (Gasoline Transfer and Dispensing)** applies to the transfer of gasoline from any tank truck, trailer, or railroad tank car into any stationary storage tank or mobile fueler and from any stationary storage tank or mobile fueler into any mobile fueler or vehicle fuel tank. The rule prohibits transfer and dispensing of gasoline in equipment that does not meet CARB

Phase I and Phase II vapor recovery requirements that provide between 95% and 98% control of gasoline vapors.

- **SCAQMD Rule 1108 (Cutback Asphalt)** prohibits the sale or use of any cutback asphalt containing more than 0.5 percent by volume organic compounds which evaporate at 260°C (500°F) or lower.
- **Rule 1113 (Architectural Coatings)** establishes maximum concentrations of VOCs in paints and other applications and establishes the thresholds for low-VOC coatings.
- **Rule 1143 (Consumer Paint Thinners and Multi-Purpose Solvents)** prohibits the supply, sale, manufacture, blend, package, or repackage of any consumer paint thinner or multi-purpose solvent for use in the District unless consumer paint thinners or other multipurpose solvents comply with applicable VOC content limits.

These SCAQMD rules would serve to limit and control the proposed project’s potential to emit air pollutants. As described in more detail below, the proposed project would not generate short-term or long-term emissions that exceed SCAQMD-recommended pollutant thresholds.

Regional Construction and Operational Emissions

The proposed Project involves site preparation and grading of the approximately 2.06-acre site, and constructing a new, approximately 3,227 square-foot 7-Eleven store that has 12 fuel pump stations and a detached, approximately 991 square-foot automated carwash at the southeastern corner of the Perris Boulevard and Rider Street intersection. Construction activities would disturb the entire site and involve site preparation, grading, construction, paving, and architectural coating work. It is anticipated soils would be balanced on-site (i.e., the project would not involve any import or export of soil). The proposed Project’s potential construction emissions were estimated using the California Emissions Estimator Model (CalEEMod), Version (V.) 2016.3.2. Construction phase and duration and the type and amount of equipment used during construction were generated using CalEEMod default assumptions and modified as necessary to reflect the following project-specific context, information, and details:

- The demolition phase assumed by CalEEMod was removed since the site is undeveloped; and
- Fugitive dust control measures were incorporated into the model consistent with requirements contained in SCAQMD Rule 403, Fugitive Dust.

The proposed Project’s maximum daily unmitigated construction emissions are shown in Table 3, *Unmitigated Maximum Daily Regional Construction Emissions*. Please refer to Appendix A for CalEEMod output files and detailed construction emissions assumptions.

**Table 3
Unmitigated Maximum Daily Regional Construction Emissions**

Construction Season	Maximum Pollutant Emissions (Pounds Per Day)					
	ROG	NO _x	CO	SO ₂	PM ₁₀	PM _{2.5}
Summer 2020	2.5	21.4	16.7	0.03	3.7	2.3
Winter 2020	2.5	21.4	16.4	0.03	3.7	2.3
Summer 2021	6.5	17.5	16.2	0.03	1.3	0.9
Winter 2021	6.5	17.5	16.0	0.03	1.3	0.9
SCAQMD Regional Threshold	75	100	550	150	150	55
Exceeds Threshold?	No	No	No	No	No	No

Source: MIG, 2020 (See Appendix A) and SCAQMD, 2020.

As shown in Table 3, the proposed Project's maximum daily, unmitigated criteria air pollutant emissions would be well below the SCAQMD's recommended regional pollutant thresholds. Project construction, therefore, would not generate criteria air pollutant emissions levels that exceed SCAQMD regional CEQA thresholds. Impacts will be less than significant.

Once operational, the proposed Project would generate long-term emissions from the following sources:

- **“Area” Sources.** The proposed Project would generate emissions from small area sources, including landscaping equipment, the use of consumer products (e.g., paints, cleaners, and fertilizers) that result in the evaporation of chemicals into the atmosphere during product use.
- **Energy Use and Consumption.** The proposed Project would generate emissions from the combustion of natural gas in water and space heating equipment, as well as industrial processes.
- **Mobile Sources.** The proposed Project would generate emissions from vehicles traveling to and from the project site.

The proposed Project's operational emissions were also estimated using CalEEMod, V. 2016.3.2. The modeling is based on the Project's first full year of operations (assumed to be 2021), using default data assumptions generated by CalEEMod, modified as necessary to reflect the following Project-specific context, information, and details:

- Project-specific land use information (i.e., lot acreage, building square footage, etc.) was applied to the model; and
- Fugitive ROG emissions associated with retail gasoline dispensing facilities are not estimated by CalEEMod. Therefore, MIG estimated emissions for the following activities separately using publicly available CARB and SCAQMD emission factor information:ⁱⁱ
 - Fuel loading generates emissions that occur when a fuel tanker truck unloads gasoline to the storage tanks. The storage tank vapors, displaced during loading, are emitted through its vent pipe. A pressure/vacuum valve installed on the tank vent pipe significantly reduces these emissions.
 - Breathing emissions occur through the storage tank vent pipe as a result of temperature and pressure changes in the tank vapor space.
 - Refueling emissions occur during motor vehicle refueling when gasoline vapors escape either through the vehicle/nozzle interface or the on-board vapor recovery (ORVR) system.
 - Spillage emissions occur from evaporating gasoline that spills during vehicle refueling.
 - Hose permeation emissions occur when liquid gasoline or gasoline vapors diffuse through the dispensing hose outer surface to the atmosphere.

ⁱⁱ Gasoline dispensing facilities are subject to CARB's Phase 1 and Phase 2 vapor recovery systems that control and reduce potential fugitive ROG emission. In addition, gasoline dispensing facilities are subject to SCAQMD permitting requirements pursuant SCAQMD Rule 461, Gasoline Transfer and Dispensing. Fugitive gasoline dispensing facility ROG emissions were estimates using the emission factor information in Table X-1 of the SCAQMD's Risk Assessment Procedures for Rules 1401, 1401.1, and 212 (SCAQMD, 2017a). See Attachment 3 of Appendix A for VOC emissions estimates.

The proposed Project’s maximum daily unmitigated operational emissions are shown in Table 4, *Unmitigated Maximum Daily Regional Operational Emissions*. Please refer to Appendix A for CalEEMod output files and detailed construction emissions assumptions.

**Table 4
Unmitigated Maximum Daily Regional Operational Emissions**

Emissions Source	Maximum Daily Pollutant Emission (Pounds Per Day) ^(A)					
	ROG	NO _x	CO	SO ₂	PM ₁₀	PM _{2.5}
Area Sources	0.1	<0.0 ^(C)				
Gasoline Dispensing ^(B)	7.3	--	--	--	--	--
Energy Demand	<0.0 ^(C)	<0.0 ^(C)	<0.0 ^(C)	<0.0 ^(C)	<0.0 ^(C)	<0.0 ^(C)
Mobile Sources	3.3	41.3	31.9	0.1	6.0	1.7
Total Daily Emissions ^(D)	10.7	41.3	31.9	0.1	6.0	1.7
SCAQMD Regional Threshold	55	55	550	150	150	55
Exceeds Threshold?	No	No	No	No	No	No

Source: MIG, 2020 (See Appendix A) and SCAQMD, 2020.
 (A) Emissions presented are worst-case emissions and may reflect summer or winter emissions levels. Maximum daily ROG, NO_x, and SO_x emissions occur during the summer. Maximum daily CO emissions occur during the winter. In general, due to rounding, there is no difference between summer and winter PM₁₀ and PM_{2.5} emissions levels for the purposes of this table.
 (B) Gasoline dispensing emissions assume 1.6 million gallons of annual throughput. See Attachment 3.
 (C) “<0.0” does not mean emissions are zero; rather, it means emissions are less than 0.05 but greater than 0.
 (D) Totals may not equal due to rounding.

As shown in Table 4, the proposed Project’s maximum daily, unmitigated operational criteria air pollutant emissions would be well below the SCAQMD’s-recommended regional pollutant thresholds. Project operation, therefore, would not generate criteria air pollutant emissions levels that exceed SCAQMD regional CEQA thresholds. Impacts will be less than significant.

Localized Construction and Operational Emissions

In addition to regional CEQA thresholds, the SCAQMD has also developed Local Significance Thresholds (LSTs) that represent the maximum emissions from a project that are expected to cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standards, which would result in significant adverse localized air quality impacts. The Project’s maximum daily construction emissions are compared against the SCAQMD’s recommended LSTs thresholds in Table 5, *Local Significance Threshold (LST) Construction Analysis*. Consistent with the SCAQMD’s LST methodology, the emissions included in the construction LST analysis are on-site emissions only, and the LST against which these on-site emissions are compared are based on the project size, in acres, as determined using the equipment assumptions generated by CalEEMod and the SCAQMD’s Fact Sheet for Applying CalEEMod to Localized Significance Thresholds.ⁱⁱⁱ The LST thresholds are for source receptor area (SRA) 24 (Perris Valley), the SRA in which the proposed Project

ⁱⁱⁱ According to the SCAQMD’s *Fact Sheet for Applying CalEEMod to Localized Significance Thresholds*, the maximum number of acres disturbed on the peak day of use per crawler tractor, grader, and rubber tired dozer is 0.5 acres per 8 hour day, while the maximum number of acres disturbed on the peak day of use per scraper is 1 acre per 8 hour day (SCAQMD, 2016).

is located, and are based on a receptor distance of 25 meters (82 feet), the closest LST receptor distance thresholds recommended for use by the SCAQMD.

**Table 5
Local Significance Threshold Construction Analysis**

Construction Phase ^(A,B)	Maximum On-Site Pollutant Emissions (Pounds Per Day)			
	NO _x	CO	PM ₁₀	PM _{2.5}
Site Preparation	19.9	11.3	1.4	0.8
Grading	21.3	9.9	3.5	2.2
Building Construction	17.4	16.0	0.9	0.9
Paving	10.6	11.8	0.6	0.5
Architectural Coating	1.5	1.8	0.1	0.1
SCAQMD LST Threshold^(C)	170	883	7	4
Exceeds Threshold?	No	No	No	No

Source: MIG, 2020 (See Appendix A) and SCAQMD, 2009.
 (A) Emissions estimated using CalEEMod, v. 2016.3.2. Estimates are based on default model assumptions unless otherwise noted in this document.
 (B) Emissions presented are worst-case emissions and may reflect summer or winter emission levels. In general, due to rounding, there is no difference between summer and winter emission levels for the purposes of this table.
 (C) The LSTs are based on a 2.0-acre project size and 25-meter receptor distance.

As shown in Table 5, the proposed project’s construction emissions would not exceed the SCAQMD’s recommended construction LSTs. Project construction, therefore, would not generate criteria air pollutant emissions levels that exceed SCAQMD local CEQA thresholds. Impacts will be less than significant. Typically, operations related LSTs become a concern when there are substantial on-site stationary or on-site mobile sources (e.g., heavy-duty or idling trucks) that could impact surrounding receptors, which is not the case for the proposed project. Nonetheless, the proposed project’s maximum daily operational emissions are compared against the SCAQMD’s-recommended LSTs in Table 6, *Local Significance Threshold Operational Analysis*. The LSTs are for SRA 24, in which the proposed project is located and a project size of 2.0 acres.

**Table 6
Local Significance Threshold Operational Analysis**

Emissions	Maximum On-Site Pollutant Emissions (Pounds Per Day) ^(A)			
	NO _x	CO	PM ₁₀	PM _{2.5}
Area Sources	<0.0 ^(B)	<0.0 ^(B)	<0.0 ^(B)	<0.0 ^(B)
Energy Sources	<0.0 ^(B)	<0.0 ^(B)	<0.0 ^(B)	<0.0 ^(B)
Mobile Sources ^(C)	0.8	0.6	0.1	<0.0 ^(B)
Total On-Site Emissions ^(D)	0.8	0.6	0.1	<0.0 ^(B)
SCAQMD LST Threshold^(E)	170	883	2	1
Threshold Exceeded?	No	No	No	No

Source: MIG 2020 (see Appendix A) and SCAQMD, 2009.
 (A) Emissions presented are worst-case emissions and may reflect summer or winter emissions levels. In general, due to rounding, there is no difference between summer and winter emissions levels for the purposes of this table.
 (B) “<0.0” does not indicate the emissions are equal to 0. It indicates the emission is greater than 0 but less than 0.05.
 (C) Mobile source emissions estimates reflect potential on-site vehicle emissions only and were derived by assuming 2% of operational mobile source emissions in Table 3 will occur on-site.
 (D) Totals may not equal due to rounding.

(E) LST threshold is conservatively based on 2.0-acre project size and 25-meter (82-foot) receptor distance.

As shown in Table 6, the proposed Project's on-site operational emissions would not exceed the SCAQMD's recommended operational LSTs. Project operation, therefore, would not generate criteria air pollutant emissions levels that exceed SCAQMD local CEQA thresholds. Impacts will be less than significant.

c) **Less than Significant Impact.** The SCAQMD identifies sensitive receptors as populations more susceptible to the effects of air pollution than the general population. Some people are more affected by air pollution than others. Sensitive air quality receptors include specific subsets of the general population that are susceptible to poor air quality and the potential adverse health effects associated with poor air quality. Both CARB and the SCAQMD consider residences, schools, parks and playgrounds, childcare centers, athletic facilities, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes to be sensitive air quality land uses and receptors (SCAQMD 2017a; CARB 2005). The potential sensitive air quality receptors adjacent or in close proximity to the perimeter of the Project area (i.e., within 1,000 feet) include:

- Single-family homes on El Rosario Drive, San Felipe Drive, and Santo Tomas Ave, adjacent to the Project site's southern and eastern property lines.

In addition to criteria air pollutants, the U.S. EPA and CARB have classified certain pollutants as Hazardous Air Pollutants (HAPs) (by U.S. EPA) or Toxic Air Contaminants (TACs) (by CARB), respectively. These pollutants can cause severe health effects at very low concentrations (noncancer effects), and many are suspected or confirmed carcinogens (i.e., can cause cancer). People exposed to HAPs/TACs at sufficient concentrations and durations may have an increased chance of getting cancer or experiencing other serious health effects. These health effects can include damage to the immune system, as well as neurological, reproductive (e.g., reduced fertility), developmental, respiratory, and/or other health problems.

A portion of the PM₁₀ and PM_{2.5} emissions generated during construction of the proposed Project would be diesel particulate matter, or DPM, a known TAC. The proposed Project's construction activities would not expose adjacent residential receptors to substantial levels of DPM that would pose a substantial adverse health risk for several reasons. First, the proposed Project does not involve substantial earthmoving or grading activities that would require large amounts of heavy-duty equipment associated with the highest DPM emissions. Second, construction activities associated with the Project would be short-term; as estimated in CalEEMod, total Project construction is estimated to last less than a year. Finally, potential long-term adverse health risks from DPM are evaluated assuming a constant exposure to emissions over a 70-year lifetime, 24 hours a day, seven days a week, with increased risks generally associated with increased proximity to emissions sources.^{iv} Since construction activities would only generate DPM emissions on an intermittent, short-term basis, DPM emissions from construction activities would be unlikely to result in adverse health effects to existing sensitive receptors that exceed the SCAQMD's significance criteria. Impacts will be less than significant with respect to PM₁₀ and PM_{2.5}.

^{iv} The SCAQMD (2019) has established the following thresholds of significance for projects that generate TAC emissions: Maximum Incremental Cancer Risk ≥ 10 in 1 million; Cancer Burden > 0.5 excess cancer cases (in areas ≥ 1 in 1 million); Chronic & Acute Hazard Index ≥ 1.0 (project increment).

Once operational, the proposed Project would result in the release of fugitive gasoline emissions gasoline storage, transfer, and dispensing activities. These sources could expose sensitive receptors in close proximity to the proposed Project to TACs, specifically benzene, ethylbenzene, and naphthalene, associated with adverse health risks. As such, the SCAQMD recommends Lead Agencies perform a health risk assessment that evaluates potential health risks associated with TACs emitted by the gasoline dispensing stations. MIG estimated potential adverse health risks resulting from fugitive gasoline vapors from the proposed Project using the SCAQMD's Risk Tool for Gasoline Dispensing Service Stations, V. 1.103 (see Appendix A). The facility throughput (1.6 million gallons per year) was estimated to produce an incremental carcinogenic risk of 4.9 per million population at a distance of 30 meters (the distance between the fuel pumps and the closest residential receptors south of the site) and 0.2 at a distance of 50 meters (the distance between fuel pumps and the closest commercial receptors west of the project site). These incremental carcinogenic risk values are below the SCAQMD's recommended CEQA threshold of 10 excess cancers per million population. The proposed Project would be required to comply with SCAQMD Rule 461 – Gasoline Transfer and Dispensing, as well as Rule 1401 – New Source Review of Toxic Air Contaminants. During the SCAQMD permitting process, the SCAQMD would establish a gasoline throughput that would ensure the proposed Project would not pose a significant health risk to adjacent nearby the receptors. Based on the preceding analysis and compliance with SCAQMD Rule 1401, the proposed Project would not result in unacceptable health risks at nearby receptors. Impacts will be less than significant with respect to the release of fugitive gasoline emissions gasoline storage, transfer, and dispensing activities.

d) **Less than Significant Impact.** According to the SCAQMD CEQA Air Quality Handbook, land uses associated with odor complaints include agricultural operations, wastewater treatment plants, landfills, and certain industrial operations (such as manufacturing uses that produce chemicals, paper, etc.). Odors are typically associated with industrial projects involving the use of chemicals, solvents, petroleum products, and other strong-smelling elements used in manufacturing processes, as well as sewage treatment facilities and landfills. Operation of the proposed gasoline dispensing facility could result in localized odors during fuel transfer; however, these odors would be controlled via vapor recovery systems, be quick to disperse, and would not affect a substantial number of people. Therefore, impacts related to odor will be less than significant.

4.4 – Biological Resources

Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	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 Game or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or US Fish and Wildlife Service?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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Applicable PVCCSP Standards and Guidelines and Mitigation Measures

No PVCCSP Standards and Guidelines are applicable to the analysis of biological resources for the Project.

The proposed Project is required to adhere to PVCCSP Mitigation Measures MM Bio-1 and MM Bio-2. PVCCSP EIR Mitigation Measure MM Bio-1 requires nesting bird surveys and avoidance measures if site-preparation activities occur during the nesting season (generally February 1 to August 31). PVCCSP Mitigation Measure MM Bio-2 requires project-specific habitat assessments and focused surveys for burrowing owls. PVCCSP Mitigation Measures MM Bio-2 also requires pre-construction burrowing owl surveys and avoidance measures in compliance with the Western Riverside MSHCP.

A baseline biological survey of the Project site was conducted by Cadre Environmental, in accordance with the requirements of the Western Riverside County Multi-species Habitat Conservation Plan (MSHCP), on August 7, 2020, and included a Step I (Habitat Assessment) (MSHCP 2006) (See Appendix B). Prior to visiting the Project Site, a review of all available and relevant data on the biological characteristics, sensitive habitats, and species potentially present on or adjacent to the Project Site was conducted. Additionally, aerial photography and USGS topographic map were examined. After reviewing the available information, Cadre Environmental conducted a physical site assessment. The Project Site is located within the Western Riverside County MSHCP Mead Valley Area Plan. The Project Site is not located within an MSHCP Criteria Area, Cell Group, or Linkage Area as shown in Attachment C, *MSHCP Relationship Map*, of the biological survey report.

a) **Less than Significant with Mitigation Incorporated.** The biological study was initiated with a review of relevant literature on the biological resources of the Project Site and vicinity. The MSHCP list of covered species potentially occurring onsite was also examined (MSHCP Table 2-2 Species Considered for Conservation Under the MSHCP Since 1999, 2004). In addition, federal register listings, protocols, and species data provided by USFWS were reviewed in conjunction with anticipated federally listed species potentially occurring at the Project Site. The California Natural Diversity Database (CNDDDB), a review of the California Native Plant Society sixth inventory (Tibor 2001), and Roberts et al. (2004) were also reviewed for pertinent information regarding the location of known occurrences of sensitive species in the vicinity of the property. In addition, numerous regional floral and faunal field guides were utilized in the identification of species and suitable habitats. Below is a discussion of the findings of the biological study.

Special Status Plant Species

The Project site is currently dominated by disturbed/ruderal vegetation. The entire Project site is disturbed (disked), and no native vegetation was documented on-site. The dominant plant species include non-native grasses and ruderal species, including Russian thistle (*Salsola tragus*), black mustard (*Brassica nigra*), and puncture vine (*Tribulus Terrestris*). A single isolated non-native tree, eucalyptus (*Eucalyptus* sp.), was documented within the Rider Street right-of-way. The biological study determined that the Project Site does not occur within a predetermined Survey Area for criteria

area species or narrow endemic plant species (RCA GIS Data Downloads 2020). Therefore, it was determined that no additional surveys are required. Impacts to candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service will not occur as a result of the development of the Project.

Special Status Wildlife Species

General wildlife species documented onsite or within the vicinity during the site visit include mourning dove (*Zenaida macroura*), rock dove, American crow (*Corvus brachyrhynchos*), European starling (*Sturnus vulgaris*), Cassin's kingbird (*Tyrannus vociferans*), northern mockingbird (*Mimus polyglottos*), Brewer's blackbird (*Euphagus cyanocephalus*), house finch (*Haemorhous mexicanus*), and house sparrow (*Passer domesticus*). The biological study determined that the Project Site does not occur within a predetermined Survey Area for mammals or amphibians (RCA GIS Data Downloads 2020). As such, no additional surveys are required. Impacts to candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service will not occur as a result of the Project. Furthermore, no other special status wildlife species listed in a nine quad search of the USFWS, Information for Planning and Consultation (IPaC), and CDFW CNDDDB databases (Appendix B) are expected to occur onsite due to a lack of suitable habitat. No impact to these resources will occur.

Nesting Bird Habitat

The single Eucalyptus tree documented within the Rider Street right-of-way represents potential nesting habitat for common raptor species. Potential direct/indirect impacts to regulated nesting birds will require compliance with California Department of Fish and Game (CDFG) Code Sections 3503, 3503.5, and 3513. Construction outside the nesting season (between September 16th and January 31st) does not require pre-removal nesting bird surveys. With incorporation of **Mitigation Measure BIO-1**, potential impacts to nesting birds will be less than significant. The Project shall also adhere to the nesting bird avoidance requirements of PVCCSP Mitigation Measure MM Bio-1.

Burrowing Owl

The biological study determined that the Project Site does not occur within a predetermined Survey Area for the burrowing owl (*Athene cunicularia*) (RCA GIS Data Downloads 2020). Therefore, it was concluded that no additional surveys are required. However, in the unlikely event that burrowing owl occupy the site prior to commencement of construction activities, **Mitigation Measure BIO-2** has been incorporated. **Mitigation Measure BIO-1** requires preconstruction surveys for burrowing owl. The Project shall also adhere to the burrowing owl avoidance requirements of PVCCSP Mitigation Measure MM Bio-2. Therefore, with mitigation impacts to burrowing owl will be less than significant.

Stephens' Kangaroo Rat

The biological study determined that the Project Site falls within the Stephens' kangaroo rat (SKR) (*Dipodomys stephensi*, SKR) Fee Area outlined in the Riverside County SKR Habitat Conservation Plan (HCP). Pursuant to Riverside County Ordinance 663.10, the Project applicant will be required to pay fees for the SKR HCP Fee Assessment Area as established and implemented by the County. Pursuant to Riverside County Ordinance 663.10, all applicants for development permits within the boundaries of the Fee Assessment Area who cannot satisfy mitigation requirements through on-site mitigation as determined through the environmental review process shall pay a Mitigation Fee of \$500.00 per gross acre of the parcels proposed for development. The Mitigation Fee shall be paid upon issuance of a grading permit or a certificate of occupancy or upon final inspection, whichever occurs first. With the payment of this fee, the proposed Project will have a less than significant impact.

Mitigation Measure

BIO-1 If construction is proposed between February 1st and September 15th, a qualified biologist must conduct a nesting bird survey(s) no more than three (3) days prior to initiation of grading to document the presence or absence of nesting birds within or directly adjacent (100 feet) to the Project Site. The survey(s) would focus on identifying any bird or raptor nests that would be directly or indirectly affected by construction activities. If active nests are documented, species-specific measures shall be prepared by a qualified biologist and implemented to prevent abandonment of the active nest. At a minimum, grading in the vicinity of a nest shall be deterred until the young birds have fledged. A minimum exclusion buffer of 100 feet shall be maintained during construction, depending on the species and location. The perimeter of the nest setback zone shall be fenced or adequately demarcated with stakes and flagging at 20-foot intervals, and construction personnel and activities restricted from the area. A survey report by a qualified biologist verifying that no active nests are present, or that the young have fledged, shall be submitted to the City of Perris for review and approval prior to initiation of grading in the nest-setback zone. The qualified biologist shall serve as a construction monitor during those periods when construction activities occur near active nest areas to ensure that no inadvertent impacts on these nests occur. Any nest permanently vacated for the season would not warrant protection pursuant to the CDFG Code Sections 3503, 3503.5, and 3513. Therefore, with adherence to existing regulations, the proposed Project will have a less than significant impact on nesting birds.

BIO-2 No more than 14 days prior to ground disturbance a focused survey for burrowing owl will be required to ensure take avoidance. Even though burrowing owls were not located as part of the general biological survey, a pre-construction survey for burrowing owl is required by the Western Riverside MSHCP because burrowing owls may encroach or migrate to the property at any time, and therefore steps should be taken to ensure avoidance, including reevaluating the locations/presence of burrowing owl or burrows. Pre-construction surveys shall be conducted in accordance with the survey requirements outlined in Appendix D of the California Department of Fish and Wildlife's *Staff Report on Burrowing Owl Mitigation*, dated March 7, 2012. If burrowing owl are found on the Project Site during preconstruction surveys, the biologist conducting surveys shall immediately contact the CDFW to develop a plan for avoidance and/or translocation prior to construction crews initiating any ground disturbance on the Project Site. In addition, active nests shall be avoided or the owls actively or passively relocated. To adequately avoid active nests, no grading or heavy equipment activity shall take place within at least 250 feet of an active nest during the breeding season (February 1 through August 31), and 160 feet during the non-breeding season.

b) **No Impact.** The biological study includes an overview of potential USACE, RWQCB, CDFW, MSHCP riparian/riverine/vernal pool jurisdictional resources. The biological study determined that no MSHCP Section 6.1.2 riparian, riverine, or vernal pool resources are within or adjacent to the Project site. As such, an MSHCP Determination of Biological Equivalent or Superior Preservation (DBESP) is not required, and no impact will occur.

c) **No Impact.** No features located within and immediately adjacent to the project site represent jurisdictional resources that may be regulated by the Santa Ana Regional Water Quality Control Board, California Department of Fish and Wildlife, and United States Army Corps of Engineers. A formal jurisdictional delineation will not be required, and no impact will occur.

d) **No Impact.** Wildlife corridors link together areas of suitable habitat that are otherwise separated by rugged terrain, changes in vegetation, or human disturbance. The fragmentation of open space areas by urbanization creates isolated “islands” of wildlife habitat. In the absence of habitat linkages that allow movement to adjoining open space areas, various studies have concluded that some wildlife species, especially the larger and more mobile mammals, will not likely persist over time in fragmented or isolated habitat areas because they prohibit the infusion of new individuals and genetic information (Cadre Environmental, 2020). Refer to the Project Habitat Assessment for a detailed description of wildlife corridors.

The analysis of wildlife movement corridors associated with the Project Site and its immediate vicinity is based on information compiled from literature, analysis of the aerial photograph, and direct observations made in the field during the site visit. A literature review was conducted that included documents on island biogeography (studies of fragmented and isolated habitat “islands”), reports on wildlife home range sizes and migration patterns, and studies on wildlife dispersal. Wildlife movement studies conducted in southern California were also reviewed. The use of field-verified digital aerial data, in conjunction with the GIS database, allowed proper identification of vegetation communities and drainage features. This information was crucial to assess the relationship of the property to large open space areas in the immediate vicinity and was also evaluated in terms of connectivity and habitat linkages. Relative to corridor issues, the discussions in the biological study are intended to focus on wildlife movement associated with the Project site and the immediate vicinity. The Project site is bordered by existing high traffic roadways, industrial, and residential development and does not represent a wildlife movement corridor. The Project Site is not located within an MSHCP designated core, extension of existing core, non-contiguous habitat block, constrained linkage, or linkage area. No impact will occur as a result of the proposed Project.

e) **Less than Significant Impact.** There is a single, isolated non-native eucalyptus tree located in the Rider Street right-of-way. According to Perris Municipal Code Section 19.71.020 (Definitions), this tree qualifies as a protected city street tree. However, pursuant to Section 19.71.080 (Permit Requirements), no person, firm, corporation, public agency, or political subdivision shall remove or severely trim any tree planted in the right-of-way of any city street or on city property without first obtaining a permit from the director of public works to do so. Prior to the removal of the eucalyptus tree in the Rider Street right-of-way, the Project Applicant will obtain the required tree removal permit and will adhere to all conditions imposed by the Director of Public Works. By obtaining a tree removal permit and adhering to additional conditions imposed by the Director of Public Works, the proposed Project will not conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. Impacts will be less than significant with adherence to existing regulations.

f) **Less than Significant Impact.** The purpose of the biological study is to document the existing biological resources, identify general vegetation types, and assess the potential biological and regulatory constraints associated with the proposed development within the Project Site as outlined by the MSHCP. The Project Site is not located within an MSHCP Criteria Area, Cell Group, or Linkage Area. No MSHCP Habitat Evaluation and Acquisition Negotiation Strategy (HANS) or Joint Project Review (JPR) is required. The following sections summarize the Project Site’s relationship to MSHCP criteria areas and MSHCP compliance guidelines.

Criteria Area Species Survey Area

The Project Site does not occur within a predetermined Survey Area for criteria species; therefore, no surveys are required (RCA GIS Data Downloads 2020). The Project is compliant with MSHCP Section 6.3.2.

Narrow Endemic Plant Species Survey Area

The Project Site does not occur within a predetermined Survey Area for narrow endemic plant species; therefore, no surveys are required (RCA GIS Data Downloads 2020). The Project is compliant with MSHCP Section 6.3.2.

Amphibian and Mammal Species Survey Area

The Project Site does not occur within the Amphibian Species Survey Area; therefore, no surveys are required (RCA GIS Data Downloads 2020). The Project Site does not occur within the Mammal Species Survey Area; therefore, no surveys are required (RCA GIS Data Downloads 2020). The Project is compliant with MSHCP Section 6.3.2.

Burrowing Owl Survey Area

The Project Site does not occur within a predetermined Survey Area for the burrowing owl; therefore, no surveys are required (RCA GIS Data Downloads 2020). The Project is compliant with MSHCP Section 6.3.2.

MSHCP Riparian/Riverine Areas and Vernal Pools

No MSHCP Section 6.1.2 riparian, riverine, or vernal pool resources were documented within or adjacent to the project site. No suitable riparian scrub, forest, or woodland habitat for the least Bell's vireo, southwestern willow flycatcher, or western yellow-billed cuckoo was documented within or adjacent to the Project Site. The Project is compliant with MSHCP Section 6.1.2.

Urban/Wildlands Interface

The MSHCP Urban/Wildlands Interface guidelines presented in Section 6.1.4 are intended to address indirect effects associated with locating commercial, mixed uses, and residential developments in proximity to a MSHCP Conservation Area. The Project Site is not located adjacent to an existing or proposed MSHCP Conservation Area. The Project is consistent with MSHCP Section 6.1.4.

Fuels Management

The fuels management guidelines presented in Section 6.4 of the MSHCP are intended to address brush management activities around new development within or adjacent to MSHCP Conservation Areas. The Project Site is not located adjacent to an existing or proposed MSHCP Conservation Area. The Project is consistent with MSHCP Section 6.4.

MSHCP Local Development Mitigation Fee

The Project Applicant is required to pay MSHCP Local Development Mitigation fees as established and implemented by the City of Perris. With the payment of these fees, impacts from the proposed Project will be less than significant.

4.5 – Cultural Resources

Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Cause a substantial adverse change in the significance of a historical resource pursuant to '15064.5?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to '15064.5?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Disturb any human remains, including those interred outside of dedicated cemeteries?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Applicable PVCCSP Standards and Guidelines and Mitigation Measures

No Standards and Guidelines related to cultural resources are included in the PVCCSP.

The proposed Project is required to adhere to PVCCSP Mitigation Measures MM Cultural-1, MM Cultural 2, and MM Cultural-4. PVCCSP EIR Mitigation Measure MM Cultural-1 requires preparation of a Phase I Cultural Resources Study that shall, at a minimum, include the results of the following:

1. *Records searches at the Eastern Information Center (EIC) the National or State Registry of Historic Places and any appropriate public, private, and tribal archives.*
2. *Sacred Land File record search with the NAHC followed by project scoping with tribes recommended by the NAHC.*
3. *Field Survey of the implementing development or infrastructure project.*

The proponents of the subject implementing development projects and the professional archaeologists are also encouraged to contact the local Native American tribes (as identified by the California Native Heritage Commission and the City of Perris) to obtain input regarding the potential for Native American resources to occur at the project site.

Finally, measures shall be identified to mitigate the known and potential significant effects of the implementing development or infrastructure, if any. The Phase 1 Cultural Resources Study submitted for each implementing development or infrastructure project shall have been completed no more than three (3) years prior to the submittal of the application for the subject property or the start of construction of an implementing infrastructure project.

PVCCSP Mitigation Measure MM Cultural-2 requires monitoring by a professional archaeologist if the Phase I Cultural Resources Study Required in MM Cultural-1 determines that such monitoring is necessary. PVCCSP Mitigation Measure MM Cultural-2 also includes avoidance measures in the case that archaeological resources are discovered during Project implementation. PVCCSP Mitigation Measure MM Cultural-4 requires avoidance measures and reporting in the event of the discovery of

humans remains, including consultation with the County coroner and potentially affected Native American tribes.

Because the proposed Project is located within the Area of Potential Effects (APE) of the Mid County Parkway (MCP) Project, including the expanded APE for the I-215/Placentia Avenue Interchange Project (the first construction package for the MCP project), all conclusions regarding impacts to cultural resources are based upon the cultural resource studies prepared for the MCP Project and the I-215/Placentia Avenue Interchange Project. As such, the information in this section is based on the Historic Property Survey Report and Attachments (HPSR) (LSA 2012)⁵, a Supplemental HPSR (LSA 2015)⁶, a second Supplemental HPSR (LSA, 2018)⁷, and a third Supplemental HPSR (LSA 2019a)⁸ prepared for the MCP Project and a fourth Supplemental HPSR (LSA 2019b)⁹ prepared for the I-215/Placentia Avenue Interchange Project. Methodology in support of these documents included a records search, a pedestrian survey, test excavations, consultation with historic groups, and Native American consultation to identify prehistoric and historical cultural resources that may be eligible for listing in the National Register of Historic Places (National Register) and the California Register of Historical Resources (California Register). All studies were completed in accordance with CEQA and Section 106 of the National Historic Preservation Act (NHPA).

A cultural resources records search was conducted at the Eastern Information Center of the California Historical Resources Information System (CHRIS) for the MCP Project. It included a review of historical maps and aerials and a review of published and unpublished information concerning archaeological, ethnographic, and historical development in the project vicinity of the MCP Project APE. Copies of site record forms for prehistoric, historical, and prehistoric/historical sites, as well as a bibliographic reference list of all previously conducted cultural resource work within the APE and for the surrounding records search area, were obtained as part of the records search. On March 4th, 2020, a cultural records search update was conducted by LSA Senior Cultural Resources Manager Riordan Goodwin at the Eastern Information Center (located at the University of California, Redlands). No additional cultural resources have been documented within 1 mile of the MCP project since the records search conducted in 2016, and the nearest prehistoric site (a bedrock milling complex) is located approximately 1-mile southwest of the Project site. CHRIS records searches also included a review of listings in the National Register (updated July 29, 2005), the California Register (from lists updated in March and July 2005), the California Inventory of Historic Resources (1976, updated March 7, 2005), California Historical Landmarks (1996, updated July 13, 2004), California Points of Historic Interest (May 1992, updated April 10, 2003), the Historic Property Data File (Office of Historic Preservation current computer list, updated March 7, 2005), and the Caltrans State and Local Bridge Survey (January 2011). In addition, a review of historic 15-minute and 30-minute USGS topographic maps, General Land Office plat maps, and Sanborn Fire Insurance Maps was conducted. A reconnaissance-level pedestrian field survey of the archaeological survey area for the MCP project was conducted in May 2004, between April and July 2005, between August 2005 and March 2006, and in March 2011. The project site for the Placentia Avenue Widening project is within the MCP archaeological survey area (approximately 1,977 ac), and is located less than a half-mile south of the proposed Project site.

a) **No Impact.** None of the historic properties identified in the HPSRs and supplemental HPSRs for the MCP Project and I-215/Placentia Avenue Interchange Project are within the proposed Project site, and none of these properties would be affected by the proposed Project. There were no prehistoric sites identified on the Project site in the HPSRs and supplemental HPSRs for the MCP Project and I-215/Placentia Avenue Interchange Project. The nearest prehistoric site identified was a bedrock milling site (P-33-106382) located approximately 1-mile southwest of the Project site. Based on the literature review and the field surveys conducted, no historic resources would be affected by the proposed Project. Therefore, no impacts to historic resources would result with the implementation of the proposed Project, and no mitigation is required.

b) **Less than Significant with Mitigation Incorporated.** The HPSR (LSA 2012) and Supplemental HPSRs (LSA 2015; LSA 2018; LSA 2019a, LSA 2019b) identified five archaeological resources within the MCP Project APE eligible for inclusion in the National Register. The resources consist of four bedrock milling sites (P-33-19862, P-33-19863, P-33-19864, and P-33-19866) and one village site (P-33-16598). No additional cultural resources were identified within the revised APE in the fourth Supplemental HPSR (November 2019) prepared for the I-215/Placentia Avenue Interchange Project. In addition, the records search conducted for the MCP Project found no recorded archaeological resources on the proposed Project site. Based on the urbanized nature of the Project area, there is little potential for the proposed Project to impact known archaeological resources during construction. However, as a precautionary measure to avoid or minimize any impacts to potential unknown archaeological resources, **Mitigation Measure CUL-1** has been incorporated. With the incorporation of this measure, the proposed Project would not cause a substantial adverse change in the significance of an archaeological resource, and impacts would be less than significant.

Mitigation Measures

CUL-1 The developer shall retain a professional archaeologist prior to the issuance of grading permits. The task of the archaeologist shall be to monitor the initial ground-altering activities at the subject site and off-site improvement areas for the unearthing of previously unknown archaeological and/or cultural resources. Selection of the archaeologist shall be subject to the approval of the City of Perris Director of Development Services and no grading activities shall occur at the site or within the offsite improvement areas until the archaeologist has been approved by the City. The archaeological monitor shall be responsible for maintaining daily field notes and a photographic record, and for reporting all finds to the developer and the City of Perris in a timely manner. The archaeologist shall be equipped to record and salvage cultural resources that may be unearthed during grading activities. The archaeologist shall be empowered to temporarily halt or divert grading equipment to allow recording and removal of the unearthed cultural resources.

In the event that archaeological resources are discovered at the site or within the off-site improvement areas, the handling of the discovered resources will differ. However, it is understood that all artifacts with the exception of human remains and related grave goods or sacred/ceremonial objects belong to the property owner. All artifacts discovered at the development site shall be inventoried and analyzed by the professional archaeologist. If any artifacts of Native American origin are discovered, all activities in the immediate vicinity of the find (within a 50-foot radius) shall stop and the project proponent and project archaeologist shall notify the City of Perris Planning Division, the Pechanga Band of Luiseño Indians and the Soboba Band of Luiseño Indians. A designated Native American observer from either the Pechanga Band of Luiseño Indians or the Soboba Band of Luiseño Indians shall be retained to help analyze the Native American artifacts for identification as everyday life and/or religious or sacred items, cultural affiliation, temporal placement, and function, as deemed possible. Consistent with California Public Resources Code Section 21083.2(b) and Assembly Bill 52 (Chapter 532, Statutes of 2014), avoidance shall be the preferred method of preservation for tribal cultural resources and archaeological resources.

The significance of Native American resources shall be evaluated in accordance with the provisions of CEQA and shall consider the religious beliefs, customs, and practices of the Luiseño tribes. All items found in association with Native American human remains shall be considered grave goods or sacred in origin and subject to special handling.

Native American artifacts that are relocated/reburied at the site would be subject to a fully executed relocation/reburial agreement with the assisting Native American tribes or bands. This shall include measures and provisions to protect the reburial area from any future impacts. Relocation/reburial shall not occur until all cataloging and basic recordation have been completed.

Native American artifacts that cannot be avoided or relocated at the site shall be prepared in a manner for curation at an accredited curation facility in Riverside County that meets federal standards per 36 CFR Part 79 and makes the artifacts available to other archaeologists/researchers for further study such as University of California, Riverside Archaeological Research Unit (UCR-ARU) or the Western Center for Archaeology and Paleontology. If more than one Native American group is involved with the proposed project and they cannot come to an agreement as to the disposition of Native American artifacts, they shall be curated, on a rotational basis, at curation facilities located within Riverside County that meet or exceed the standards contained in 36 C.F.R. Part 79. The archaeological consultant shall deliver the Native American artifacts, including title, to the accredited curation facility within a reasonable amount of time along with the fees necessary for permanent curation.

Non-Native American artifacts shall be inventoried, assessed, and analyzed for cultural affiliation, personal affiliation (prior ownership), function, and temporal placement. Subsequent to analysis and reporting, these artifacts will be subjected to curation or returned to the property owner, as deemed appropriate.

Once grading activities have ceased or the archaeologist, in consultation with the designated Native American observer, determines that monitoring is no longer necessary, monitoring activities can be discontinued following notification to the City of Perris Planning Division.

A report of findings, including an itemized inventory of recovered artifacts, shall be prepared upon completion of the steps outlined above. The report shall include a discussion of the significance of all recovered artifacts. The report shall provide evidence that any Native American and Non-Native American archaeological resources recovered during development have been avoided, reburied, or curated at an accredited curation facility. A copy of the report shall also be filed with the Eastern Information Center (EIC) and submitted to the Pechanga Band of Luiseño Indians and the Soboba Band of Luiseño Indians.

c) **Less than Significant with Mitigation Incorporated.** The Project site does not exhibit a formal cemetery and is not adjacent to any known formal cemeteries. Given the disturbed nature of the site, it is unlikely that Project construction would disturb any buried human remains. However, in the unlikely event that human remains are discovered during Project construction activities, **Mitigation Measure CUL-2** has been incorporated. With incorporation of this measure, the proposed Project would not have a substantial impact on any human remains, including those interred outside of dedicated cemeteries, and impacts would be less than significant.

Mitigation Measure

CUL-2 In the event that human remains (or remains that may be human) are discovered at the site during grading or earthmoving, the construction contractors, project archaeologist, and/or designated Native American observer shall immediately stop all activities within 100 feet of the find. The project proponent shall then inform the Riverside County Coroner and the City of Perris Planning Division immediately, and the coroner shall be permitted to examine the

remains as required by California Health and Safety Code Section 7050.5(b). If the coroner determines that the remains are of Native American origin, the coroner would notify the Native American Heritage Commission (NAHC), which will identify the "Most Likely Descendent" (MLD). Despite the 4 affiliation with any Native American representatives at the site, the NAHC's identification of the MLD will stand.

The MLD shall be granted access to inspect the site of the discovery of Native American human remains and may recommend to the project proponent means for treatment or disposition, with appropriate dignity of the human remains and any associated grave goods. The MLD shall complete his or her inspection and make recommendations or preferences for treatment within 48 hours of being granted access to the site. The disposition of the remains will be determined in consultation between the project proponent and the MLD. In the event that the project proponent and the MLD are in disagreement regarding the disposition of the remains, State law will apply and the mediation and decision process will occur with the NAHC (see Public Resources Code Section 5097.98(e) and 5097.94(k)).

The specific locations of Native American burials and reburials will be proprietary and not disclosed to the general public. The locations will be documented by the consulting archaeologist in conjunction with the various stakeholders and a report of findings will be filed with the Eastern Information Center (EIC).

4.6 – Energy

Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption or energy resources, during project construction or operation?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Applicable PVCCSP Standards and Guidelines and Mitigation Measures

Section 1.2 (Specific Plan Vision and Objectives) of the PVCCSP encourages increased energy efficiency in building design and the offering of incentives for LEED certification. Section 4.2.4 (Lighting) of the PVCCSP requires lighting standards to be energy efficient. No other PVCCSP Standard and Guidelines are applicable to the analysis of energy.

The proposed Project is required to adhere to PVCCSP EIR Mitigation Measures MM Air-19 and MM Air-20. PVCCSP EIR Mitigation Measure MM Air-19 requires implementing development projects to include installation of energy-efficient street lighting throughout project sites. PVCCSP Mitigation Measure MM Air-20 requires each implementing development project to implement, at a minimum, an increase in each building’s energy efficiency 15 percent beyond Title 24, and reduce indoor water use by 25 percent.

CARB Low Carbon Fuel Standard Regulation

CARB initially approved the Low Carbon Fuel Standard (LCFS) regulation in 2009, identifying it as one of the nine discrete early action measures in its original 2008 Scoping Plan to reduce California’s GHG emissions. Originally, the LCFS regulation required at least a 10% percent reduction in the carbon intensity of California’s transportation fuels by 2020 (compared to a 2010 baseline). On September 27, 2018, CARB approved changes to the LCFS regulation that require a 20% reduction in carbon intensity by 2030. These regulatory changes exceed the assumption in CARB’s 2017 Climate Change Scoping Plan, which targeted an 18% reduction in transportation fuel carbon intensity by 2030 as one of the primary measures for achieving the state’s GHG 2030 target.

Renewable Portfolio Standard Program

In 2002, California established its Renewables Portfolio Standard (RPS) Program, with the goal of increasing the percentage of renewable energy in the state’s electricity mix to 20 percent of retail sales by 2017. The *2003 Integrated Energy Policy Report* recommended accelerating that goal to 20 percent by 2010, and the *2004 Energy Report Update* further recommended increasing the target to 33 percent

by 2020. The state's *Energy Action Plan* also supported this goal. In 2006 under Senate Bill 107, California's 20 percent by 2010 RPS goal was codified. The legislation required retail sellers of electricity to increase renewable energy purchases by at least one percent each year with a target of 20 percent renewables by 2010. Publicly owned utilities set their own RPS goals, recognizing the intent of the legislature to attain the 20 percent by 2010 target.

On November 17, 2008, Governor Schwarzenegger signed Executive Order S-14-08 requiring "[a]ll retail sellers of electricity shall serve 33 percent of their load with renewable energy by 2020." The following year, Executive Order S-21-09 directed the California Air Resources Board, under its AB 32 authority, to enact regulations to achieve the goal of 33 percent renewables by 2020.

In October 2015, Governor Brown signed Senate Bill 350 to codify ambitious climate and clean energy goals. One key provision of SB 350 is for retail sellers and publicly owned utilities to procure "half of the state's electricity from renewable sources by 2030."

The State's RPS program was further strengthened by the passage of SB 100 in 2018. SB 100 revised the State's RPS Program to require retail sellers of electricity to serve 50% and 60% of the total kilowatt-hours sold to retail end-use customers be served by renewable energy sources by 2026 and 2030, respectively, and requires 100% of all electricity supplied come from renewable sources by 2045.

Note: The analysis provided below is based on use of the California Emissions Estimator Model (CalEEMod) Version 2016.3.2, performed by MIG on September 3, 2020 (See Appendix A).

a) **Less than Significant Impact.** Implementation of the Project would increase the demand for electricity and natural gas at the project site and gasoline consumption in the region during construction and operation. These potential increases are discussed in more detail below.

Electricity

Construction. Temporary electric power would be required for lighting and electronic equipment (e.g., computers) located in trailers used by the construction crew. However, the electricity used for such activities would be temporary and would have a negligible contribution to the project's overall energy consumption.

Operational. During operation of the Project, the convenience store, gasoline fueling station, and car wash would require electricity for multiple purposes, such as: building heating and cooling, lighting, appliances, and electronics. The car wash would require electricity for multiple purposes, such as: car wash cleaning and drying appurtenances, car wash handheld tools, indoor and outdoor lighting, and electronics.

As described above, CalEEMod was used to estimate project emissions from energy uses. Default electricity generations in CalEEMod were used for the proposed land use and climate zone based on compliance with the 2016 Title 24 Building Code.^v Based on the CalEEMod run conducted, the Project is estimated to consume approximately 71,931 kilowatt hours per year (kWh/yr.)

^v Based on the timing of construction, the Project would be constructed to the 2019 Title 24 CALGreen Building Code requirements, which are more efficient than the 2016 standards. Thus, the values presented reflect conservative assumptions, and likely overestimate energy that would be consumed by the Project.

Although electricity consumption would increase at the site under implementation of the Project, the building envelope, HVAC, lighting, and other systems, would be designed to maximize energy performance. The Project would be subject to statewide mandatory energy requirements as outlined in the CALGreen Code. The proposed Project would also indirectly benefit from other, regulatory actions taken at the state level. For example, SB 100 requires 60% of the power purchased by California come from renewable sources by 2030. SB 100 further requires all retail electricity be carbon-free by 2045. Based on these state-wide mandates, electricity consumed at the site will become more and more green (e.g., not requiring the burning of fossil fuels), which will lead to the more efficient use of energy resources. For these reasons, the electricity that would be consumed by the Project is not considered to be inefficient or wasteful, and impacts would be less than significant.

Natural Gas

Construction. Natural gas consumption is not anticipated during construction of the Project. Fuels used for construction would generally consists of diesel and gasoline, which are discussed in the next subsection. Any amounts of natural gas that may be consumed during Project construction would be nominal and would have a negligible contribution to the Project's overall energy consumption.

Operational. Natural gas consumption would be required during operation of the Project for various purposes, such as building heating and cooling, cooking, and natural gas automobiles.

Similar to the estimates derived for electricity consumption, CalEEMod was also used to estimate natural gas consumption associated with the Project. The demand calculations assumed the proposed convenience store, gasoline fueling station, and car wash would be built to the 2016 Title 24 CALGreen efficiency requirements. Based on the Project design, the Project is estimated to consume approximately 39,362 British thermal units per year (kBTU/yr), as detailed in the air quality modeling data presented in Appendix A.

Although natural gas consumption would increase at the site under implementation of the Project, the building envelope, HVAC, and other systems, would be designed to maximize energy performance. The Project would be subject to statewide mandatory energy requirements as outlined in the CALGreen Code. The natural gas that would be consumed by the Project is not considered to be inefficient or wasteful, and impacts would be less than significant.

Diesel and Gasoline Fuel

Construction. Diesel and gasoline fuels, also referred to as petroleum in this subsection, would be consumed throughout construction of the Project. Fuel consumed by construction equipment would be the primary energy resource consumed over the course of construction, and vehicle miles traveled (VMT) associated with the transportation of construction materials (e.g., deliveries to the site) and worker trips to and from the site would also result in petroleum consumption. Whereas on-site, heavy-duty construction equipment and delivery trucks would predominantly use diesel fuel, construction workers would generally rely on gasoline-powered vehicles. However, the diesel and gasoline used for construction activities would be temporary and would have a negligible contribution to the Project's overall energy consumption. In addition, the Project would be required to comply with CARB's Airborne Toxic Control Measures, which restricts heavy-duty diesel vehicle idling to five minutes. Since petroleum use during construction would be temporary and required to conduct development activities, it would not be wasteful or inefficient, and impacts would be less than significant.

Operational. Fuel consumption associated with the Project's operational phase would primarily be attributable to customers driving to and from the site (vehicle miles traveled) for fuel deliveries and other

convenience store amenities and trucks used to deliver fuel to the site. Over the lifetime of the Project, the fuel efficiency of the vehicles being used by residences and delivery services is expected to increase. As such, the amount of petroleum consumed as a result of vehicular trips to and from the Project site during operation is anticipated to decrease over time. In addition, there are numerous regulations in place that require and encourage fuel efficiency. For example, CARB has adopted an approach to passenger vehicles by combining the control of smog-causing pollutants and GHG emissions into a single, coordinated package of standards. The approach also includes efforts to support and accelerate the number of plug-in hybrids and ZEVs in California. Accordingly, operation of the Project is expected to decrease the amount of petroleum it consumes in the future due to advances in fuel economy.

Although the Project would increase petroleum use in the region during construction and initial operation, the use would be a small fraction of the statewide use and due to efficiency increase, would diminish over time. As such, petroleum consumption associated with the Project would not be considered inefficient or wasteful and would result in a less-than-significant impact.

b) **Less than Significant Impact.** The Project would not conflict with or obstruct a state or local plan adopted for the purposes of increasing the amount of renewable energy or energy efficiency. The California Title 24 Building Code contains energy efficiency standards for commercial buildings. These standards address electricity and natural gas efficiency in lighting, water, heating, and air conditioning, as well as the effects of the building envelopes (e.g., windows, doors, walls and roofs, etc.) on energy consumption. As described in Section 4.6.a, the Project would be required to comply with the 2019 Title 24 CALGreen standards. Also, as described in Section 4.8.b (Greenhouse Gases), the Project would not conflict with the City of Perris Climate Action Plan (CAP) standards for energy efficiency and renewable energy. Since the Project would comply with applicable State standards and adhere to the City's energy reductions measures identified in the CAP, the Project would not conflict with nor obstruct a state or local plan for renewable energy or energy efficiency. Therefore, impacts would be less than significant.

4.7 – Geology and Soils

Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	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.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ii) Strong seismic ground shaking?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iii) Seismic-related ground failure, including liquefaction?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iv) Landslides?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Result in substantial soil erosion or the loss of topsoil?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1997), creating substantial direct or indirect risks to life or property?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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Applicable PVCCSP Standards and Guidelines and Mitigation Measures

No PVCCSP Standards and Guidelines are applicable to the analysis of geology and soils.

The proposed Project is required to adhere to PVCCSP Mitigation Measures MM Geo-1 and MM Cultural-3. PVCCSP EIR Mitigation Measure MM Geo-1 requires implementing development projects to submit a geotechnical report prepared by a registered geologist that assesses the soil stability within the implementing development project affecting individual lots and building pads. The report is also required to describe the methodology (e.g., overexcavated, backfilled, compaction) being used to implement the project’s design. PVCCSP Mitigation Measure MM Cultural-3 requires implementing development project to retain a professional paleontologist to monitor subsurface excavation that exceeds five (5) feet in depth, and requires avoidance measures in the event of discovery of paleontological resources.

a.i) **Less than Significant Impact.** According to the Perris Valley Commerce Center Specific Plan Environmental Impact Report (SPEIR) and the Perris General Plan Safety Element, the Project site is not located within an Alquist-Priolo Earthquake Fault Zone or other known earthquake fault. The nearest Alquist-Priolo Earthquake Fault Zone is the Lake Elsinore fault, which is located 8 miles east of the Project site. Therefore, impacts would be less than significant.

a.ii) **Less than Significant Impact.** The Project site is subject to strong seismic ground shaking, as are the majority of properties in Southern California. The Project is subject to the seismic design criteria of the California Building Code (CBC). The 2016 California Building Code (California Building Code, California Code of Regulations, Title 24, Volume 2) contains seismic safety provisions with the aim of preventing building collapse during a design earthquake, so that occupants would be able to evacuate after the earthquake. A design earthquake is one with a two percent chance of exceedance in 50 years, or an average return period of 2,475 years. Adherence to these requirements will reduce the potential of the convenience store, car wash, or fueling station canopy from collapsing during an earthquake, thereby minimizing injury and loss of life. Although structures may be damaged during earthquakes, adherence to seismic design requirements will minimize damage to property within the structure because the structure is designed not to collapse. The CBC is intended to provide minimum requirements to prevent major structural failure and loss of life. Adherence to existing regulations will reduce the risk of loss, injury, and death. Impacts due to strong ground shaking would be less than significant with construction of the proposed convenience store, car wash, and fueling station.

a.iii) **Less than Significant Impact.** Liquefaction is a phenomenon that occurs when soil undergoes transformation from a solid state to a liquefied condition when subjected to high intensity ground shaking. This typically occurs where susceptible soils (particularly the medium sand to silt range) are located over a high groundwater table (within 50 feet of the surface). Affected soils lose all strength during liquefaction and foundation failure can occur. According to the North Perris Groundwater Development Initial Siting Study (See Appendix B), groundwater depth in the Project area ranges from approximately 30 feet to 138 feet below ground surface (bgs).¹⁰ Moreover, subsurface lithology is described as sandy soils, which are prone to liquefaction. These findings are consistent with the map of liquefaction zones from the PVCC SP EIR, which indicates that the Project site is located in an area with deep groundwater and susceptible sediments, and thus is be subject to low liquefaction susceptibility. The proposed Project would not expose people or structures to seismic-related ground

failure, including liquefaction with adherence to CBC regulations for construction. With adherence to existing regulations impacts will be less than significant.

a.iv) **No Impact.** According to the site plan the Project site is located in an area that is relatively flat. In addition, the Perris General Plan Safety Element (Exhibit S-4: Slope Instability) shows there is little to no potential for landslides at the Project site. No impacts would occur.

b) **Less than Significant Impact.** Topsoil is used to cover surface areas for the establishment and maintenance of vegetation due to its high concentrations of organic matter and microorganisms. The Project has the potential to expose surficial soils to wind and water erosion during construction activities. However, wind erosion would be minimized through soil stabilization measures required by SCAQMD Rule 403 (Fugitive Dust), such as daily watering. Water erosion would be prevented through the City's standard erosion control practices required pursuant to the CBC and the National Pollution Discharge Elimination System (NPDES) regulations, such as silt fencing, fiber rolls, or sandbags. Following Project construction, the site itself would consist of mostly impervious surfaces and landscaping. Impacts related to soil erosion would be less than significant with implementation of existing regulations.

c) **Less than Significant Impact.** Impacts related to liquefaction and landslides are discussed above in Sections 4.6.a and 4.6.b. Lateral spreading is the downslope movement of surface sediment due to liquefaction in a subsurface layer. The downslope movement is due to gravity and earthquake shaking combined. Such movement can occur on slope gradients of as little as one degree. Lateral spreading typically damages pipelines, utilities, bridges, and structures. Lateral spreading of the ground surface during a seismic activity usually occurs along the weak shear zones within a liquefiable soil layer and has been observed to generally take place toward a free face (i.e. retaining wall, slope, or channel) and to lesser extent on ground surfaces with a very gentle slope. Due to the absence of any channel within or near the Project site, and the subsurface soil conditions that have a low liquefaction susceptibility, the potential for lateral spread occurring on the Project site is considered to be negligible. The proposed Project is required to be constructed in accordance with the CBC. Compliance with existing CBC regulations would limit hazard impacts arising from unstable soils to less than significant levels.

d) **Less than Significant Impact.** The CBC requires special design considerations for foundations of structures built on soils with expansion indices greater than 20. The Project is required to be constructed in accordance with the CBC. Compliance with existing CBC regulations would limit hazard impacts arising from unstable soils to less than significant levels. Impacts would be less than significant.

e) **No Impact.** The Project proposes to connect to the existing EMWD sewer system. The proposed Project would connect to this system and would not require use of septic tanks. No impact will occur.

f) **Less than Significant with Mitigation Incorporated.** A paleontological resource and monitoring assessment for the Perris/Rider Center Project site (Assessor's Parcel Number [APN] 300-300-026) in the City of Perris was prepared by Brian F. Smith and Associates, Inc, and dated October 30, 2020 (See Appendix C). The assessment was based on a previous record search in the area and on environmental considerations as outlined in the Conservation Element of the City of Perris General Plan, adopted by the Perris City Council on July 12, 2005.

The most recent geologic maps of the area show surface exposures of a single geologic formation at the Project site, consisting of lower and middle Pleistocene (approximately 1.8 million to perhaps 200,000 to 300,000 year old) sandy alluvial fan deposits. Holocene (<10,000 year old) alluvial valley deposits (Qyvs_a), which may be present as a veneer over the older alluvial fan deposits, are present about half a mile to the east of the Project site.

The Conservation Element of the City of Perris General Plan adopted on July 12, 2005, contains a section on Paleontological Resources (pages 26, 27 {Exhibit CN-7, "Paleontological Sensitivity"}), and on "Goals, Policies and Implementation Measures" (page 43) that need to be implemented for construction related projects that might adversely affect nonrenewable paleontological resources (*i.e.*, fossils). As shown on the Exhibit CN-7 paleontological sensitivity map, the Project site is located within Area 1, which exhibits exposures of older Pleistocene valley deposits that are assigned a High Paleontological Sensitivity. These deposits have high potential to contain significant fossil resources. Implementation Measure IV.A.4 (under Goal IV – Cultural Resources [Protection of ... paleontological sites.], Policy IV.A [Comply with state and federal regulations and ensure preservation of the significant ... paleontological resources.]) states: "In Area 1 and Area 2 shown on the Paleontological Sensitivity Map [*i.e.*, Exhibit CN-7 on page 27 of the Conservation Element], paleontologic monitoring of all projects requiring subsurface excavations will be required once any excavation begins." In cultural resource management, "excavation" typically includes mass grading activities, as well as basement and/or footing excavations and utility trenching activities.

A previous paleontological literature and collections and records search conducted by the Geological Sciences Division of the San Bernardino County Museum in Redlands, California, of a nearby property to the northeast (Stratford Ranch project), did not identify any known fossil localities in the formational units (*i.e.*, "alluvial valley deposits" and "alluvial fan deposits") in the vicinity of the Project Site. Although Holocene alluvium (*i.e.*, alluvial valley deposits) is generally considered to have been too recently deposited to have potential to contain fossil resources and is typically assigned a "low paleontological resource sensitivity," older (Pleistocene) alluvial fan deposits do have a high potential to contain significant nonrenewable paleontological resources (*i.e.*, fossils), are assigned a "high paleontological resource sensitivity," and typically require paleontological monitoring. Similarly mapped Pleistocene sediments throughout the lowland (valley) areas of Riverside County and the Inland Empire have been reported to yield significant fossil remains, particularly extinct terrestrial mammals from the last Ice Age, such as mammoths, mastodons, giant ground sloths, dire wolves, saber-toothed cats, large and small horses, camels, and bison.

A Paleontological Sensitivity Report generated by the Riverside County Land Information System on March 24, 2008, also assigns a High Paleontological Sensitivity (High B) to the Project site. Based on the results of this evaluation, and on the environmental requirements outlined in the Conservation Element of the City of Perris General Plan, the Project site is located within areas assigned a high paleontological sensitivity, and therefore will require paleontological monitoring of all excavation related activities during the early phases of construction for this Project. Therefore, **Mitigation Measure GEO-1** has been incorporated. The Project will also comply with PVCCSP EIR Mitigation Measure MM Cultural-3. With incorporation of mitigation measures, impacts to paleontological resources will be less than significant.

Mitigation Measures

GEO-1 Prior to the issuance of grading permits, the project applicant shall submit to and receive approval from the City, a Paleontological Resource Impact Mitigation Monitoring Program (PRIMMP).

The PRIMMP shall include the provision of a qualified professional paleontologist (or his or her trained paleontological monitor representative) during onsite and off-site subsurface excavation that exceeds three (3) feet in depth. Selection of the paleontologist shall be subject to approval of the City of Perris Director of Development Services and no grading activities shall occur at the site until the paleontologist has been approved by the City.

Monitoring shall be restricted to undisturbed subsurface areas of older alluvium, which might be present below the surface. The approved paleontologist shall be prepared to quickly salvage fossils as they are unearthed to avoid construction delays. The paleontologist shall also remove samples of sediments which are likely to contain the remains of small fossil invertebrates and vertebrates. The paleontologist shall have the power to temporarily halt or divert grading equipment to allow for removal of abundant or large specimens.

Collected samples of sediments shall be washed to recover small invertebrate and vertebrate fossils. Recovered specimens shall be prepared so that they can be identified and permanently preserved. Specimens shall be identified and curated and placed into an accredited repository (such as the Western Science Center or the Riverside Metropolitan Museum) with permanent curation and retrievable storage.

A report of findings, including an itemized inventory of recovered specimens, shall be prepared upon completion of the steps outlined above. The report shall include a discussion of the significance of all recovered specimens. The report and inventory, when submitted to the City of Perris Planning Division, would signify completion of the program to mitigate impacts to paleontological resources.

4.8 – Greenhouse Gas Emissions

Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Applicable PVCCSP Standards and Guidelines and Mitigation Measures

No PVCCSP Standards and Guidelines are applicable to the analysis of biological resources for the Project.

The proposed Project is required to adhere to PVCCSP Mitigation Measures MM Air-11 through MM Air-14 and Mitigation Measure MM Air-21. PVCCSP EIR Mitigation Measure MM Air-11 requires signage to be posted at loading docks and all entrances to loading areas prohibiting all on-site truck idling in excess of five (5) minutes. PVCCSP Mitigation Measure MM Air-12 requires electrical hookup units where transport refrigeration units (TRUs) are in use to allow TRUs with electric standby capabilities to use them. In order to promote alternative fuels and help support “clean” truck fleets, PVCCSP Mitigation Measures MM Air-13 requires the developer/successor-in-interest of each implementing development project to provide building occupants and businesses with information related to SCAQMD’s Carl Moyer Program or other state programs that restrict operations to “clean” trucks. PVCCSP Mitigation Measure MM Air-14 requires each implementing development project to designate parking spaces for high-occupancy vehicles and provide larger parking spaces to accommodate vans used for ride sharing. PVCCSP Mitigation Measure MM Air-21 requires each implementing development project to implement, at a minimum, use of water conserving appliances and fixtures within all new residential developments.

Note: The analysis provided below is based on use of the California Emissions Estimator Model (CalEEMod) Version 2016.3.2, performed by MIG on September 3, 2020 (See Appendix A).

a) **Less than Significant Impact.** Gases that trap heat in the atmosphere and affect regulation of the Earth’s temperature are known as greenhouse gases (GHGs). GHG that contribute to climate change are a different type of pollutant than criteria or hazardous air pollutants because climate change is global in scale, both in terms of causes and effects. Some GHG are emitted to the atmosphere naturally by biological and geological processes such as evaporation (water vapor), aerobic respiration (carbon dioxide), and off-gassing from low oxygen environments such as swamps or exposed permafrost (methane); however, GHG emissions from human activities such as fuel combustion (e.g., carbon dioxide) and refrigerants use (e.g., hydrofluorocarbons) significantly contribute to overall GHG concentrations in the atmosphere, climate regulation, and global climate change. The 1997 United

Nations' Kyoto Protocol international treaty set targets for reductions in emissions of four specific GHGs – carbon dioxide, methane, nitrous oxide, and sulfur hexafluoride – and two groups of gases – hydrofluorocarbons and perfluorocarbons. These GHG are the primary GHG emitted into the atmosphere by human activities. The six most common GHG's are described below.

- Carbon Dioxide (CO₂)
- Methane (CH₄)
- Nitrous oxide (N₂O)
- Sulfur hexafluoride
- Hydrofluorocarbons (HFCs) and
- Perfluorocarbons (PFCs).

GHG emissions from human activities contribute to overall GHG concentrations in the atmosphere and the corresponding effects of global climate change (e.g., rising temperatures, increased severe weather events such as drought and flooding). The potential for a GHG to absorb and trap heat in the atmosphere is considered its global warming potential (GWP). The reference gas for measuring GWP is CO₂, which has a GWP of one. By comparison, CH₄ has a GWP of 25, which means that one molecule of CH₄ has 25 times the effect on global warming as one molecule of CO₂. Multiplying the estimated emissions for non-CO₂ GHGs by their GWP determines their carbon dioxide equivalent (CO₂e), which enables a project's combined global warming potential to be expressed in terms of mass CO₂ emissions.

Project GHG Emissions

The proposed Project would generate GHG emissions from both short-term construction and long-term operational activities. As described in more detail below, the Project would not generate GHG emissions that exceed SCAQMD-recommended GHG thresholds. In order to provide guidance to local lead agencies on determining the significance of GHG emissions in their CEQA documents, the SCAQMD convened the first GHG Significance Threshold Working Group (Working Group) meeting on April 30, 2008. To date, the Working Group has convened a total of 15 times, with the last meeting taking place on September 28, 2010. Based on the last Working Group meeting, the SCAQMD identified an interim, tiered approach for evaluating GHG emissions intent on capturing 90 percent of development projects where the SCAQMD is not the lead agency. The following describes the basic structure of the SCAQMD's tiered, interim GHG significance thresholds (SCAQMD, 2010):

- Tier 1 consists of evaluating whether or not the project qualifies for applicable CEQA exemptions.
- Tier 2 consists of determining whether or not a project is consistent with a greenhouse gas reduction plan. If a project is consistent with a greenhouse gas reduction plan, it would not have a significant impact.
- Tier 3 consists of using screening values at the discretion of the Lead Agency; however, the Lead Agency should be consistent for all projects within its jurisdiction. The following thresholds were proposed for consideration:
 - 3,000 MTCO₂e/year for all land use types; or
 - 3,500 MTCO₂e/year for residential; 1,400 MTCO₂e/year for commercial; 3,000 MTCO₂e/year for mixed use projects.
- Tier 4 has three options for projects that exceed the screening values identified in Tier 3:
 - Option 1: Reduce emissions from business as usual by a certain percentage (currently undefined); or
 - Option 2: Early implementation of applicable AB 32 Scoping Measures; or

- Option 3: For plan-level analyses, analyze a project’s emissions against an efficiency value of 6.6 MTCO₂e/year/service population by 2020 and 4.1 MTCO₂e/year/service population by 2035. For project-level analyses, analyze a project’s emissions against an efficiency value of 4.8 and 3.0 MTCO₂e/year/service population for the 2020 and 2035 calendar years, respectively.

The SCAQMD’s interim Tier 3, 3,000 MTCO₂e per year for all land use types was intended to address GHG emissions through the Year 2020, consistent with AB 32 GHG emissions reduction goals at the state level. Since the proposed Project would become operational as early as 2022 (i.e., two years after 2020), the 3,000 MTCO₂e per year interim threshold is not directly applicable to the proposed Project. As such, in addition to the 3,000 MTCO₂e per year interim threshold, this analysis also uses a Project-specific GHG emissions goal of 1,800 MTCO₂e per year, which demonstrates progress towards the state’s next GHG emission reduction goal in 2030 (i.e., 40 percent below 1990 levels by 2030).^{vi} Construction activities would generate GHG emissions primarily from equipment fuel combustion as well as worker and vendor trips to and from the project site during site preparation, grading, building construction, paving, and architectural coating activities. Construction activities would cease to emit GHG upon completion, unlike operational emissions that would be continuous year after year until the project is decommissioned. The SCAQMD recommends amortizing construction GHG emissions over a 30-year period and including with operational emissions estimates. This normalizes construction emissions so that they can be grouped with operational emissions and compared to appropriate thresholds, plans, etc. GHG emissions from construction of the Project were estimated using CalEEMod, Version 2016.3.2, based on the same modeling parameters described in Section 4.3. The Project’s total construction emissions, as estimated in CalEEMod, are shown in Table 7, *Project Construction Greenhouse Gas Emissions*.

**Table 7
Project Construction Greenhouse Gas Emissions**

Construction Year	GHG Emissions (MT/YR)			
	CO ₂	CH ₄	N ₂ O	TOTAL ^(A)
2020	91.2	<0.0 ^(B)	0.0	91.6
2021	233.1	<0.0 ^(B)	0.0	234.1
Total	324.3	0.1	0.0	325.7
<i>Amortized^(C)</i>	<i>10.8</i>	<i><0.0^(B)</i>	<i>0.00</i>	<i>10.9</i>

Source: MIG 2020 (See Appendix A)
 Note:
 (A) MTCO₂e
 (B) <0.0 does not mean emissions are zero; rather, it means emissions are greater than 0.00, but less than 0.1.
 (C) Amortized over 30-years. Slight variations may occur due to rounding.

Once operational, the proposed convenience store, gasoline fueling station, and car wash would generate GHG emissions from area, stationary, mobile, water/wastewater, and solid waste sources.

^{vi} The 1,800 MTCO₂e per year goal was developed by taking the SCAQMD’s Tier 3 threshold of 3,000 MTCO₂e per year, which was the threshold to reduce emissions back to 1990 levels, and reducing it by 40 percent (3,000 MTCO₂e/yr * (1 - 0.4) = 1,800 MTCO₂e/yr). This reduction is consistent with the GHG reductions required under SB 32. This linear reduction approach oversimplifies the threshold development process. The City is not adopting nor proposing to use 1,800 MTCO₂e as a CEQA GHG threshold for general use; rather, it is only intended for to provide additional context and information on the magnitude of the proposed Project’s GHG emissions.

The Project’s operational GHG emissions, combined with the amortized construction emissions are shown in Table 8, *Project Operational Greenhouse Gas Emissions*.

**Table 8
Project Operational Greenhouse Gas Emissions**

Source	GHG Emissions (MT/YR)			
	CO ₂	CH ₄	N ₂ O	TOTAL ^(A)
Area	<0.0 ^(B)	0.0	0.0	<0.0 ^(B)
Energy	25.0	<0.0 ^(B)	<0.0 ^(B)	25.1
Mobile	1,247.9	0.1	0.0 ^(B)	1,251.2
Solid Waste	2.7	0.2	0.0 ^(B)	6.8
Water/Wastewater	2.2	<0.0 ^(B)	<0.0 ^(B)	2.6
Amortized Construction	10.8	<0.0 ^(B)	0.0	10.9
<i>Total</i> ^(C)	1,288.6	0.3	<0.0 ^(B)	1,296.6
SCAQMD 2020 Interim Threshold				3,000
Project-specific 2030 GHG Emissions Goal				1,800
SCAQMD Interim Threshold or Project-specific Goal Exceeded?				No
Source: MIG 2020 (See Appendix A)				
Note:				
(A) MTCO _{2e}				
(B) <0.0 means that emissions are greater than zero, but less than 0.05.				
(C) Slight variations may occur due to rounding.				

As shown in Table 8, the Project’s potential increase in GHG emissions would be below the SCAQMD 2020 interim GHG threshold for 2020 and derived 2030 project-specific GHG emission reduction goal of 1,800 MTCO_{2e}. This impact would be less than significant.

b) **Less than Significant Impact.** The Project would not conflict with CARB’s Scoping Plan, the Southern California Association of Governments (SCAG) 2045 RTP/SCS, the City of Perris General Plan, or the City of Perris Climate Action Plan. The project’s consistency with these plans is described in more detail below.

CARB Scoping Plan

The 2017 Climate Change Scoping Plan is CARB’s primary document used to ensure State GHG reduction goals are met. The plan identifies an increasing need for coordination among State, regional, and local governments to achieve the GHG emissions reductions that can be gained from local land use planning and decisions. The major elements of the 2017 Climate Change Scoping Plan, which is designed to achieve the State’s 2030 GHG reduction goal include:

- Implementing and/or increase the standards of the Mobile Source Strategy, which include increasing zero emission vehicle (ZEV) buses and trucks.
- Low Carbon Fuel Standard (LCFS), with an increased stringency (18 percent by 2030).
- Implementation of SB 350, which expands the Renewable Portfolio Standard (RPS) to 50 percent and doubles energy efficiency savings by 2030.
- California Sustainable Freight Action Plan, which improves freight system efficiency, utilizes near-zero emissions technology, and deployment of ZEV trucks.
- Implementing the proposed Short-Lived Climate Pollutant Strategy, which focuses on reducing CH₄ and hydrocarbon emissions by 40 percent and anthropogenic black carbon emissions by 50 percent by year 2030.

- Continued implementation of SB 375.
- Post-2020 Cap-and-Trade Program that includes declining caps.
- 20 percent reduction in GHG emissions from refineries by 2030.
- Development of a Natural and Working Lands Action Plan to secure California's land base as a net carbon sink.

Nearly all of the specific measures identified in the 2017 Climate Change Scoping Plan would be implemented at the state level, with CARB and/or another state or regional agency having the primary responsibility for achieving required GHG reductions. The Project, therefore, would not directly conflict with any of the specific measure identified in the 2017 Climate Change Scoping Plan.

Southern California Association of Governments RTP/SCS

The SCAG 2045 RTP/SCS, Connect SoCal, is a growth strategy and transportation plan whose primary intent is to demonstrate how the SCAG region would meet its GHG reduction target through the year 2045. Many of the measures included in Connect SoCal are focused on: the expansion of, and access to, mass transit (e.g., light rail, commuter rail, bus rapid transit, etc.); planning growth around livable corridors; and locating new housing and job growth in high quality transit areas. Collectively, these land use plans, in conjunction with measures at the state-level to improve fuel efficiency standards, are designed to meet CARB's goal for the SCAB region for reducing per capita GHG emissions in the region by eight percent by 2020—compared with 2005 levels—and by 19 percent by 2035 (CARB 2018).

The proposed Project is located within a High Quality Transit Area, as designated in Connect SoCal, meaning that it is within one-half mile from major transit stops and high quality transit corridors (based on the language of SB 375).^{vii} Therefore, employees and potential customers of the convenience store would have additional transit amenities available that could facilitate a reduction in single-occupancy vehicle trips to and from the site. Furthermore, the placement of a new fueling station along Perris Boulevard could provide drivers with easier access to fuel, as opposed to deviating from their primary route (i.e., the Project could provide easier refueling for pass-by trips). Based on the Project's location and type of development proposed (i.e., infill), the Project would not conflict with Connect SoCal.

City of Perris General Plan

The City of Perris's General Plan goals and policies that are applicable to GHG reductions and climate change are as follows:

Goal VIII: Sustainable Future - Create a vision for energy and resource conservation and the use of green building design for the City, to protect the environment, improve quality of life, and promote sustainable practices.

Policy VIII.A: Adopt and maintain development regulations that encourage water and resource conservation.

^{vii} The definitions of major transit stops and high quality transit corridors are as follows: A) Major Transit Stop: A site containing an existing rail transit station, a ferry terminal served by either a bus or rail transit service, or the intersection of two or more major bus routes with a frequency of service interval of 15 minutes or less during the morning and afternoon peak commute periods (CA Public Resource Code Section 21064.3). It also includes major transit stops that are included in the applicable regional transportation. B) High-Quality Transit Corridor (HQTC): A corridor with fixed route bus service with service intervals no longer than 15 minutes during peak commute hours.

Policy VIII.B: Adopt and maintain development regulations that encourage recycling and reduced waste generation by construction projects.

Policy VIII.C: Adopt and maintain development regulations which encourage increased energy efficiency in buildings, and the design of durable buildings that are efficient and economical to own and operate. Encourage green building development by establishing density bonuses, expedited permitting, and possible tax deduction incentives to be made available for developers who meet LEED building standards for new and refurbished developments (U.S. Green Building Council's Leadership in Energy and Environmental Design green building programs).

Policy VIII.D: Educate and promote the health and productivity benefits for residents, workers and visitors to the City that can be achieved through Green Building techniques and conservation of resources.

Goal IX: Encourage project designs that support the use of alternative transportation facilities.

Policy IX.A: Encourage land uses and new development that support alternatives to the single occupant vehicle.

Goal X: Encourage improved energy performance standards above and beyond the California Title 24 requirements.

Policy X.A: Establish density bonuses, expedited permitting, and possible tax deduction incentives to be made available for developers who exceed current Title 24 requirements for new development.

Policy X.B: Encourage the use of trees within project design to lessen the energy needs, reduce the urban heat island effect, and improve air quality throughout the region.

Policy X.C: Encourage strategic shape and placement of new structures within new commercial and industrial projects.

The Project involves development of a convenience store, gasoline refueling station, and car wash. It would not interfere with the City's goals of creating a vision for a sustainable future, encouraging alternative transportation facilities, or encouraging improved energy performance standards. As such, the Project would not conflict with the City's General Plan.

City of Perris Climate Action Plan

The City of Perris participates in the Western Riverside Energy Leader Partnership (WRELP) Program, which has developed municipal and community-wide Energy Action Plans (EAPs) for many jurisdictions in the subregion. Perris's Climate Action Plan (CAP), including the GHG inventories and forecasts contained within, is based on the Western Riverside Council of Governments (WRCOG) Subregional CAP. The Perris CAP utilizes WRCOG's analysis of existing GHG reduction programs and policies that have already been implemented in the subregion and of applicable best practices from other regions to assist in meeting the 2020 subregional reduction target. The resulting GHG reduction measures chosen for the Subregional CAP were based on their GHG-reduction potential, cost-benefit characteristics, funding availability, and feasibility of implementation. Perris, and other member jurisdictions, independently determined the level of implementation for each measure, and the WRCOG CAP presents the results collectively, demonstrating the collaborative effort and partnership that will facilitate implementation. These reduction measures are organized into major economic sectors similar to the emissions inventory: Energy- including electricity and natural gas consumption, Transportation and Land Use, and Solid Waste measures (E-1, T-1 through T-12, and SW-1 and SW-2).

The CAP sets forth 16 measures to guide the City in meeting reduction goals in energy use, transportation and land use, and solid waste. The goals and policies identified in the CAP represent the City's actions to achieve the GHG reduction targets of AB 32 for target year 2020. Although the proposed Project would become operational in 2021, approximately a year after the 2020 goal set forth

in the City’s CAP, many of the measures identified in the CAP would still help reduce GHG emissions associated with the proposed Project. An analysis of the Proposed project’s consistency with applicable measures in the City’s CAP is provided in Table 9, *Project Consistency with the City of Perris Climate Action Plan*.

**Table 9
Project Consistency with the City of Perris Climate Action Plan**

Applicable Measure	Consistency Analysis
Energy Use	
E-1. Energy Action Plans: Improve municipal and community-wide energy efficiency and reduce energy consumption through the adoption of local Energy Actions Plans (EAP).	Consistent: The proposed Project would be built to meet the 2019 Building Energy Efficiency Standards and CalGreen, which is included by reference in Municipal Code Section 16.08.050.
Transportation and Land Use	
T-1. Bicycle Infrastructure Improvements: Expand on-street and off-street bicycle infrastructure, including bicycle lanes and bicycle trails.	Consistent: The Project includes bicycle racks and will construct a new concrete sidewalk along the pedestrian right-of-way along Rider Street. These improvements will aid in the City’s ongoing implementation of the Perris Master Trail Plan.
T-2. Bicycle Parking: Provide additional options for bicycle parking.	Consistent: The Project will include bicycle racks as a condition of approval.
T-3. End of Trip Facilities: Encourage use of non-motorized transportation modes by providing appropriate facilities and amenities for commuters.	Consistent: The Project will include bicycle racks which are considered end-of-trip commuter facilities.
T-4. Transit Frequency Expansion: Collaborate with local and regional transit providers to provide more frequent transit in the subregion.	Not Applicable: This measure is implemented at the regional level by the regional transit agency. However, the Project will not conflict with implementation of this measure.
T-5. Traffic Signal Coordination: Incorporate technology to synchronize and coordinate traffic signals along local arterials.	Not Applicable: The Project does not include construction of traffic signals. However, the Project will not conflict with implementation of this measure.
T-6. Density: Improve jobs-housing balance and reduce vehicle miles traveled by increasing household and employment densities.	Consistent: The Project will contribute to buildout of the City’s General Plan, will increase density, and will make non-motorized transportation options such as walking and bicycling more viable by constructing a new concrete sidewalk along the Project’s boundary with Rider Street and by providing bicycle racks.
T-7. Mixed-Use Development: Provide for a variety of development types and uses.	Not Applicable: The Project does not include a mix of development types and uses. However, the Project will not conflict with implementation of this measure.

Applicable Measure	Consistency Analysis
T-8. Design/ Site Planning: Design neighborhoods and sites to reduce VMT.	Consistent: The Project satisfies multiple VMT screening criteria and is therefore presumed to have a less than significant VMT impact.
T-9. Pedestrian-Only Areas: Encourage walking by providing pedestrian-only community areas.	Not Applicable: The Project does not include provision of pedestrian-only community areas. However, the Project will not conflict with implementation of this measure.
T-10. Limit Parking Requirements for New Development: Reduce requirements for vehicle parking in development projects.	Consistent: The Project is consistent with Perris’s amended zoning that reduces parking requirements for new non-residential development by 10%.
T-11. Voluntary Transportation Demand Management: Reduce demand for roadway travel through incentives for alternative modes of transportation and disincentives for driving.	Not Applicable: The Project is not a use that is conducive to TDM strategies such as parking “cash out” programs and allowing telecommuting. However, the Project will not conflict with the implementation of this measure.
T-12. Accelerated Bike Plan Implementation: Accelerate the implementation or all or specified components of a jurisdiction’s adopted bike plan.	Consistent: The Project includes bicycle racks and will construct a new concrete sidewalk along the pedestrian right-of-way along Rider Street. These improvements will aid in the City’s ongoing implementation of the Perris Master Trail Plan.
Solid Waste	
SW-1. Yard Waste Collection: Provide green waste collection bins community-wide.	Not Applicable: The Project would not generate residential yard waste. The Project will not conflict with implementation of this measure.
SW-2. Food Scrap and Compostable Paper Division: Divert food and paper waste from landfills by implementing collection system.	Consistent: The Project will utilize separate food scrap collection bins.
Source: Perris, 2016.	

Community Energy Action Plan

The Perris Community Energy Action Plan (CEAP) is designed to improve the energy efficiency of the City. The CEAP assists the City in prioritizing goals, policies, and assign appropriate energy consumption targets across the community. The CEAP includes statewide policies as R1 reduction measures. The R1 measures are included in the Perris CAP to show all of the anticipated reduction strategies identified in the AB 32 Scoping Plan for implementation at the state level that will ultimately result in a reduction of GHG emissions at the local level.

At the local level, CEAP R2 and R3 measures would be incorporated to provide additional reductions in GHG emissions. R2 measures can be quantified to show the value of the reduction in GHG emissions. R3 measures provide a program through which reductions in emissions would occur, but their value cannot be quantified. For example, R3-E3: Energy Efficiency Training and Public Education, is a measure that provides education to inform people of the programs, technology, and potential funding

available to be more energy efficient, and provides incentives to participate in the voluntary programs shown in some of the R2 measures. R3-E3 is supportive of measures R2-E1 through R2-E6 because it would provide more publicity, reduce the perceived challenge of being energy efficient, and provide information on potential rebates and other funding programs that will make retrofits more accessible. Therefore, although by itself R3-E3 cannot be quantified, its implementation provides a level of assurance that the reduction goals specified in the R2 measures will be achieved.

To reduce commercial GHG emissions beyond the reductions associated with the R1 reduction measures, the City has implemented measures R2-E2: New Commercial Energy Efficiency and R2-E4: Commercial Renewable Energy Requirements. These reduction measures, which apply to the proposed Project, are discussed in detail below.

R2-E2: New Commercial Energy Efficiency. Construction of new commercial buildings allows the opportunity to include energy efficient measures and lessen the impact of the new development on both energy demands and the community-wide GHG emissions. Although not limited to these actions, this reduction goal can be achieved through incorporation of the following:

- Installation of Energy Star qualified or equivalent appliances, including air conditioning and heating units, dishwashers, water heaters, etc.;
- Installation of solar water heaters;
- Installation of Energy Star qualified or equivalent windows and appropriate insulation for climate zone;
- Installation of Energy Star qualified or equivalent lighting;
- Installation of Energy Star qualified or equivalent computer systems and electronics to reduce electricity need from plug load;
- Optimizing conditions for natural heating, cooling, and lighting by building siting and orientation;
- Use of features that incorporate natural ventilation;
- Installation of light-colored “cool” pavements, and strategically located shade trees along all bicycle and pedestrian routes; and
- Use of skylights, reflective surfaces, and natural shading in building design and layouts.

The estimated emissions reduction potential of this measure is 3,004 MT CO₂e per year. These emissions reductions assume all new commercial units will increase energy efficiency an average of 10% beyond 2008 T-24 standards. These emissions reductions assume a 25% decrease in electricity and natural gas use from new commercial development.

R2-E4: Commercial Renewable Energy Requirements. Construction of new commercial buildings allows the opportunity to include renewable energy production and lessen the impact of the new development on both energy demands and community-wide GHG emissions. This measure would provide an incentive for facilities to be equipped with “solar-ready” features where feasible to facilitate future installation of solar energy systems. These features would include optimal solar orientation for buildings (south facing roof sloped at 20 degrees to 55 degrees from the horizontal), clear access on south sloped roofs, electrical conduit installed for solar electric system wiring, plumbing installed for solar hot water systems, and space provided for a solar hot water tank. Additional renewable energy measures include:

- On-site solar photovoltaic;
- On-site thermal water heating;
- Provide support for off-site solar or wind generation.

Evaluation of Environmental Impacts

The estimated emissions reduction potential of this measure is 1,843 MT CO₂e per year. These emissions reductions assume 20% of electricity use from new commercial development would be derived from renewable energy, and that an average of 5kW of photovoltaic cells would be installed per 10,000 square feet of building space.

The proposed Project would include installation of Energy Star qualified or equivalent appliances, including air conditioning and heating units, water heaters, windows, insulation, lighting, computer systems and electronics, light-colored pavement, and strategically located shade trees along pedestrian rights-of way adjacent to the Project. The proposed Project would also include installation of solar-ready features, where feasible, to facilitate future installation of solar energy systems. The proposed Project will be constructed in compliance with the California Building Energy Efficiency Standards (Title 24, Parts 6 and 11) of the California Building Code Standards. With adherence to existing regulations for commercial developments, the proposed Project would not conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases. Impacts will be less than significant.

4.9 – Hazards and Hazardous Materials

Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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 or excessive noise for people residing or working in the project area?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Applicable PVCCSP Standards and Guidelines and Mitigation Measures

The PVCCSP includes Standards and Guidelines relevant to development within the Airport Influence Zones I and II. These Standards and Guidelines summarized below are incorporated as part of the Project and are assumed in the analysis presented in this section. The chapters/section numbers provided correspond to the PVCCSP chapters/sections.

Airport Overlay Zone (Chapter 2.1.6 of the PVCCSP)

Accident Potential Zone I (APZ-I)

This zone prohibits many uses that involve hazardous materials (such as gas stations), and those uses that have higher densities of people per acre. Nonresidential development will be limited to those uses that have not more than 25 persons per acre such as office parks, warehouses and distribution centers or similar uses. This zone prohibits new residential development, schools or churches. It should be noted that there is some existing residential development in this area.

Accident Potential Zone II (APZ-II)

This zone prohibits many uses that involve hazardous materials (such as gas stations), and those uses that have higher densities of people per acre. Non-residential development will be limited to those uses that have not more than 50 persons per acre at any time, including hotels and motels. This zone prohibits new residential development, schools or churches.

AIRPORT OVERLAY ZONE (Chapter 12.0 of the PVCCSP)

The Airport Overlay Zone (AOZ) is an area approximately 1,032 acres and generally extending south of the runway at March Air Reserve Base/Inland Port (March ARB/IP) through the central part of the Perris Valley Commerce Center (PVCC) Specific Plan area. This zoning overlay defines specific land uses and land use densities as distinguished by each of these areas. This zoning overlay corresponds to the March ARB/IP Airport Land Use Compatibility Plan adopted in 2014 and the March ARB/IP Safety Zones: M (Military), A (Clear Zone), B1 (Inner Approach Departure Zone), B2 (High Noise Zone), C1 (Primary Approach/Departure Zone), C2 (Flight Corridor Zone), D (Flight Corridor Buffer), and E (Other Airport Environs). These safety zones are shown on Figure 12.0-1. The AOZ corresponds generally with the boundaries and provisions of the 2014 March ARB/IP ALUCP and airport influence area.

Airport Overlay Zones and Delineation (Chapter 12.1 of the PVCCSP)

The following March zones apply throughout the Perris Valley Commerce Center. Refer to Figure 12.0-1 below for overlay zones.

Zone M (Military) includes all lands owned by the U.S. Air Force. By law, neither local governments nor the Riverside Airport Land Use Commission have jurisdiction over federal lands.

Zone A (Clear Zone) contains lands within the Clear Zone (CZ) at each end of the runway, but not on the base property. As defined by the 2005 Air Installation Compatible Use Zone (AICUZ), the clear zones are 3,000 feet wide and 3,000 feet long beginning at the runway ends. Zone A at the south end of the runway includes privately owned land. The U.S. Air Force has acquired restrictive use easements preventing the development of this property.

Zone B1 (Inner Approach/Departure Zone) encompasses areas of high noise and high accident potential risk within the inner portion of the runway approach and departure corridors. The zone is defined by the boundaries of Accident Potential Zones (APZs) I and II, adjusted on the north to take into

account the turning departure flight tracks. The majority of the zone is exposed to projected noise levels in excess of 65 dB CNEL.

Zone B2 (High Noise Zone) is similar to Zone B1 in terms of noise impact, but is subject to less accident potential risk. The projected 65 dB CNEL contour forms the basis for the zone boundary. The actual boundary follows roads, parcel lines or other geographic features that lie generally just beyond the contour line. Lands within the APZs are excluded from Zone B2. Most of the zone lies adjacent to the runway. To the north, portions extend along the sides of Zone B1. To the south, a small area borders the sides of Zones A and B1 and a larger area extends two (2) miles beyond the south end of Zone B1.

Zone C1 (Primary Approach/Departure Zone) encompasses most of the projected 60 dB CNEL contour plus immediately adjoining areas. The zone boundary follows geographic features. Accident potential risks are moderate in that aircraft fly at low altitudes over or near the zone. To the south, an area beginning just beyond Nuevo Road—approximately five (5) miles from the runway end—is excluded from the zone. Exposure to noise in this area is greater (above 60 dB CNEL), however, the accident potential risks at this distance from the runway are reduced by the altitude at which aircraft typically fly over the area. Single-event noise levels are potentially disruptive in this zone.

Zone C2 (Flight Corridor Zone) contains the remainder of the lands within the 60 dB CNEL contour to the south. Although aircraft overflying this area are at 2,000 feet or more above the runway on descent and generally 3,000 feet or more on takeoff, single-event noise levels combined with the frequency of overflights, including at night, make noise a moderate compatibility concern. A larger portion of Zone C2 is situated to the west of the airport and includes locations above which most of the military closed-circuit flight training aircraft activity takes place. Aircraft overfly this area at circuit altitude (3,000 feet) or higher (similar to the south portion of Zone C2), but high terrain in some locations makes the flight altitude above ground level comparatively lower. Single-event noise levels in this area can be intrusive. However, at present, nearly all of the flight training activity takes place on weekdays during daylight hours, thus reducing the significance of the noise impact on residential land uses. Accident potential risk levels in both portions of Zone C2 are judged to be moderate to low with flight training aircraft activity being the primary concerns

Zone D (Flight Corridor Buffer) is intended to encompass other places where aircraft may fly at or below 3,000 feet above the airport elevation either on arrival or departure. Additionally, it includes locations near the primary flight paths where aircraft noise may be loud enough to be disruptive. Direct overflights of these areas may occur occasionally. Accident potential risk levels in this zone are low.

Zone E (Other Airport Environs) contains the remainder of the Airport Influence Area (AIA). Noise impacts are low (this area is beyond the 55-CNEL noise contour), and risk of accidents is low. Airspace protection is the major concern in that aircraft pass over these areas while flying to, from, or around March ARB/IPA.

The High Terrain Zone serves a more focused purpose than the preceding eight zones. It is intended to identify locations where objects may be hazards to the aircraft operating in the airport's airspace and require careful review. This zone is within the FAR Part 77 surfaces for March ARB/IPA. For a complete listing of those land uses prohibited or permitted with restrictions within the March ARB/IP safety zones, see Tables 12.0-1.

Applicability (Chapter 12.1.1 of the PVCCSP)

Regulations in this Chapter shall apply to all uses, activities, and existing and proposed development project on properties within the March ARB/IP ALUCP Zone A (Clear Zone), Zone B1 (Inner Approach

Departure Zone), Zone B2 (High Noise Zone), Zone C1 (Primary Approach/Departure Zone), Zone C2 (Flight Corridor Zone), Zone D (Flight Corridor Buffer), and Zone E (Other Airport Environs) designated in the ALUCP. Should an override action be taken, the City of Perris shall ensure that development is consistent with direction in the State Aeronautics Act, the FAA regulations, and guidance provided in the Caltrans division of Aeronautics Airport Land Use Planning Handbook.

Existing Development and Land Uses

Non-conforming uses and structures shall comply with Airspace Protection Standards of 19.51.070 which prohibit any activities that pose a risk to flight operations within the AOZ. Existing land uses that are not consistent with the AOZ are nonconforming uses and may continue. No increase in density for non-conforming residential land uses is permitted. Non-conforming buildings and uses shall comply with Perris Municipal Code Chapter 19.80 (Nonconforming Building and Uses) provisions for expiration of nonconforming status and proposed changes to land use that does not conform to the AOZ. Development or land uses shall be considered “existing” if one of the following conditions are met:

- A vesting tentative map has been approved and has not expired or all discretionary approvals have been obtained and have not expired.
- Building permits have been issued and have not expired.
- The structures and site development have been legally established and physically exist.

Procedures (Chapter 12.1.2 of the PVCCSP)

Approval

All ministerial and discretionary actions within the AOZ shall be reviewed for consistency with this Chapter prior to approval.

Mandatory findings for approval

When a project, use or activity is subject to discretionary actions requiring a public hearing or notice, the applicable review authority shall make all of the following findings, as applicable:

- The project, use or activity complies with the noise compatibility policies of the AOZ.
- The project, use or activity complies with residential and non-residential density standards and other development conditions as per Table 12.0-1, March ARB/IP Basic Compatibility Criteria Table.
- The project, use or activity complies with Figure 12.0-1, March ARB/IP Compatibility Map.
- The project, use or activity complies with the airspace protection policies of the AOZ.
- The project, use or activity complies with the overflight policies of the AOZ.

Amendments

Other than General Plan, Specific Plan, or Zoning Code changes addressed through a previous referral to the Riverside County Airport Land Use Commission (RCALUC), or any action to overrule any determination of the March ARB/IP ALUCP, proposed general plan land use amendments, zoning amendments, and specific plan amendments that impact density or intensity of development within the AOZ shall be referred to the RCALUC for a determination of compatibility with the adopted March ARB/IP ALUCP.

Override Provisions

Should the RCALUC update the March ARB/IP ALUCP, the City Council of the City of Perris shall review the updated March ARB/IP ALUCP and either make changes to applicable General Plan sections,

zoning, and implementing ordinances, or the City Council may, pursuant to Public Utilities Code Section 21676(b), overrule the RCALUC.

Compatibility with March ARB/IP ALUCP (Chapter 12.1.3 of the PVCCSP)

The Perris Valley Commerce Center is located in March ARB/IP safety zones and therefore all development shall comply with the following measures:

Avigation Easement

Development projects shall provide an executed avigation easement to the March Joint Powers Authority (MJPA). Avigation easement forms and instructions are available on the MJPA website, www.marchjpa.com.

Noise Standard

All building office areas shall be constructed with appropriate sound mitigation measures as determined by an acoustical engineer or architect to ensure appropriate interior sound levels.

Land Use and Activities

Compatible and approved land uses and activities shall not be altered or amended without City consent. The following shall be prohibited:

- Any use that would direct a steady light or flashing light of red, white, green or amber colors (associated with airport operations) towards an aircraft engaged in a climb following takeoff or landing at an airport, other than FAA-approved navigational lights and systems.
- Any use that would cause sunlight to be reflected towards an aircraft engaged in a climb following takeoff or descent towards a landing at an airport.
- Any use that would generate excessive smoke or water vapor or attract large concentrations of birds, or that would otherwise affect safe air navigation within the AIA.
- Any use that would generate electrical interference that may be detrimental to the operation of aircraft or the aircraft's navigation instrumentation.

Retention and Water Quality Basins

All retention and water quality basins shall be designed to dewater within 48 hours of a rainfall event.

Notice of Airport in the Vicinity

Prior to approval of new development projects, all applicants shall prepare an aerial photograph identifying the location of the March ARB/IP in relationship to the project site, and a Notice of Airport in the Vicinity. Because the entire PVCC SP lies within the MARB Airport Influence Area, notice must be provided to all potential purchasers or tenants and shall consist of the following:

NOTICE OF AIRPORT IN VICINITY

This property is presently located in the vicinity of an airport, within what is known as an airport influence area. For that reason, the property may be subject to some of the annoyances or inconveniences associated with proximity to airport operations (for example: noise, vibration or odors). Individual sensitivities to those annoyances can vary from person to person. You may wish to consider what airport annoyances, if any, are associated with the property before you complete your purchase and determine whether they are acceptable to you. Business & Professions Code Section 11010 (b)(13)(A)

Disclosure

The applicant shall provide full disclosure of the aviation easement and Notice of Airport in the Vicinity to all prospective purchasers or tenants.

Lighting Plans

Prior to issuance of a building permit, lighting plans shall be submitted to an airport lighting consultant or March ARB/IP), for review and comment prior to issuance of building permits.

Height Restrictions per Federal Aviation Regulations Part 77

The federal government has developed standards for determining obstructions in navigable airspace. Federal Aviation Regulations Part 77 defines a variety of imaginary surfaces at certain altitudes around airports. The Part 77 surfaces include the primary surface, approach surface, transitional surface, horizontal surface and conical surface. Collectively, the Part 77 surfaces around an airport define a bowl-shaped area with ramps sloping up from each runway end. The Part 77 regulations identify elevations at which structures may present a potential hazard to air navigation and require FAA review. Please see Appendix D of the 2005 March ARB/IP AICUZ that describes FAR Part 77 height obstruction criteria surrounding the airport.

Form 7460

Development projects in the AOZ shall submit FAA Form 7460-1 (Notice of Proposed Construction or Alteration) through the process outlined at oaaaa.faa.gov, and shall receive and provide the City of Perris a copy of the FAA's "Determination of No Hazard to Air Navigation" prior to project construction. Should cranes or vertical equipment be used during the construction process, a separate Form 7460-1 is required for construction equipment to be submitted.

Infill

Infill: Where development not in conformance with the criteria set forth in this Compatibility Plan already exists, additional infill development of similar lands uses may be allowed to occur even if such lands uses are to be prohibited elsewhere in the zone. This exception does not apply within Compatibility Zones A or B1.

- (a) A parcel can be considered for infill development if it meets all of the following criteria plus the applicable provisions of either sub-policy (b) or (c) below:
- (1) The parcel size is no larger than 20.0 acres.
 - (2) At least 50 % of the site's perimeter is bounded (disregarding roads) by existing uses similar to, or more intensive than, those proposed.
 - (3) The proposed project would not extend the perimeter of the area defined by the surrounding, already developed, incompatible uses.
 - (4) Further increases in the residential density, nonresidential usage intensity, and/or other incompatible design or usage characteristics (e.g., through use permits, density transfers, addition of second units on the same parcel, height variance, or other strategy) are prohibited.
 - (5) The area to be developed cannot previously have been set aside as open land in accordance with policies contained in this Plan unless replacement open land is provided within the same compatibility zone.
- (b) For residential development, the average development density (dwelling units per gross acre) of the site shall not exceed the lesser of:
- (1) The average density represented by all existing lots that lie fully or partially within a distance of 300 feet from the boundary of the parcel to be divided; or

- (2) Double the density permitted in accordance with the criteria for that location as indicated in the Compatibility Criteria Table 1 in Chapter 19.51, Airport Overlay Zone, of the City of Perris zoning code.
- (c) For nonresidential development, the average usage intensity (the number of people per gross acre) of the site's proposed use shall not exceed the lesser of:
- (1) The average intensity of all existing uses that lie fully or partially within a distance of 300 feet from the boundary of the proposed development; or
 - (2) Double the intensity permitted in accordance with the criteria for that location as indicated in the March ARB/IP COMPATIBILITY CRITERIA Table 1 in Chapter 19.51, Airport Overlay Zone, of the City of Perris zoning code.
- (d) The single-acre and risk-reduction design density and intensity multipliers described in the Compatibility Criteria Table 1 in Chapter 19.51, Airport Overlay Zone, of the City of Perris zoning code are applicable to infill development.
- (e) Infill development on some parcels should not enable additional parcels to then meet the qualifications for infill. The intent is that parcels eligible for infill be determined just once. The burden for demonstrating that a proposed.

Enhanced Site Amenities (Chapter 13.3.1 of the PVCCSP)

The Perris Valley Commerce Center Specific Plan encourages development that is functional and promotes superior aesthetics. By providing enhanced site amenities, individual property owners will advance their own business interests and those of the greater community. Amenities may include, but are not limited to:

- On-site employee child day-care for large businesses that do not use or store significant amounts of hazardous materials provided there are no restrictions as a result of the Airport Overlay Zone.
- On-site employee gym, shower, or exercise equipment that encourages physical fitness and employee retention in buildings less than 100,000 square feet.
- Outdoor seating areas, public spaces, and plazas that encourage employee interaction and outdoor dining.
- On-site cafeterias to encourage workers to stay at work for lunch, reducing the amount of driving needed.
- Convenient carpool covered parking, employee drop-off areas and/or electric vehicle recharging stations to encourage trip reduction and improved air quality.
- Other amenities as proposed by site developers and acceptable to the City.

The proposed Project is also required to adhere to PVCCSP Mitigation Measures MM Haz-2 through MM Haz-6. PVCCSP EIR Mitigation Measure MM Haz-2 requires the landowner to convey an avigation easement to the MARB. PVCCSP Mitigation Measure MM Haz-3 requires any outdoor lighting to be hooded or shielded to prevent either spillage of lumens or reflection into the sky above the horizontal plane. PVCCSP Mitigation Measures MM Haz-4 requires notice to be provided to all potential purchasers and tenants that the property is located in the vicinity of the airport, within what is known as an airport influence area, and for this reason the property may be subject to some of the annoyances and inconveniences associated with proximity to airport operations. PVCCSP Mitigation Measure MM Haz-5 prohibits certain uses such as any uses that would direct a steady light or flashing light of red, any uses that would cause sunlight to be reflected toward aircraft, any use that would generate smoke or water vapor or attract large concentrations of birds, and any use that would generate electoral

interference that may be detrimental to the operation of the airport, and any use. A minimum of 45 days prior to submittal of an application for a building permit, PVCCSP Mitigation Measure MM Haz-6 requires the implementing development project applicant to consult with the City of Perris Planning Department to determine if the project will encroach on any imaginary surface. If it is determined that there will be an encroachment into the 100-to-1 imaginary surface, the applicant is required to file a FAA Form 7460-1, Notice of Proposed Construction or Alteration.

a) **Less than Significant Impact.** Implementation of the Project could create significant hazards as a result of the routine transport, use, or disposal of hazardous materials.

Short-term (Construction Period) Activities. Project construction activities would involve the temporary use and transport of fuels, lubricating fluids, solvents, and other hazardous materials. The contractor would be required to develop and adhere to a Health and Safety Plan, which pursuant to California state Health and Safety Code Chapter 6.95, Division 20 (§§ 25500-25532), would minimize potentially hazardous effects of handling potentially hazardous materials during construction. Project compliance with federal, state, and local regulations pertaining to safe transport, use, handling, and disposal of hazardous materials would reduce these effects, and this potential would be considered a less-than-significant impact.

Long-term (Operational) Activities. With regard to Project operation, widely used hazardous materials common at commercial uses include paints and other solvents, cleaners, and pesticides. Operation of the proposed convenience market would involve the use of cleaning solutions for daily operation and paints for routine maintenance and re-coating of structures. Operation of the proposed car wash would involve the use of cleaning solutions for daily operation and paints for routine maintenance and re-coating of structures. The remnants of these and other products are disposed of as household hazardous waste (HHW) that includes used dead batteries, electronic wastes, and other wastes that are prohibited or discouraged from being disposed of at local landfills. Use of common household hazardous materials and their disposal does not present a substantial health risk to the community. Impacts associated with the routine transport, use, or disposal of hazardous materials or wastes would be less than significant. Operation of the proposed fueling stations would involve the routine transport and use of petroleum gasoline. However, with adherence to existing federal, state, and local regulations for the storage and transport of petroleum, impacts related to the routine transport, use or disposal of hazardous materials will be less than significant.

b) **Less than Significant Impact.** According to the State Water Resources Control Board, there are no open cases of leaking underground storage tanks (LUST) within one-quarter mile of the Project site.¹¹ There would be a less than significant impact related to the release of hazardous materials into the environment as a result of development of the proposed convenience market, car wash, and fueling station.

Construction of the convenience market, car wash, and fueling station would require the use and transport of hazardous materials such as asphalt, paints, and other solvents. Construction activities could also produce hazardous wastes associated with the use of such products. Construction of the proposed Project would require ordinary construction activities and would not require a substantial or uncommon amount of hazardous materials to complete. All hazardous materials are required to be utilized and transported in accordance with their labeling pursuant to federal and state law. Routine construction practices include good housekeeping measures to prevent/contain/clean-up spills and contamination from fuels, solvents, concrete wastes, and other waste materials. There are no buildings or structures on the site. Therefore, no demolition activities will occur. Construction-related impacts would be less than significant with adherence to existing regulations.

With regard to operation, the proposed convenience market, car wash, and fueling station would involve the use and sale of petroleum gasoline. However, the operation of fueling stations and sale of petroleum gasoline is highly regulated at the state and federal level and designed to not leak even after the design life of the tanks expires. In addition, recent regulation requires regular inspections of underground tanks and dictates how long tanks can remain underground before they must be removed and/or replaced. Operation of the fueling station will adhere to all federal, state, and local regulations and safety guidelines. Therefore, the Project would not 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. Impacts would be less than significant.

c) **No Impact.** Val Verde Elementary School, the closest school to the project site, is located approximately 0.75 miles southwest of the Project site. The proposed Project would not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste because it is a commercial use that does not include any such operations. No automobile repair or maintenance activities will occur on the site during Project operation. Therefore, the Project will not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school. No impact would occur.

d) **No Impact.** The proposed project is not located on a site listed on the state *Cortese List*, a compilation of various sites throughout the state that have been compromised due to soil or groundwater contamination from past uses.¹²

Based upon review of the *Cortese List*, the project site is not:

- listed as a hazardous waste and substance site by the Department of Toxic Substances Control (DTSC),¹³
- listed as a leaking underground storage tank (LUFT) site by the State Water Resources Control Board (SWRCB),¹⁴
- listed as a hazardous solid waste disposal site by the SWRCB,¹⁵
- currently subject to a Cease and Desist Order (CDO) or a Cleanup and Abatement Order (CAO) as issued by the SWRCB,¹⁶ or
- developed with a hazardous waste facility subject to corrective action by the DTSC.¹⁷

e) **Less than Significant with Mitigation Incorporated.** The proposed Project is located approximately 2.5 miles southeast of March Air Reserve Base/ Inland Port (ARB/IP) and is within March ARB/IP Airport Land Use Compatibility Plan (ALUCP) Zone B1 (Inner Approach/Departure Zone) and Airport Protection Zone II. Riverside County Airport Land Use Commission (ALUC) protects public health, safety, and welfare by ensuring the orderly expansion of airports and the adoption of land use measures that minimize the public's exposure to extensive noise and safety hazards within areas around airports. The Riverside County ALUC reviews land use compatibility issues for development surrounding airports in the County, including safety, noise, overflight, and airspace protection. These compatibility issues are identified and analyzed in the Airport Land Use Compatibility Plan (ALUCP) for each airport, and the implementation of these plans promotes compatible development around the airports. The proposed Project is subject to Riverside County ALUC review pursuant to state law (Public Utilities Code Section 21676(b)) because, if approved, it would require the City to adopt an SPA to change the Project site's existing PVCCSP land use designation from BPO to Commercial (see also Section 4.3.4.5). Otherwise, the proposed Project is not considered a major land use action or other land use action subject to ALUC review pursuant to Section 1.5, Types of Actions Reviewed, of Chapter 2, Countywide Policies, of the Riverside County ALUCP Policy Document (Riverside County ALUC, 2005). As determined by the ALUC on September 10, 2020, the proposed Project is consistent with the 2014 ALUCP, subject to certain conditions of approval (See Appendix F).

Land Use Compatibility

The PVCCSP, as amended, provides high quality industrial, commercial, and office land uses to serve the existing and future residents and businesses of the City. It provides land uses and development standards that promote smart growth, sustainable development, and a strong sense of place. The PVCCSP land use plan includes the following designations relevant to the Project:

- **Business/Professional Office (BPO):** This zone provides for uses associated with business, professional or administrative services located in areas of high visibility from major roadways with convenient access for automobiles and public transit service. Small-scale warehousing and light manufacturing are also allowed. This zone combines the General Plan Land Use designations of Business Park and Professional Office.
- **Commercial:** This zoning designation provides for retail, professional office, and service-oriented business activities which serve the entire City, as well as the surrounding neighborhoods. This zone combines the General Plan Land Use designation of Community Commercial and Commercial Neighborhood.

As previously described, the proposed Project site is currently designated by the PVCCSP as BPO; however, the Applicant is proposing an SPA to change the PVCCSP land use designation from BPO to Commercial to allow for 24-hour operation and off-site sale of alcohol.

In addition to land use designations, the PVCCSP has the following airport overlay zones (AOZ) that apply to the Project:

- **Accident Potential Zone II (APZ-II):** This zone prohibits many uses that involve hazardous materials (such as gas stations), and those uses that have higher densities of people per acre. Non-residential development will be limited to those uses that have not more than 50 persons per acre at any time, including hotels and motels. This zone prohibits new residential development, schools, or churches.

The PVCCSP includes specific standards and design guidelines intended to create eco-friendly, high-quality developments, unify the area's character, and develop a business community that fosters long-term economic success. The guidelines are the main tool used by the City to evaluate development projects subject to discretionary review.

The proposed Project is located approximately 2.5 miles southeast of March ARB/IP and is within March ARB/IP Airport Land Use Compatibility Plan (ALUCP) Zone B1 (Inner Approach/Departure Zone) and Airport Protection Zone II. The Project site lies within the 65 CNEL noise contour associated with March ARB/IP, meaning airport-related noise levels are between 65 CNEL and 70 CNEL. The Riverside County Airport Land Use Commission will review the proposed Project for compatibility with the March ABR/IP ALUCP, including basic compatibility factors and criteria established by Tables MA-1 and MA-2 of the ALUCP and the AOZ.

The Project will not encroach on any imaginary surfaces of the airport. The Project will be developed in compliance with the PVCCSP and ALUCP; therefore, the Project will not expose persons residing or working in the Project area to excessive airport safety hazards. The Project represents an allowable land use consistent with the PVCCSP. The Project will not exceed the allowable height limits established in FAR Part 77, and all mitigation measures recommended by FAA shall be incorporated into the Project Conditions of Approval. The Project will not interfere with aircraft operations because the proposed convenience store, car wash, and fueling station will not reflect glare, emit electronic interference, produce smoke, or store or dispense hazardous materials in such a manner that would endanger aircraft

operations or public safety in the event of an aircraft accident. As required in Section 4.2.1 of the PVCCSP, an Avigation Easement shall be granted to March ARB/IP before the issuance of a building permit. A copy of the easement shall be forwarded to the City and the affected airport. Finally, the property owner will notify all renters, lessees, or buyers that the site is subject to aircraft overflight from the airport, is subject to potential noise problems associated with aircraft operations, and is subject to an Avigation Easement. The information shall be provided before completion of final rental, lease, or sale, and shall be incorporated into the Covenants, Conditions, and Restrictions (CC&Rs) recorded with the property and in all lease and rental agreements. Therefore, with adherence to established regulations and standards impacts related to land use compatibility will be less than significant.

Airport Noise

Both the ALUCP and the Perris Valley Commerce Center Specific Plan (PVCCSP SP) require all building office areas to be constructed with appropriate noise attenuation measures that meet a 45 CNEL interior noise level. The proposed Project, therefore, will require an exterior to interior airport noise level reduction of up to 25 CNEL to meet ALUCP compatibility requirements even though it is not a noise-sensitive land use that is prone to typical noise sensitivity factors such as interference with speech or sleep. In addition, as a local-serving, commercial retail business, patrons are unlikely to expect or require quiet conditions at the site and would therefore likely judge the exterior and interior ambient noise levels at the site to be acceptable.

The conceptual layout for the proposed 7-Eleven building indicates approximately 40 square feet of office space would be located along the building's western exterior wall. Standard construction techniques typically provide a minimum exterior to interior noise attenuation (i.e., reduction) of 20 to 30 dBA with windows and doors closed and are likely to be sufficient to meet a 45 CNEL standard in the proposed building's office area. Nonetheless, to ensure the proposed Project is compatible with the March ARB/IP ALUCP, PVCCSP SP, and City code requirements and does not expose people working at the Project site to excessive airport related noise levels, Mitigation Measure HAZ-1 has been incorporated which requires the Applicant to prepare and submit a final acoustical analysis, report, or other documentation to the City that demonstrates the proposed building's final exterior wall design and assembly will achieve an exterior to interior noise level reduction of 25 dB at all building office areas that have at least one wall that is part of the building façade/ exterior wall assembly. With incorporation of Mitigation Measure HAZ-1, impacts related to airport noise will be less than significant.

Mitigation Measure

HAZ-1 The Applicant shall prepare and submit to the City a final acoustical analysis, report, or other documentation that demonstrates the final exterior wall design and assembly will achieve an exterior to interior noise level reduction of 25 dB at all building office areas that have at least one wall that is part of the building façade/ exterior wall assembly. Demonstration of said exterior to interior noise level reduction of 25 dB shall occur prior to issuance of building permits.

f) **Less than Significant Impact.** Per state Fire and Building Codes, sufficient space will have to be provided around the buildings for emergency personnel and equipment access and emergency evacuation. All Project elements, including landscaping, would be sited with sufficient clearance from existing and proposed structures so as not to interfere with emergency access to and evacuation from the facility. The convenience store, car wash, and fueling station will be required to comply with the California Fire Code as adopted by the Perris Municipal Code (Chapter 16.08.058). The Project site plan includes two separate driveways: one at the southwest corner of the site along Perris Boulevard and the other at the northeast corner of the site along Rider Street. Both driveways will be 35-foot wide

and will be restricted to right-in/right-out turning movements. The driveways would be constructed to California Fire Code specifications and would allow emergency access and evacuation from the site. The Project would not impair implementation of or physically interfere with an adopted emergency response plan or evacuation plan because no permanent public street or lane closures are proposed. Construction work in the street associated with the buildings would be limited to lateral utility connections and would be limited to nominal potential traffic diversion. Project impacts would be less than significant.

g) **Less than Significant Impact.** The Project Site is not located within or near any State Responsibility Areas¹⁸ or other wildland areas. The nearest such area is approximately 1.15 miles east of the Project site. Therefore, the potential impact related to wildland fire would be less-than-significant.

4.10 – Hydrology and Water Quality

Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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;	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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; or	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iv) impede or redirect flood flows?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Applicable PVCCSP Standards and Guidelines and Mitigation Measures

The PVCCSP includes Standards and Guidelines relevant to water quality and hydrology. These Standards and Guidelines summarized below are incorporated as part of the Project and are assumed in the analysis presented in this section. The chapters/section numbers provided correspond to the PVCCSP chapters/sections.

Water Quality Site Design (Chapter 4.2.2.7 of the PVCCSP)

Water Quality Management Plan

Most developments are required to implement a Water Quality Management Plan (WQMP) in accordance with the most recently adopted Riverside County MS4 NPDES Permit (Board Order R8-2010-0033). Approval by the City of a WQMP plan requires submittal of a complete document with supporting data which includes at a minimum, a site "Post-Construction BMP Plan," and treatment control facility sizing calculations. Site design, based on Low Impact Design, and Source Control BMP's must be incorporated into the civil site design. If these two types of BMP's do not sufficiently manage hydromodification or treat expected pollutants, treatment control facilities must be implemented in control BMP's are in accordance with Riverside County Storm Water Best Management Practice Hand Book. The Regional Water Quality Control Board continuously updates impairments as studies are completed, the most current version of impairment data should be reviewed prior to preparation of Preliminary or Final WQMP document.

The MS4 Permit requires that applicable new development and redevelopment project:

- Design the site to minimize imperviousness, detain runoff, and infiltrate, reuse or evapotranspire runoff where feasible.
- Cover or control sources of stormwater pollutants.
- Use LID to infiltrate, evapotranspire, harvest and use, or treat runoff from impervious surfaces.
- Ensure runoff does not create a hydrologic condition of concern.
- Maintain Stormwater BMPs.

Low Impact Design

According to the State Water Resources Control Board, Low Impact Design (LID) is, "a sustainable practice that benefits water supply and contributes to water quality protection. Unlike traditional storm runoff BMPs, LID takes a different approach by using site design and storm water management to maintain the site's pre-development runoff rates and volumes. The goal of LID is to mimic a site's predevelopment hydrology by using design techniques that infiltrate, filter, store, evaporate and detail runoff close to the source of rainfall."

As stated in the Riverside County LID Manual, when LID is implemented correctly on a site, it provides two primary benefits: 1) hydromodification flows are managed across the site and 2) expected pollutants are reduced in the remaining runoff. In order to meet Regional Water Quality Control Board (RWQCB) requirements in the Sana Ana Watershed, the design capture volume (VBMP) is based on capturing the volume of runoff generated from an 85th percentile, 24-hour storm event. There are seven mandatory BMP types to be implemented on project sites.

- Infiltration Basins
- Infiltration Trenches
- Permeable Pavement
- Harvest and Use
- Bioretention Facilities

- Extended Detention Basins
- Sand Filter Basins

The NPDES Permit requires that the design capture volume be first infiltrated, evapotranspired, or harvested and reused. When such retention methods are infeasible, the remainder of the volume can be biotreated. The steps to this approach include:

- Optimize the Site Layout
- Preserve Existing Drainage Patterns
- Protection of Existing Vegetation and Sensitive Areas
- Preserve Natural Infiltration Capacity
- Minimize Impervious Area
- Disperse Runoff to Adjacent Pervious Areas
- Delineate Drainage Management Areas
- Classify and Tabulate DMAs, and Determine Runoff Factors
 - Self-treating areas
 - Self-retaining areas
 - Areas draining to self-retaining areas
 - Areas draining to BMP's

An example of LID design within roadways includes, inverted medians along drives and parking aisles to serve the site design function. In place of raised or mounded landscaped medians, depressed landscaped areas should be designed which will capture parking lot and street runoff, reduce directly connected impervious areas, promote infiltration, and pre-treat runoff in a swale or trench prior to discharge to a treatment control facility. The inverted median can incorporate a flow line slope or utilize a grated inlet in order to achieve drainage of the depression within 72 hours (maximum).

Source Control

Source Control features are also required to be implemented for each project as part of the Final WQMP. Source Control Features are those measures which can be taken to eliminate the presence of pollutants through prevention. Source Control BMPs include permanent, structural features that may be required in project plans such as roofs over and berms around trash and recycling areas and operations BMPs, such as regular sweeping and housekeeping that must be implemented by the site's occupant or user. The maximum extent practicable standard typically requires both types of BMPs. In general, operational BMPs cannot be substituted for a feasible and effective permanent BMP. Steps to selecting Source Control BMPs include:

- Specify Source Control BMPs
- Identify Pollutant Sources
- Note Locations on Project-Specific WQMP Exhibit
- Prepare a Table and Narrative
- Identify Operational Source Control BMPs

BMP Features in "Visibility Zone"

Some sites may necessitate the placement of Water Quality BMPs adjacent to public right-of-ways. In such a situation, landscaping requirements of this Specific Plan shall be followed. Please note the following:

- Treatment control BMP's adjacent to the public right-of-way must drain properly to adequate storm drain facilities. If no storm drain is available, alternative drainage shall be proposed for

approval by City Engineer. Treatment control BMPs are not to be placed within public right-of-way. Figure 4.0-8 through Figure 4.0-13 provide layout options for BMP features adjacent to public right-of-way. Street cross sections other than those provided shall be subject to similar requirements provided by the City of Perris.

Open Jointed Surfaces for Sidewalk

Open jointed materials include interlocking pavers, porous pavement and pervious concrete or other surfaces which do not shed water during typical storm events shall be considered for use in place of concrete for sidewalks. Alternative open jointed materials will be evaluated for acceptance.

Open Jointed Surfaces in Low Traffic Areas

Open jointed surfaces or porous concrete shall be considered for use in low-traffic areas of parking lots (such as Class C vehicle parking stalls) and for surfaces proposed as patios and sidewalks.

Filter Strips

Filter strips are vegetated areas intended to treat sheet flow from adjacent impervious areas. Filter strips function by slowing runoff velocities and filtering out sediment and other pollutants, while providing some infiltration into underlying soils. Filter strips shall be considered for use adjacent to parking lots, sidewalks, and roads. The filter strip shall consist of grass turf or other low lying, thick vegetation.

Filter Strip Adjoining Impervious Surfaces

Filter strips should adjoin impervious surfaces where feasible, which shed runoff in sheet-flow fashion. Filter strips are not appropriate for more concentrated flows such as discharge from a pipe or curb-cutout.

Roof Runoff Discharge into Landscape Area

Given current design practices, as much roof runoff as possible shall be discharged to landscaped areas adjacent to the buildings.

Second Treatment of Roof Water

Under current standards, if treated roof runoff cannot be conveyed without mixing with on-site untreated runoff, the roof runoff will require a second treatment, independent of the initial treatment and regardless of the methods employed.

Covered Trash Enclosures

Trash enclosures covers must be provided.

LANDSCAPE STANDARDS AND GUIDELINES (Chapter 6.0 of the PVCCSP)

On-Site Landscape General Requirements (Chapter 6.1 of the PVCCSP)

Unspecified Uses

All areas not devoted to parking, drive isles, buildings or operational areas shall be landscaped and permanently maintained.

Perimeter Landscape

All buildings should have perimeter landscape, except where loading docks, plazas and entries would interrupt planting. Landscape areas shall be provided on all sides of buildings visible to the public.

Street Entries

Street entries into development sites shall be designed with landscaping and/or architectural features that project a high quality image for the development.

Slopes

Cut slopes are level areas in the landscape formed by cutting into a slope and adding a retaining wall to create stability while fill slopes are the surface formed from earth deposited to build a road or trail. Cut slopes that are equal to or greater than three (3) feet in vertical height and fill slopes equal to or greater than five (5) feet in vertical height, shall be planted with a ground cover to protect the slope from erosion and instability. Slopes exceeding three (3) feet in vertical height shall be planted with shrubs spaced not more than ten (10) feet on center or with trees spaced not to exceed 30 feet on center, or with a combination of shrubs and trees at equivalent spacing, in addition to the groundcover.

Main Entries, Plaza, Courtyards

Trees and shrubs should be used near the main entries of buildings, pedestrian plazas, and courtyards. Large specimen trees are encouraged.

Maintenance Intensive/Litter Producing Trees Discouraged

Trees that produce litter, are shallow rooted or have other maintenance intensive characteristics are not encouraged for use in parking areas, pedestrian plazas, or courtyards.

Avoid Interference with Project Lighting/Utilities/Emergency Apparatus

Landscaping should not interfere with the lighting of the project area or restrict access to utilities (i.e. electrical boxes, meters, etc.) or emergency apparatus (i.e. fire hydrants or fire department connections).

Scale of Landscape

Landscaping should be kept in scale with adjacent buildings and shall be maintained at an appropriate size at maturity.

Planters and Pots

The use of planters and pots in the building recesses and adjacent to the exterior walls is encouraged. Pot and planter materials should complement the architectural style, texture, and color of the building and should be properly irrigated and drained.

MWD Trail Buffer

Properties immediately south of the trail (from Indian Avenue to Webster Avenue) and to the north (from Indian Avenue to the Perris Valley Storm Channel) are encouraged to provide a minimum 10-foot landscape buffer strip planted with large trees to compliment the trail and provide shade. Refer to Figure 5.0-6.

On-Site Landscape Screening (Chapter 6.1.1 of the PVCCSP)

Plant Screening Maturity

Plant materials specified to be used for screening purposes such as trash enclosure, transformers or loading areas, should reach maturity within three years of installation.

Screenwall Planting

Screenwalls shall be made more aesthetically pleasing with the incorporation of plant material and vines.

Trash Enclosures

Trash enclosures shall be visually enhanced by screening and softening with landscaping and overhead trellis treatment.

Landscape in Parking Lots (Chapter 6.1.2 of the PVCCSP)

Minimum 50% Shade Coverage

Shade trees shall be provided within the vehicular parking areas and should attain a minimum 50% shade coverage of the parking area when the trees reach maturity (approximately 15 years). Parking lot shade trees shall be of an evergreen variety capable of producing a large canopy to achieve this shade requirement.

Planter Islands

Planter islands shall have a minimum width of eight (8) feet curb to curb, bounded on the outside by a 6-inch high concrete curb (or its equivalent). Curb break and wheel stops may be substituted where landscaped swales adjacent to the paving are intended for water quality management purposes. Refer to Figure 4.0-6.

Parking Lot Screening

Parking lots shall be screened from the public rights-of-way to a height of 36 inches by use of primary structures or combination of earthen berms, shrubs, and garden walls as depicted in Figure 6.0-1. If walls are incorporated into the design, they must be aesthetically compatible with the project design and no taller than 36 inches within the setback area, as measured from ground surface to top of wall.

One Tree per Six Parking Spaces

A minimum of one tree per six parking spaces shall be provided within the parking lot and its immediate perimeter as shown in Figure 6.0-2.

Concrete Curbs, Mow Strips or Combination

Landscaping in parking lots or along drive aisles must be protected or delineated with six-inch concrete curbs, concrete mow strips, or the combination of both, as approved by the City of Perris. This requirement may be waived or modified as necessary, to mitigate water quality management requirements.

Planter Rows Between Opposing Parking Stalls or Diamond Planters

Planter rows between opposing parking stalls or diamond planters with a minimum inside width of 5-feet shall be allowed for tree plantings capable of providing 50% shade coverage of the parking area, as required. Rock or mulch coverings are encouraged in diamond planters. Planter rows between opposing parking stalls or along perimeter landscape buffers may be designed as vegetated swales for utilization as infiltration trenches for run-off, as a method of pollutant mitigation to manage water quality. These areas may be designed without curbs where wheel stops are provided.

Pedestrian Linkages

Parking areas should be designed with pedestrian walkways which link the building to the street sidewalk system creating an extension of the pedestrian environment. This can be accomplished by using design features such as walkways with enhanced paving, trellis structures, and/or landscape treatment. Walkways should not only link the building to the street, but should link the parking areas to the buildings such that pedestrians do not have to walk in the vehicle lanes to get to building entrances.

On-Site Plant Palette (Chapter 6.1.3 of the PVCCSP)

Landscape plant palette for the Perris Valley Commerce Center should be consistent with Section 6.2 Off-Site Landscape. The plant palette was selected to complement and enhance the thematic setting for the community, appropriateness to climatic and soil conditions, ease of maintenance and water conservation. Plants other than those listed below, may be used to satisfy design or horticultural needs consistent with the Project's objectives. If approved by the City of Perris, plants shall be consistent with California Friendly Landscape and meet all minimum City of Perris Water Conservation Requirements as defined in Development Code Chapter 19.70, Landscaping, including but not limited to:

- Use of drought-tolerant plants.
- Use of landscaped areas designed to retain irrigation water.
- Use of satellite-based irrigation timers.
- Use of automatic irrigation systems.
- Use of plant groupings with similar irrigation requirements to reduce over-irrigation.
- Extensive use of mulch in landscaped areas.
- Installation of drip irrigation systems, where appropriate.
- Limit use of turf for active purposes only.
- Limit use of impervious surfaces.

Off-Site Landscape General Requirements (Chapter 6.2 of the PVCCSP)

Streetscape Landscape (Chapter 6.2.1 of the PVCCSP)

Streetscapes in the Perris Valley Commerce Center are vital in creating a community identity, a visual hierarchy in the street classifications, theme, unification, and quality. These public areas will be the only community spaces threading through the community and will serve as unifying elements that enhance the vehicular and pedestrian experiences. The design concept for the streetscapes is to provide regimented, identifiable, and generously landscaped greenbelts that soften views of the buildings and parking facilities while providing an enjoyable experience. To ensure the visual and spatial continuity within this Perris Valley Commerce Center and aid in the identification of street classifications, the landscape design and plant material for the streetscapes has been set forth in this Perris Valley Commerce Center Specific Plan. The plant material specified is native and appropriate non-native drought tolerant species. Trees of varying textures and heights, shrubs, decorative grasses, and groundcover will be used to buffer and separate adjacent land uses, reduce maintenance requirements, and conserve resources.

Expressway

The Expressway is a 184-foot right-of-way (Figure 6.0-3) that boasts a 25-foot wide landscape parkway with a non-curb adjacent 8-foot wide meandering sidewalk. It includes a landscaped 14-foot wide raised center median. The parkway shall be formally planted with evergreen trees contrasting with the informal meandering planting and shrubs providing a screen of the adjacent walls, parked cars and/or buildings. The raised median shall retain a formal appearance in the application of both the plant materials and hardscape features. Drought tolerant ground cover and native stone will be used as an alternative to turf. These tree and screening elements require coordination and design integration with bioswale designs. The landscape design shall consist of the following plant materials:

Botanical Name	Common Name	Size/Spacing
<i>Trees</i>		
Washingtonia filifara	California Fan Palm	As per plan
Cercidium floridum	Blue Palo Verde	As per plan
<i>Shrubs</i>		
Dasyilirion wheeleri	Desert Spoon	As per plan
<i>Ground Cover</i>		
Helictotrichon sempervirens	Blue Oat Grass	As per plan
Tulbaghia violacea	Society Garlic	As per plan

Arterial

The Arterial roadway is a 128-foot right-of-way (Figures 6.0-4 and 6.0-5) which includes a 14-foot wide raised median. The parkway is 17-foot wide and includes a non-curb adjacent 6-foot wide sidewalk. The landscape area along arterial roadways shall be formally planted with alternating groups of deciduous and evergreen canopy trees located on both sides of the sidewalk. The parkway area beneath the trees shall be planted with drought-tolerant ground covers. These tree and screening elements require coordination and design integration with adjacent bioswale designs, as necessary. The landscape design shall consist of the following plant materials:

Botanical Name	Common Name	Size/Spacing
<i>Trees</i>		
Lagerstroemia indica x fauriei 'Tuscarora'	Tuscarora Crape Myrtle	15" gallon
Olea eropaea 'Monher'	Majastic Beauty Fruitless Olive	24 " Box
Syagrus romanzoffiana	Queen Palm	24" Box
<i>Shrubs</i>		
Grevillea x 'Noell'	Noell Grevillea	5 gallon
Lantana x 'New Gold'	New Gold Lantana	1 gallon
Nandina domestica	Heavenly Bamboo	1 gallon
'Wood's Dwarf'	Wood's Dwarf	
Officinalis Rosmarinus	Rosemary	1 gallon
'Huntington Carpet'	Huntington Carpet	
Tulbaghia violacea 'Tricolor'	Tricolor Society Garlic	1 gallon
<i>Ground Cover</i>		
Tachelospermum jasminoides 'Variegata'	Variegated Star Jasmine	1 gallon

Secondary Arterial (with Raised Median)

The Secondary Arterial roadway has a 14-foot wide raised median within a 94-foot right-of-way (Figures 6.0-6). The parkway is 12-feet wide and includes a non-curb adjacent 6-foot wide sidewalk. The landscape area along secondary arterial roadways shall be planted with formal alternating groups of deciduous canopy tree specimens. The parkway area beneath the trees shall be planted with drought-tolerant ground covers and shrubs. These tree and screening elements require coordination and design integration with adjacent bioswale designs, as necessary. The raised median shall retain a formal appearance in the application of both the plant materials and hardscape features. The landscape design shall consist of the following plant materials:

Botanical Name	Common Name	Size/Spacing
<i>Trees</i>		
Brachychiton populnea	Botte Tree	24" Box, 2" Cal., 20' On Center
Lagerstroemia indica x fauriei 'Tuscarora'	Tuscarora Crape Myrtle	15" gallon
Prunus blireana	Blireana Flowering Plum	15" gallon
<i>Shrubs</i>		
Lantana camara 'Robpatrai'	Patriot Rainbow Compact Lantana	5 gallon
Lantana x 'New Gold'	New Gold Lantana	1 gallon
Rhaphiolepis umbellate	Dwarf Yedda Hawthorn	1 gallon
<i>Ground Cover</i>		
Pennistemen setaceum 'Rubrum'	Purple Fountain Grass	1 gallon

Secondary Arterial (with Striped Median)

As an alternative to the raised median design, the Secondary Arterial roadway may be developed with a 12-foot striped median within a 94-foot right-of-way (Figures 6.0-7). The parkway is 15-foot wide with a non-curb adjacent 6-foot wide sidewalk. The landscape area along secondary arterial roadways shall be planted with formal alternating groups of deciduous canopy trees specimens. The parkway area beneath the trees shall be planted with droughttolerant shrubs and ground covers. These tree and screening elements require coordination and design integration with adjacent bioswale designs when necessary. The landscape design shall consist of the following plant materials:

Botanical Name	Common Name	Size/Spacing
<i>Trees</i>		
Lagerstroemia indica x fauriei 'Tuscarora'	Tuscarora Crape Myrtle	15" gallon
Prunus blireana	Blireana Flowering Plum	15" gallon
<i>Shrubs</i>		
Lantana camara 'Robpatrai'	Patriot Rainbow Compact Lantana	5 gallon
Lantana x 'New Gold'	New Gold Lantana	1 gallon
Rhaphiolepis umbellate	Dwarf Yedda Hawthorn	1 gallon
<i>Ground Cover</i>		
Tachelospermum asiaticum	Asian Jasmine	1 gallon

Major Collector

The Major Collector roadway has a 12-foot striped median within a 78-foot right-of-way (Figures 6.0-8). The parkway includes a 5-foot wide landscape area, 6-foot wide curb adjacent sidewalk, a 12-foot drive lane and a 10-foot parking area. The landscape area along the major collector roadways shall be formally planted with evergreen canopy tree specimens. These tree and screening elements require coordination and design integration with adjacent bioswale designs, as necessary. The landscape design shall consist of the following plant materials:

Botanical Name	Common Name	Size/Spacing
<i>Trees</i>		
Geijera parviflora	Australian Willow	24" box, 20' On Center
<i>Shrubs</i>		
Photinia fraseri	Fraser's Photinia	5 gallon
<i>Decorative Grasses</i>		
Muhlenbergia lindheimeri	Lindheimer's Muhly	1 gallon
<i>Ground Cover</i>		
Lantana sellowiana	Trailing Lantana	1 gallon

Collector Road

The Collector roadway has a 66-foot right-of-way (Figures 6.0-9). This includes a 44-foot paved surface, 5-foot wide landscape area and a curb adjacent 6-foot wide sidewalk. The landscape area along the collector roadways shall be planted with evergreen canopy trees. Native boulders from the area shall be placed intermittently in the landscape along the sidewalk. These tree and screening elements require coordination and design integration with adjacent bioswale designs, as necessary. The landscape design shall consist of the following plant materials:

Botanical Name	Common Name	Size/Spacing
<i>Trees</i>		
Platanus x acerfolia	London Plane Tree	24" Box, 2" Cal. 30' On Center
<i>Shrubs</i>		
Yucca flaccida 'Gold Garland'	Gold Garland Yucca	5 gallon
<i>Decorative Grasses</i>		
Pennisetum alopecuroides 'Hameln'	Dwarf Fountain Grass	1 gallon
<i>Ground Cover</i>		
Lantana sellowiana	Trailing Lantana	1 gallon

Local Road

The Local Roadway has a 60-foot right-of-way (Figures 6.0-10), with a 4-foot wide landscape area and a 6-foot wide curb adjacent sidewalk. The landscape area along the local roadways shall be planted with London Plane Trees. Native boulders from the area shall be placed intermittently in the landscape along the sidewalk. These tree and screening elements require coordination and design integration with adjacent bioswale designs, as necessary. The landscape design shall consist of the following plant materials:

Botanical Name	Common Name	Size/Spacing
<i>Trees</i>		
Platanus x acerfolia	London Plane Tree	24" Box, 2" Cal. 30' On Center
<i>Decorative Grasses</i>		
Pennisetum alopecuroides 'Hameln'	Dwarf Fountain Grass	1 gallon
Pennistemen orientale	Karley Rose Fountain Grass	1 gallon

Community Entries/Special Roadways (Chapter 6.2.2 of the PVCCSP)

Specific gateways and intersections within the Perris Valley Commerce Center have been identified to reinforce its boundaries and provide a sense of arrival. These features will reinforce the design theme for the community through a consistent or complimentary blend of hardscape, plant materials, and entry

monumentation. Please refer to Figure 5.0-4 for specific locations of gateways and key intersections. The gateways are strategically located at key intersections near the boundary of the specific plan area. The design for these gateways will include a consistent application of elements, all within the street rights-of-way, such as landscaping, signage on one or both sides of the street, banners, fencing/walls and lighting at these key entrances into the community.

Gateway Monumentation

Monuments at key intersections will help to identify entrance into the Perris Valley Commerce Center Specific Plan area as depicted in Figure 6.0-12.

Lighting Posts

Lighting for the public right-of-way will be consistent throughout the PVCC. The design of the light posts and fixtures will be architecturally compatible with the theme of the community. The intent is to provide continuity throughout the specific plan area and create visual interest in the landscape. Light posts shall be constructed of metal and include the PVCC logo. The logo will be constructed from flat cutout painted aluminum and be attached to the light standard with stainless steel straps. A Banner Program will add color and texture to create a festive environment.

Banner Program

Two major roadways within the specific plan (Ramona Expressway and Perris Boulevard) will be accented with banners as depicted in Figure 6.0-11.

Gateway Entries

There will be six primary gateways into this community. These include three west of Highway 215 (Harley Knox Boulevard, Ramona Expressway, and Placentia Avenue), two north/south gateways on Perris Boulevard, and one on Ramona Expressway. Accent palms, deciduous and evergreen trees, with flowering shrubs and groundcovers will help to frame the entry monumentation. Four of the six gateways will have the landscape and monumentation only on the community side of the intersection (two corners) giving the appearance of a gated entry. The remaining two gateways (Harley Knox Boulevard and Placentia Avenue) will only receive these improvements on the southwest and northeast corners respectively, because they fall in the corners of the community (Figures 6.0-13 thru 6.0-20).

Interior Intersections

All monumentation for the interior of the community will vary in size subject to the classification of the street(s) that intersect. If streets of different classifications intersect, the monumentation requirements will be based on the larger classification. Actual monumentation should be as depicted in Figure 6.0-12.

Planting Guidelines (Chapter 6.3 of the PVCCSP)

All areas required to be landscaped shall be planted with groundcovers, shrubs, or trees selected from the Plan Palette Section 6.1.3. The material shall be planted in the following sizes and shall be in accordance with all City of Perris standards and minimum requirements:

- Trees: Twenty-five percent (25%) of the site trees (excluding all street and screen trees) provided shall be a minimum 24-inch box size. The balance of the trees shall have a minimum size of 15 gallons.
- All 15-Gallon Trees shall be staked with two pressure-treated lodge pole tree stakes that are eight-feet in length and two-inches in width. An equivalent staking material may be used in the same dimensions if approved by the Planning Department.
- All 24-Box Trees shall be staked with two pressure-treated lodge pole tree stakes that are eight-feet in length and two-inches in width. An equivalent staking material may be used in the same

dimensions if approved by the Planning Department. Larger trees shall be guywired per City of Perris standards.

- Larger Specimen Trees are encouraged for entry points, pedestrian plazas and courtyards.
- Shrubs: The majority of all shrubs used shall have a minimum size of 5 gallons. Smaller shrubs may be used where rapid growth characteristics warrant.

Plant Maintenance

All specimen trees shall be fine pruned after planting to allow for both vehicular and pedestrian safety.

Plant Material Requirements and Purpose

All planting areas shall be designed to be consistent with plant material horticultural requirements and work with the purpose of the planting (i.e. aesthetics, screening, wind, etc.).

Structures Wrapped by Landscaping

Exterior building sides (excluding screen loading type areas) should be grounded by landscaping. A minimum landscape strip of five-feet should be provided between parking, sidewalks, and other paved areas adjacent to the structure.

Turf and Ground Cover Areas to be Cross Ripped

All future turf and ground cover areas are to be cross ripped to a depth of six-inches both ways through the use of a rototiller or equivalent machine. All soil amendments shall be blended in and rototilled to a depth of six-inches.

Deep Root Barriers

Deep root barriers of 24" or greater, shall be installed where trees are planted within five-feet of any building, curb, gutter, utility, or paved surface or within 10-feet of a public right-of-way or sidewalk.

Erosion Control

Refer to the City of Perris Standards, City of Perris Municipal Zoning Code, Chapter 19.70, Section 19.70.040, Landscape Design Guidelines. Prior to the installation of plant material, soil samples from representative slopes and flat areas shall be obtained by the landscape contractor and tested for agronomic suitability in order to determine proper planting and maintenance requirements for proposed plant materials with pre-planting and post-planting recommendations.

Positive Drainage to Street or Collection Device

All landscape areas shall have positive drainage to the street or collection devices.

Concrete Gutters/Swales Are Prohibited Landscape Areas

Concrete gutters/swales are prohibited as drainage devices in landscaped areas. A series of low points and underground drainage systems shall be provided where surface conveyance of runoff would damage and/or erode planting areas or cross sidewalks.

Irrigation and Water Conservation (Chapter 6.4 of the PVCCSP)

Refer to City of Perris Municipal Zoning Code, Chapter 19.70.020, "Water Conservation Requirements for New or Rehabilitated Landscapes."

No mitigation measures for hydrology and water quality are included in the PVCCSP EIR.

a) **Less than Significant with Mitigation Incorporated.** A project normally would have an impact on surface water quality if discharges associated with the project would create pollution, contamination, or

nuisance as defined in Water Code Section 13050, or that cause regulatory standards to be violated as defined in the applicable National Pollutant Discharge Elimination System (NPDES) stormwater permit or Water Quality Control Plan for a receiving water body. For the purpose of this specific issue, a significant impact could occur if the proposed Project would discharge water that does not meet the quality standards of the agencies which regulate surface water quality and water discharge into stormwater drainage systems. Significant impacts could also occur if the Project does not comply with all applicable regulations with regard to surface water quality as governed by the State Water Resources Control Board (SWRCB). These regulations include preparation of a Water Quality Management Plan (WQMP) to reduce potential post-construction water quality impacts.

Construction Impacts

Three general sources of potential short-term, construction-related stormwater pollution associated with the proposed Project include: 1) the handling, storage, and disposal of construction materials containing pollutants; 2) the maintenance and operation of construction equipment; and 3) earth-moving activities which, when not controlled, may generate soil erosion via storm runoff or mechanical equipment. During site grading and excavation activities, bare soil would be exposed to wind and water erosion. If precautions are not taken to contain sediments, construction activities could produce sediment-laden storm runoff. In addition to increased erosion potential, hazardous materials associated with construction equipment could adversely affect water quality if spilled or stored improperly; therefore, **Mitigation Measure HYD-1** has been incorporated to ensure impacts from construction activities are less than significant.

HYD-1: *Requirements for Contractors to Implement BMPs and Best Available Technologies.* EMWD would require contractors to implement BMPs and best available technologies to reduce potential impacts to water quality that would result from construction activities. To reduce or eliminate construction-related water quality impacts before the onset of construction activities, EMWD would obtain coverage under the National Pollutant Discharge Elimination System (NPDES) General Construction Permit. Construction activities would comply with the conditions of the permit including preparation of a storm water pollution prevention plan, implementation of BMP's, and monitoring impacts, if any, to water quality. As part of this process, multiple BMP's should be implemented to provide effective erosion and sediment control. BMP's to be implemented as part of this mitigation measure may include, but not be limited to, the following:

- Temporary erosion control measures such as silt fences, staked straw bales, silt/sediment basins and traps, check dams, sandbag dikes, and temporary re-vegetation or other groundcover shall be employed for disturbed areas.
- Storm drain inlets on the site and in downstream offsite areas shall be protected from sediment with the use of BMP's acceptable to EMWD, local jurisdictions and the California Regional Water Quality Control Board, Santa Ana Region.
- Dirt and debris shall be swept from the construction zone on a regular basis, particularly before predicted rainfall events.
- No disturbed surfaces shall be left without erosion control measures in place from early fall to early spring (October 15 and April 15).

Operational Impacts

Proposed construction will result in approximately 73 percent impervious surfaces on the Project site. The approximately 2.06-acre site will be completely developed with the convenience market, car wash,

fueling stations, parking, and landscaping improvements. Runoff from the developed site could result in increased potential water contamination from urban pollutants that are commonly found in surface parking lots, ornamental landscape planters and from atmospheric buildup on rooftops.

Stormwater would be collected on site and conveyed to the existing storm drain system under Perris Boulevard and Riders Street. The Project would be subject to post-construction BMPs to address increases in impervious surfaces, methods to decrease incremental increases in off-site stormwater flows, and methods for decreasing pollutant loading in off-site discharges. A key design criterion is to treat the first ¾-inch rainstorm flows, since the first rains typically carry the most concentrated levels of pollution that have built up since the last storm. Common post-construction BMPs include retaining stormwater on-site to filter back into the groundwater. The Project includes an on-site infiltration basin that will act to store and treat excess stormwater flows before being discharged in to the Municipal storm drain system. The proposed infiltration basin will have a volume of 14,451 cubic feet and a design capture volume of 3,074 cubic feet. The proposed Project would also consist of approximately 24,372 square feet of landscaped area along the boundaries of the site, comprising approximately 27.1% of the overall site total. These landscaped areas would serve as bio swales for runoff collection and treatment. Water runoff would infiltrate these basins as well as flow over impervious surfaces and be discharged into the Municipal storm drain system.

The proposed convenience market, car wash, and fueling station would not generate hazardous wastewater that would require any special waste discharge permits. All wastewater associated with the buildings' interior plumbing system would be discharged into the local sewer system for treatment at the regional wastewater treatment plant. Although the amount of impervious surfaces would be greater than existing conditions, runoff would be captured on site and conveyed through a proposed on-site storm drainage system that includes water treatment at an infiltration basin and at the site's various bio swales prior to being discharged into the municipal storm drain system. Impacts associated with operation of the proposed convenience market, car wash, and fueling station would therefore be less than significant with implementation of existing regulations.

b) **Less than Significant Impact.** If the Project removes an existing groundwater recharge area or substantially reduces runoff that results in groundwater recharge such that existing wells would no longer be able to operate, a potentially significant impact could occur. In general, groundwater does not occur in the area within 100 to 200 feet of the ground surface. Project-related grading would only go a few feet below the surface, and would not reach the depth of the groundwater table. No disturbance of groundwater is anticipated. The proposed building footprint and pavement area would increase impervious surface coverage on the site, thereby reducing the total amount of infiltration onsite. However, infiltration of irrigation water through soil and water from runoff through soft-bottom channels would ensure continued groundwater recharge in Perris as impervious surfaces increase. The Project site is not utilized for groundwater recharge and will include landscaped areas that would serve as infiltration. Because this site is not managed for groundwater supplies and would provide landscaped areas for continued infiltration, this change in infiltration would not have a significant effect on groundwater table level. Impacts related to development of the proposed convenience market, car wash, and fueling station with respect to groundwater recharge would be less than significant.

c.i) **Less than Significant Impact.** According to the City of Perris General Plan EIR, the project lies within San Jacinto watershed; the only major tributary within the City is the Perris Valley Channel (City of Perris, 2005). The channel lies less than a mile east of the Project. In addition, a smaller drainage ditch, "Lateral A", which flows into the Perris Valley Channel lies roughly 2-miles to the north of the proposed Project site. However, these do not lie within the proposed Project site and the Project would not result in the alteration of these drainages. Additionally, the Project is small in scale and would not

lead to a substantial alteration of existing drainage patterns. On site drainage flows will drain into existing drainage facilities under Perris Boulevard. Therefore, the impact is less than significant.

c.ii) **Less than Significant Impact.** No streams traverse the Project site; thus, the Project would not result in the alteration of any stream course. During construction, the Project applicant would be required to comply with drainage and runoff guidelines pursuant to Municipal Code Chapter 14.22.

With regard to Project operation, construction of the convenience market, car wash, and fueling station would increase the net area of impermeable surfaces on the site; therefore, increased discharges to the City's existing storm drain system would likely occur. Stormwater associated with the proposed development would be collected on site and conveyed to an on-site infiltration basin and various on-site bio swales for treatment and then conveyed to the City's storm drainage system at Perris Boulevard. Permits to connect to the existing storm drainage system would be obtained prior to construction. All drainage plans are subject to City review and approval. Therefore, the increase in discharges would not impact local storm drain capacity. The Project is not an industrial use and therefore would not result in substantial pollutant loading such that treatment control BMPs would be required to protect downstream water quality. Impacts related to the proposed convenience market, car wash, and fueling station would be less than significant.

c.iii) **Less than Significant Impact.** Development of the proposed Project would increase the net area of impermeable surfaces on the site; therefore, increased discharges to the City's existing storm drain system would likely occur. Stormwater would be collected on site and conveyed to an on-site infiltration basin and various on-site bio swales for treatment and then conveyed to the City's storm drainage system at Perris Boulevard. Permits to connect to the existing storm drainage system would be obtained prior to construction. All drainage plans are subject to City review and approval. Therefore, the increase in discharges would not impact local storm drain capacity. The proposed Project is not an industrial use and therefore would not result in substantial pollutant loading such that treatment control BMPs would be required to protect downstream water quality. Impacts would be less than significant.

c.iv) **No Impact.** According to flood maps prepared by the Federal Emergency Management Agency, the Project site is not located within a 100-year flood floodplain.¹⁹ The Project is located in Zone X, which is an area of minimal flood hazard. Additionally, the General Plan does not identify the Project site is being located in a flood hazard zone.²⁰ Therefore, the Project will not impede or redirect flood flows. No impacts will occur.

d) **No Impact.** The City is not exposed to tsunami hazards due to its inland location. In addition, according to Figure S-15 of the General Plan EIR, Perris is within the potential dam inundation plain of four reservoirs: Pigeon Pass Reservoir to the north in the City of Moreno Valley, Lake Perris Reservoir to the immediate northeast, Little Lake Reservoir to the east in Hemet and Diamond Valley Lake to the southeast. However, the Project site is not located in the dam inundation zones of any of these lakes and reservoirs.²¹ As previously mentioned, the Project site is not located within a FEMA 100-year flood floodplain. No impact would result.

e) **Less than Significant Impact.** The Regional Board's Basin Plan is designed to preserve and enhance water quality and protect the beneficial uses of all regional waters. Specifically, the Basin Plan (i) designates beneficial uses for surface and ground waters, (ii) sets narrative and numerical objectives that must be attained or maintained to protect the designated beneficial uses and conform to the state's anti-degradation policy, and (iii) describes implementation programs to protect all waters in the region. Development allowed by the Project would be required to adhere to requirements of the water quality control plan, including all existing regulation and permitting requirements. This would include the

incorporation of best management practices (BMPs) to protect water quality during construction and operational periods.

Development of the Project would be subject to all existing water quality regulations and programs, including all applicable construction permits. Existing General Plan policies related to water quality would also be applicable to the Project. General Plan Conservation Element, Policy VI.A and its associated implementation measures would limit potential water quality impacts to surface water and groundwater resources. General Plan Policy VI.A requires all projects to comply with the discharge permit requirements of the Regional Water Quality Control Board (Order No. R8-2010-0033). Implementation of these policies, in conjunction with compliance with existing regulatory programs, would ensure that water quality impacts related to the proposed Project would be less than significant.

4.11 – Land Use and Planning

Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Physically divide an established community?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Applicable PVCCSP Standards and Guidelines and Mitigation Measures

The PVCCSP includes Standards and Guidelines applicable to the Project in terms of permitted land uses for the Commercial designation. These Standards and Guidelines summarized below are incorporated as part of the Project and are assumed in the analysis presented in this section. The chapters/section numbers provided correspond to the PVCCSP chapters/sections.

Perris Valley Commerce Center On-Site Development Standards (Chapter 4.1 of the PVCCSP)

In order to ensure the orderly, consistent, and sensible development of the Perris Valley Commerce Center Specific Plan, land use standards and design criteria have been created for each land use category. A summary of the standards applicable to Aesthetics for commercial sites within the Specific Plan area is provided below.

General On-Site Project Development Standards and Guidelines (Chapter 4.2.1 of the PVCCSP)

Uses and Standards Shall Be Developed In Accordance with the Specific Plan

Properties within the Perris Valley Commerce Center Specific Plan shall be developed in general conformance with the Land Use Plan (Figure 2.0-1).

Uses and Standards Shall Be Developed In Accordance With City of Perris Codes

Uses and development standards will be in accordance with the City of Perris Municipal Code Chapter 19 (Zoning/Land Use Ordinance) as amended by the Perris Valley Commerce Center Specific Plan zoning ordinance, and further defined by the Specific Plan objectives, design guidelines, as well as future detailed development proposals including subdivisions, development plans, and conditional use permits. If there are any conflicts between the Specific Plan and the City of Perris Municipal Code, the Specific Plan will supersede. If the Specific Plan is silent on particular subjects, the City shall refer to the Municipal Code for guidance.

Development Shall Be Consistent with the Perris Valley Commerce Center Specific Plan

Development of properties governed by the Perris Valley Commerce Center Specific Plan area shall be in accordance with the mandatory requirements of all City of Perris ordinances, including state laws, and shall conform substantially to the Perris Valley Commerce Center Specific Plan, as filed in the office of the City of Perris Development Services Department, unless otherwise amended.

No Changes to Development Procedures Except as Outlined in the Specific Plan

Except for the Specific Plan Development Standards/Design Guidelines adopted with the Perris Valley Commerce Center Specific Plan, no portion of the Specific Plan which purport or propose to change, waive, or modify any ordinance or other legal requirement for development shall be considered to be part of the adopted Perris Valley Commerce Center Specific Plan.

Subdivision Map Act

Lots created pursuant to the Perris Valley Commerce Center Specific Plan, and subsequent tentative maps, shall be in conformance with the development standards of the zoning applied to the property and all other applicable City standards, as well as the Subdivision Map Act.

Water Quality Management Plan

Most developments are required to implement a Water Quality Management Plan (WQMP) in accordance with the most recently adopted Riverside County MS4 NPDES Permit (Board Order R8-2010-0033. Approval by the City of a WQMP plan requires submittal of a document with supporting data which includes at a minimum, a site "Post-Construction BMP Plan," and treatment control facility sizing calculations. Site design, based on Low Impact Design (LID) elements and Source Control BMP's, must be incorporated into the site design. If these two types of BMP's do not sufficiently manage hydromodification and treat expected pollutants, then treatment control facilities must be implemented in order to assure proper flow management and pollutant treatment. Treatment control BMP's are in accordance with Riverside County Storm Water Best Management Practice Hand Book. The Regional Water Quality Board continuously updates impairments as studies are completed, the most current version of impairment data should be reviewed prior to preparation of Preliminary or Final WQMP document.

Uses Affecting March Air Reserve Base

The following uses shall be prohibited within the specific plan:

- Any use which would direct a steady light or flashing light of red, white, green, or amber colors associated with airport operations toward an aircraft engaged in an initial straight climb following takeoff or toward an aircraft engaged in a straight final approach toward a landing at an airport, other than an FAA-approved navigational signal light or visual approach slope indicator.
- Any use which would cause sunlight to be reflected toward an aircraft engaged in an initial straight climb following takeoff or toward an aircraft engaged in a straight final approach toward a landing at an airport.
- Any use which would generate excessive smoke or water vapor or which would attract large concentrations of birds, or which otherwise may affect safe air navigation within the area.
- Any use which would generate electrical interference that may be detrimental to the operation of aircraft and/or aircraft instrumentation.
- Any use which would obstruct Federal Aviation Regulations, Part 77 Conical Surface. (This is also a standard of condition of approval on City projects).
- All retention and water quality basins shall be designed to dewater within 48 hours of a rainfall event.

Avigation Easements

Prior to recordation of a final map, issuance of building permits, or conveyance to an entity exempt from the Subdivision Map Act, whichever occurs first, the landowner shall convey an avigation easement to March Air Reserve Base/March Global Port through the March Joint Powers Authority (MJPA). Provide and disclose a "Notice of Airport in Vicinity" to building tenants.

Accident Potential Zones

All proposed projects that lie within Accident Potential Zones must comply with Airport Overlay Zone Standards. Refer to Section 12.0 for special Airport Overlay Zone development standards and guidelines.

Residential Buffer

The Perris Valley Commerce Center Specific Plan has two established residential zones. Refer to Figure 4.0-16 for locations and Section 4.2.8 for Residential Buffer Development Standards and Guidelines.

Crime Prevention Measures

Development projects should take precautions by installing on-site security measures. Security areas include, but are not limited to, entry areas for automated teller machines (ATM's), display areas and bus stops. It is recommended that these areas provide for 30-feet of candlepower. Security and safety of future users of facilities constructed within the Perris Valley Commerce Center Specific Plan should be considered in the design concepts for each individual development proposal such as:

- Sensored lights that automatically operate at night.
- Installation of building alarm, fire systems and video surveillance.
- Special lighting to improve visibility of the address.
- Graffiti prevention measures such as vines on wall, and anti-graffiti covering.
- Downward lighting through development site.

Trash and Recyclable Materials

Development of all Perris Valley Commerce Center Specific Plan sites shall contain enclosures (or compactors) for collection of trash and recyclable materials subject to water quality and best management practices. All trash enclosures shall comply with City of Perris Standards and with applicable City of Perris recycling requirements.

Waste Hauling

Construction and other waste disposal shall be hauled to a city approved facility.

Construction of Infrastructure May Be Financed

Construction of required infrastructure (such as sewer and water lines, storm drains, and roads) may be financed through the establishment of a financing district (e.g., Assessment District, Community Facilities District, or Road and Bridge Benefit District). Refer to Section 13.

Easements on MWD Property

The use of Metropolitan's fee rights-of-way by governmental agencies for public street and utility purposes is encouraged, provided that such use does not interfere with MWD's use of the property, the entire width of the property is accepted into the agency's public street system and fair market value is paid for such use of the right-of-way. The Director of MWD's Right-of-Way and Land Division Department should be contacted concerning easements for landscaping, street, storm drain, sewer, water or other public facilities proposed within MWD's fee properties. A map and legal description of the requested easements must be submitted. Also, written evidence must be submitted that shows the city or county will accept the easement for the specific purpose into its public system. The grant of the easement will be subject to MWD's rights to use its land for water pipelines and related purposes to the same extent as if such grant had not been made. Please note, if entry is required on the property prior to issuance of the easement, an entry permit must be obtained.

Site Layout for Commercial Zones (Chapter 4.2.2 of the PVCCSP)

Building Orientation/Placement (Chapter 4.2.2.1 of the PVCCSP)

Building Frontages/Entrances

Accentuate public streets by locating building frontages and their entrances toward public right-of-way as shown in Figure 4.0-1. Buildings should be oriented so that entrances and entry access points are easily identified from a distance by pedestrians and/or vehicular traffic. Reinforce entries with architectural material, and landscape features so they are clearly identifiable. Loading areas and employee parking lots should be located at the side and rear of buildings when possible.

Promote Walkability

Promoting walkability and circulation is encouraged through placement of buildings and pedestrian circulation facilities.

Projects within 100 Feet of Extended Runway Centerline

Buildings shall be designed to avoid placement within 100 feet of the extended runway centerline of the airport. This strip should be devoted to parking, landscaping and outdoor storage.

Distinct Visual Link

Establish a distinct visual link in multi-building complexes by using architecture, landscape, site design elements and pedestrian connections to unify the project.

Create Diversity and Sense of Community

Avoid long, monotonous building facades and create diversity and a sense of community by clustering buildings around courtyards, plazas, and landscaped open spaces.

Utilize Building for Screening

Utilize building placement, accented walls, or unique design to effectively screen views of loading docks, storage areas, and/or outdoor work areas that would otherwise be visible to public view.

Vehicular Access and On-Site Circulation (Chapter 4.2.2.2 of the PVCCSP)

Site design should address the intended functions of the facility beginning with safe, definable site access that creates a sense of arrival.

Establish Truck Routes

Truck routes are required for trucks having a maximum gross weight of 5 tons. These routes (Figure 3.0-3) should avoid conflicts with established communities and be separated from passenger vehicles where possible.

Driveway Spacing

Refer to Table 4.0-2 for appropriate driveway spacing.

Minimize Vehicular Conflict

Site access should promote safety, efficiency, convenience, and minimize conflict between employee/customer vehicles and large trucks by creating separate access points when possible as shown in Figure 4.0-2.

Access Points Easily Identifiable

Entry drives should be easily identifiable through the use of enhanced landscaping and special pavements (accent colors, textures, and patterns). Landscaped medians should be provided on major project entrances as shown on Figure 4.0-3. Signage should also be used to identify customer and service entrances. Driveways used exclusively for deliveries or loading activities are excluded.

Shared Access

The City encourages shared driveway access whenever possible. Reciprocal ingress/egress access easements shall be provided for circulation and parking to facilitate ease of vehicular movement between properties and to limit the number of vehicular access points to adjoining streets.

Emergency Vehicle Access

Design of primary drive aisles must allow for emergency vehicle access. Typically, this requirement is a minimum of 20 feet. However, applicants are encouraged to check with the City's Fire Marshall.

Visual Link to Building and Entry

A well designed entry should offer a visual link to the building and entry through the use of business signs, paving, and landscaping.

Primary Entry Drive/Location of Building

The primary entry drive should be oriented toward the main entrance of the building as shown in Figure 4.0-4.

Entry Median

A landscaped center median shall be provided at the primary entrance for sites requiring 100 or more parking spaces.

Landscape Parkways/Sides of Entry

Landscaped parkways shall border both sides of all entry drives to create a sense of arrival.

Dual Axle Entrances

Entrances used primarily or solely by dual axle vehicles shall provide a minimum 50' radius curb returns.

Avoid Back-up onto Public Streets

To avoid back-up onto public streets, entry drive approaches shall avoid conflict points such as parking stalls, internal drive aisles, or pedestrian crossings. Final determination of the driveway approach length shall be determined by the Planning Manager and the City Engineer after consideration of the project site design.

Minimize Interactions

Minimize interactions between trucks, cars and pedestrians by having separate circulation. The placement of loading areas and dock facilities should minimize the interaction between trucks and visitor/customer automobiles. Access to loading and delivery areas should be separated from parking areas to the greatest extent feasible.

Consideration of Large Truck Maneuverability

The design and location of loading facilities should take into consideration the specific dimensions required for the maneuvering of large trucks and trailers into and out of loading positions at docks or in stalls and driveways.

Pedestrian Access and On-Site Circulation (Chapter 4.2.2.3 of the PVCCSP)

Avoid Conflicts Between Pedestrian and Vehicular Circulation

Provide a system of pedestrian walkways that avoid conflicts between vehicle circulation through the utilization of separated pathways for direct pedestrian access from public rights-of-way and parking areas to building entries and throughout the site with internal pedestrian linkages as shown in Figure 4.0-5.

Adequate Vehicle Spacing For Drive-Through Service

Businesses with drive-through service shall provide adequate stacking to accommodate eight (8) vehicles in the drive-through lane from the prior to each pick-up window to avoid conflict with on-site circulation.

Primary Walkway

Primary walkways should be 5 feet wide at a minimum and conform to ADA/Title 24 standards for surfacing, slope, and other requirements.

Pedestrian Linkages to Public Realm

A minimum five-foot wide sidewalk or pathway, at or near the primary drive aisle, should be provided as a connecting pedestrian link from the public street to the building(s), as well as to systems of mass transit, and other on-site building(s).

Parking and Loading (Chapter 4.2.2.4 of the PVCCSP)

Refer to Chapter 19.69 of the City of Perris Zoning Ordinance for parking and loading standards.

Shared Parking

Shared parking with adjacent neighboring uses is encouraged provided minimum parking requirements are met and uses have alternating peak hour parking demands. Refer to Chapter 19.69 of the City of Perris Zoning Ordinance for shared parking standards.

Avoid Long Continuous Drive Aisles

Large parking lots should avoid long, continuous drive aisles to limit the opportunity for highspeed vehicular travel. Where long drive aisles best serve a site, they should utilize curves and stop signs or textured pavement at strategic locations in place of speed bumps.

Pass-Through Aisles

Parking aisles should include pass through aisles if their length exceeds thirty (30) stalls.

Screening Parking Lot

Parking lots should be screened from public view through the use of berms, low walls and/or plant materials.

Ends of Parking Aisle

The ends of all parking aisles and rows shall be protected by a landscaped island or finger. Landscape fingers should be provided on average every ten contiguous parking spaces. The parking island/finger shall be a minimum of 8' wide including a 12" concrete step-out on both sides as depicted in Figure 4.0-6 with the end stalls a minimum of 11' wide.

Bicycle Racks

Facilities with 200 or more required parking spaces shall provide a bicycle parking area to accommodate no less than 5 locking bicycles. Facilities with 500 or more required parking spaces shall provide bicycle parking to accommodate no less than 15 locking bicycles. Bicycle parking shall be located near main entrances of buildings, adjacent to landscape areas.

Motorcycle Parking

Facilities with 200 or more required parking spaces may provide a motorcycle parking area with an overall dimension of 7 feet in length and area not less than 56 square feet. Facilities with 500 or more required parking spaces shall provide a motorcycle parking area with an overall dimension of 7 feet in length and area not less than 70 square feet. For every two motorcycle spaces, credit for one parking space shall be given.

ADA Compliant Parking

All parking lots and parking areas shall be ADA compliant.

Loading Area Placement

Consideration should be given to the placement of loading areas away from sensitive receptors (schools, residences, hospitals, etc.), public gathering areas or other uses that might be impacted by noise and associated loading activities, as well as locating away from public view. Additional setback requirement has been provided for projects adjoining residential uses (Table 4.0-1 and Figure 4.0-16). In other cases where placement of loading facilities cannot be accommodated away from these areas, additional setbacks, sound walls, screening or combination thereof may be required.

Screening (Chapter 4.2.2.5 of the PVCCSP)

Screen Loading Docks

When possible, loading areas should be located on the side or rear of a site and shall be screened from public view. When loading areas are located in the Visual Overlay Zone (Fig. 4.0-17), special consideration to the visible aesthetics of screen walls, fences and landscaping should be considered.

Screening Methods

Acceptable screening methods include building offsets, connecting wing walls, perimeter site walls and fences, landscaping and berming. Such screen walls should be architecturally integrated with building by design, color, and material. Screen walls shall be of the same design and materials as primary buildings and a minimum of 6 feet high so as to sufficiently screen loading docks. Screen walls exceeding 8 feet in height shall be softened with earthen berms and dense landscape as noted in Figure 4.0-7.

Screening of Outdoor Storage Areas, Work Areas, Etc.

The screening of outdoor storage areas, outdoor work areas (where permitted), and mechanical equipment with walls that utilize the same building materials and architectural design of the buildings is required. Soften screen walls with earth berms and dense landscaping as depicted in Figure 4.0-7. The intent is to keep walls as low and unobtrusive as possible while performing their screening and security functions.

Outdoor Storage (Chapter 4.2.2.6 of the PVCCSP)

No Outdoor Storage Permitted Other Than as Specified.

Outdoor storage is limited to the General Industrial Zone of the Perris Valley Commerce Center. No other outdoor storage will be permitted, with the exception of accessory uses for outdoor storage directly associated with and incidental to the primary use occupying less than 10% of the site or floor area.

Residential Buffer Development Standards and Guidelines (Chapter 4.2.8 of the PVCCSP)

There are two existing residential communities located within the boundary of the Perris Valley Commerce Center and one that abuts the Specific Plan boundary as depicted in Figure 4.0-16. To recognize and blend with those communities, a Residential Buffer Zone has been established for proposed industrial, commercial and business professional office development abutting existing or proposed residential development.

50-Foot Setback

A 50-foot setback is required for commercial, industrial and business professional office developments immediately abutting existing residential property lines. Other allowed uses and facilities within the 50-foot setback include landscape areas, water quality basins and conveyances, vehicle travel aisles, passenger car parking and any feature deemed unobtrusive to the neighboring residential use by the Development Services Department.

Hours of Operation

Depending on the type of use and activities proposed by the industrial, commercial or professional/office development, the Development Services Department may impose restrictions on hours of operation for construction, as well as business operation.

Direct Lighting Away from Residential

All project lighting must be directed away from residential areas.

Screening

Proposed industrial, commercial or professional/office developments will need to screen operation for residential view through landscape and/or wall screening.

Sound Walls

Sound walls may be required to mitigate potential operational noise impacts from proposed industrial, commercial or professional/office development, as well as be constructed in the first phase of development to help shield residents from construction noise.

Other Restrictions May Be Required Based on Actual Use

Depending on proposed use, an Air Quality Study and/or Health Risk Assessment may be required to determine project viability located adjacent to residences.

COMMERCIAL DESIGN STANDARDS AND GUIDELINES (Chapter 7.0 of the PVCCSP)

Definition of Commercial (Chapter 7.1 of the PVCCSP)

Commercial (C)

This zoning designation provides for retail, professional office, and service oriented business activities which serve the entire City, as well as the surrounding neighborhoods. This zone shall be applicable to

and correlate with the General Plan Land Use designations of Community Commercial and Commercial Neighborhood. Allowable uses within the commercial designation include those uses derived from commercial uses in the City of Perris Municipal Code Chapter 19, as set forth in Table 2.0-2 of the Perris Valley Commerce Center Specific Plan. Land Use definitions can be found in Section 2.4.

Commercial Development Standards and Guidelines (Chapter 7.2 of the PVCCSP)

Refer to Table 4.0-1 of the Perris Valley Commerce Center Specific Plan for development standards and guidelines with the following exceptions and/or additions:

Commercial Site Layout (Chapter 7.2.1 of the PVCCSP)

Vehicular Access and On-Site Circulation (Chapter 7.2.1.1 of the PVCCSP)

Adequate Vehicle Spacing For Drive-Thru's

Businesses with drive-thru service(s) shall provide adequate stacking to accommodate eight (8) vehicles prior to each pick-up window to avoid conflict with on-site circulation.

Pedestrian Access and On-Site Circulation (Chapter 7.2.1.2 of the PVCCSP)

Internal Pedestrian Walkways

Internal walkway should provide connection between building entries, plazas, and courtyards within the project and be covered when possible.

Paving For Walkways Visible from Public Rights-of-Way/Public Access

Enhanced paving is preferred in areas visible from public rights-of-way or utilized for public access to define business entries, pedestrian walkways, and within plazas and patios.

Walkways through Parking Lots

Pedestrian walkways through commercial development parking lots should be accented with special design features such as raised, colored and/or textured pavement, a widened roadway, or a combination of the preceding.

Pedestrian Access Between Buildings/Parking Areas/Amenities On/Off-Site

Pedestrian walkways should be embellished and defined by landscaping, trees, lighting, textured paving, and/or trellises.

Parking and Loading (Chapter 7.2.1.3 of the PVCCSP)

Parking Requirements

Refer to City of Perris Zoning Ordinance, Chapter 19.69.

Disperse Parking Areas

When possible, disperse parking into multiple smaller lots or separated parking blocks as opposed to one large lot so that cars are not the dominant visual element of the site from the street.

Limited Store Front Parking

To promote visibility of the business, store parking should be limited as shown in Figure 7.0-1. Should store front parking be provided, landscaping treatments shall be required to provide a more visually appealing store front and parking should be limited to the greatest extent possible.

Parking and Loading (Chapter 7.2.1.4 of the PVCCSP)

Plazas Required for Over 100,000 S.F. Commercial Centers

Commercial centers over 100,000 square feet require a plaza of at least one (1) square foot per 100 square feet of building area.

Commercial Plaza Elements

Plazas and open space areas provide a friendly and inviting vision and environment by incorporating some of the following elements:

- Enhanced visitor area(s) (i.e., a plaza, patio, courtyard, linear promenade, terrace, or usable landscaped area) scaled accordingly to the size and demands of the particular user or facility.
- Architectural features and site furniture, adhering to a consistent theme.
- Seating, such as benches, tables and chairs, and/or low seating walls.
- Enhanced paving using a combination of textures and patterns, site walls including tree grates.
- Decorative light fixtures and pedestrian scale, bollards and other accent lighting. Enhanced walkway lighting shall not act as sole lighting.
- Landscaping of special interest, landscape buffering, screen walls, trellises, pergola structures and large scale canopy trees.
- Public art or other focal point amenity. Public art is highly encouraged and incentivized by the City. Refer to Section 14.0 for additional incentive information.

Plaza Locations

Plazas should be oriented toward the public view whenever possible as shown in Figure 7.0-2, and placed in areas where high levels of pedestrian activity is likely to occur. They should complement the associated facilities and draw attention to the primary business entry and/or serve as a common area for multiple businesses, adjacent to building entrances, in food service areas, or between building clusters.

Higher Level of Design Treatments

Enhanced plazas and open space areas should exhibit a higher level of design treatments that incorporate seating, water features, sculptures, trash receptacles, ash urns, pedestrian scaled lighting enhancements, and other furnishings as appropriate for the specific user.

Shelter and Buffer Plazas

Plazas should be sheltered and buffered as much as possible from the sun, noise and traffic of adjacent streets, trash receptacles, parking, loading areas, or other incompatible land uses.

Outdoor Seating Area (Over 10,000 S.F. Building Area)

Outdoor seating areas accessible to patrons shall be provided for retail and food service areas over 10,000 square feet of building area.

Separate Employee Break Areas

Site design layout is encouraged to separate employee break areas from the public plaza areas.

Connection to Adjacent Amenities

Site design should include provisions for pedestrian access when adjacent to area wide open space, trails, parks, or other community amenities.

Outdoor Storage (Chapter 7.2.1.5 of the PVCCSP)

Shopping Cart Storage Material

Businesses which utilize shopping carts shall provide designated storage areas within most parking aisles. Tubular holding structures shall be prohibited.

Shopping Cart Storage Screening

Outside shopping cart storage areas shall be screened through the use of walls and/or raised planters constructed as an element of the building.

Outdoor Storage Restrictions

Other than noted above, no other outdoor storage is permitted in the Commercial Zone.

Outdoor Display (Chapter 7.2.1.6 of the PVCCSP)

Extension of Indoor Display Areas

Outdoor display areas shall be designed as an extension of typical indoor display areas through the use of such space defining elements as perimeter landscaping, distinctive placement areas, enhanced surface treatment, or decorative security fencing. The design of these areas shall maintain adequate pedestrian circulation outside of the vehicular travel area.

Approval with Site Plan

Outdoor display areas shall be included and approved by the City with the site plan approval.

Water Quality Site Design (Chapter 7.2.1.7 of the PVCCSP)

Runoff From Truck Docks

Runoff from truck docks must be treated for pollutants of concern prior to discharge from the site.

Truck-wells

Truck-wells are discouraged due to potential clogging of sump-condition storm drain inlets. If used, runoff-needs to run through landscape before discharging from site.

The PVCCSP EIR does not include mitigation measures for this topic.

a) **Less than Significant Impact.** The Project site is located in the northern part of the city, in General Plan Planning Area 1, which is primarily made up of land designated for industrial and business park uses. The Project is surrounded by light industrial, commercial, and residential uses as well as some vacant land. The Project site is also included in the Perris Valley Commerce Center Specific Plan (PVCCSP), which has been designed to encourage a mix of land uses, and also to implement General Plan infrastructure improvement needs, such as roads, water, sewer, and flood control facilities. The Project is requesting an amendment to the PVCCSP from Business/ Professional Office (BPO) to Commercial (C). The Commercial (C) land use designation combines the General Plan Land Use designation of Community Commercial and Commercial Neighborhood. This zone provides for retail, professional office, and service oriented business activities which serve the entire City, as well as the surrounding neighborhoods. Therefore, the Project is consistent and compatible with the surrounding land uses. The Project does not involve construction of any roadway, flood control channel, or other structure that would physically divide any portion of the community. The Project use would be consistent with the general uses in the vicinity and therefore would not divide an established community. Therefore, impacts will be less than significant.

b) **Less than Significant Impact.** As stated above, the Project site is included in the Perris Valley Commerce Center Specific Plan, which encourages urbanization of this area/site. The proposed Specific Plan Amendment from Business/ Professional Office to Commercial would not lead to a conflict with any land use plan because the Project area is dominated by commercial and industrial land uses and some residential uses, and the proposed convenience store, fueling station, and car wash would be consistent with surrounding uses. As described throughout this document, the proposed Project would be consistent with the City of Perris Municipal Code; the PVCCSP; the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP); the Air Installation Compatible Use Zone (AICUZ) Study; the Southern California Association of Governments (SCAG) Regional Plan; and the SCAG Growth Management Plan. Therefore, implementation of the proposed Project would not conflict with applicable plans, policies and regulations adopted for the purpose of avoiding or mitigating an environmental effect. Impacts will be less than significant.

4.12 – Mineral Resources

Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Applicable PVCCSP Standards and Guidelines and Mitigation Measures

No Standards and Guidelines or mitigation measures related to mineral resources are included in the PVCCSP or associated PVCCSP EIR.

a-b) **No Impact.** The Project site is designated as "Urban Area" by the California Geological Survey, and therefore is not considered a mineral resource site by the state. No impacts would occur.

b) **No Impact.** The Project site is not designated as a mineral resource site in either the General Plan or the Perris Valley Commerce Center Specific Plan. No impacts would occur.

4.13 – Noise

Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Generation of excessive groundborne vibration or groundborne noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Applicable PVCCSP Standards and Guidelines and Mitigation Measures

The PVCCSP includes Standards and Guidelines applicable to the Project in terms of airport noise impacts. These Standards and Guidelines summarized below are incorporated as part of the Project and are assumed in the analysis presented in this section. The chapters/section numbers provided correspond to the PVCCSP chapters/sections.

Residential Buffer Development Standards and Guidelines (Chapter 4.2.8 of the PVCCSP)

There are two existing residential communities located within the boundary of the Perris Valley Commerce Center and one that abuts the Specific Plan boundary as depicted in Figure 4.0-16. To recognize and blend with those communities, a Residential Buffer Zone has been established for proposed industrial, commercial and business professional office development abutting existing or proposed residential development.

50-Foot Setback

A 50-foot setback is required for commercial, industrial and business professional office developments immediately abutting existing residential property lines. Other allowed uses and facilities within the 50-foot setback include landscape areas, water quality basins and conveyances, vehicle travel aisles, passenger car parking and any feature deemed unobtrusive to the neighboring residential use by the Development Services Department.

Hours of Operation

Depending on the type of use and activities proposed by the industrial, commercial or professional/office development, the Development Services Department may impose restrictions on hours of operation for construction, as well as business operation.

Direct Lighting Away from Residential

All project lighting must be directed away from residential areas.

Screening

Proposed industrial, commercial or professional/office developments will need to screen operation for residential view through landscape and/or wall screening.

Sound Walls

Sound walls may be required to mitigate potential operational noise impacts from proposed industrial, commercial or professional/office development, as well as be constructed in the first phase of development to help shield residents from construction noise.

Other Restrictions May Be Required Based on Actual Use

Depending on proposed use, an Air Quality Study and/or Health Risk Assessment may be required to determine project viability located adjacent to residences.

AIRPORT OVERLAY ZONE (Chapter 12.0 of the PVCCSP)

The Airport Overlay Zone (AOZ) is an area approximately 1,032 acres and generally extending south of the runway at March Air Reserve Base/Inland Port (March ARB/IP) through the central part of the Perris Valley Commerce Center (PVCC) Specific Plan area. This zoning overlay defines specific land uses and land use densities as distinguished by each of these areas. This zoning overlay corresponds to the March ARB/IP Airport Land Use Compatibility Plan adopted in 2014 and the March ARB/IP Safety Zones: M (Military), A (Clear Zone), B1 (Inner Approach Departure Zone), B2 (High Noise Zone), C1 (Primary Approach/Departure Zone), C2 (Flight Corridor Zone), D (Flight Corridor Buffer), and E (Other Airport Environs). These safety zones are shown on Figure 12.0-1. The AOZ corresponds generally with the boundaries and provisions of the 2014 March ARB/IP ALUCP and airport influence area.

Airport Overlay Zones and Delineation (Chapter 12.1 of the PVCCSP)

The following March zones apply throughout the Perris Valley Commerce Center. Refer to Figure 12.0-1 below for overlay zones.

Zone M (Military) includes all lands owned by the U.S. Air Force. By law, neither local governments nor the Riverside Airport Land Use Commission have jurisdiction over federal lands.

Zone A (Clear Zone) contains lands within the Clear Zone (CZ) at each end of the runway, but not on the base property. As defined by the 2005 Air Installation Compatible Use Zone (AICUZ), the clear zones are 3,000 feet wide and 3,000 feet long beginning at the runway ends. Zone A at the south end of the runway includes privately owned land. The U.S. Air Force has acquired restrictive use easements preventing the development of this property.

Zone B1 (Inner Approach/Departure Zone) encompasses areas of high noise and high accident potential risk within the inner portion of the runway approach and departure corridors. The zone is defined by the boundaries of Accident Potential Zones (APZs) I and II, adjusted on the north to take into

account the turning departure flight tracks. The majority of the zone is exposed to projected noise levels in excess of 65 dB CNEL.

Zone B2 (High Noise Zone) is similar to Zone B1 in terms of noise impact, but is subject to less accident potential risk. The projected 65 dB CNEL contour forms the basis for the zone boundary. The actual boundary follows roads, parcel lines or other geographic features that lie generally just beyond the contour line. Lands within the APZs are excluded from Zone B2. Most of the zone lies adjacent to the runway. To the north, portions extend along the sides of Zone B1. To the south, a small area borders the sides of Zones A and B1 and a larger area extends two (2) miles beyond the south end of Zone B1.

Zone C1 (Primary Approach/Departure Zone) encompasses most of the projected 60 dB CNEL contour plus immediately adjoining areas. The zone boundary follows geographic features. Accident potential risks are moderate in that aircraft fly at low altitudes over or near the zone. To the south, an area beginning just beyond Nuevo Road—approximately five (5) miles from the runway end—is excluded from the zone. Exposure to noise in this area is greater (above 60 dB CNEL), however, the accident potential risks at this distance from the runway are reduced by the altitude at which aircraft typically fly over the area. Single-event noise levels are potentially disruptive in this zone.

Zone C2 (Flight Corridor Zone) contains the remainder of the lands within the 60 dB CNEL contour to the south. Although aircraft overflying this area are at 2,000 feet or more above the runway on descent and generally 3,000 feet or more on takeoff, single-event noise levels combined with the frequency of overflights, including at night, make noise a moderate compatibility concern. A larger portion of Zone C2 is situated to the west of the airport and includes locations above which most of the military closed-circuit flight training aircraft activity takes place. Aircraft overfly this area at circuit altitude (3,000 feet) or higher (similar to the south portion of Zone C2), but high terrain in some locations makes the flight altitude above ground level comparatively lower. Single-event noise levels in this area can be intrusive. However, at present, nearly all of the flight training activity takes place on weekdays during daylight hours, thus reducing the significance of the noise impact on residential land uses. Accident potential risk levels in both portions of Zone C2 are judged to be moderate to low with flight training aircraft activity being the primary concerns

Zone D (Flight Corridor Buffer) is intended to encompass other places where aircraft may fly at or below 3,000 feet above the airport elevation either on arrival or departure. Additionally, it includes locations near the primary flight paths where aircraft noise may be loud enough to be disruptive. Direct overflights of these areas may occur occasionally. Accident potential risk levels in this zone are low.

Zone E (Other Airport Environs) contains the remainder of the Airport Influence Area (AIA). Noise impacts are low (this area is beyond the 55-CNEL noise contour), and risk of accidents is low. Airspace protection is the major concern in that aircraft pass over these areas while flying to, from, or around March ARB/IPA.

The High Terrain Zone serves a more focused purpose than the preceding eight zones. It is intended to identify locations where objects may be hazards to the aircraft operating in the airport's airspace and require careful review. This zone is within the FAR Part 77 surfaces for March ARB/IPA. For a complete listing of those land uses prohibited or permitted with restrictions within the March ARB/IP safety zones, see Tables 12.0-1.

Applicability (Chapter 12.1.1 of the PVCCSP)

Regulations in this Chapter shall apply to all uses, activities, and existing and proposed development project on properties within the March ARB/IP ALUCP Zone A (Clear Zone), Zone B1 (Inner Approach

Departure Zone), Zone B2 (High Noise Zone), Zone C1 (Primary Approach/Departure Zone), Zone C2 (Flight Corridor Zone), Zone D (Flight Corridor Buffer), and Zone E (Other Airport Environs) designated in the ALUCP. Should an override action be taken, the City of Perris shall ensure that development is consistent with direction in the State Aeronautics Act, the FAA regulations, and guidance provided in the Caltrans division of Aeronautics Airport Land Use Planning Handbook.

Existing Development and Land Uses

Non-conforming uses and structures shall comply with Airspace Protection Standards of 19.51.070 which prohibit any activities that pose a risk to flight operations within the AOZ. Existing land uses that are not consistent with the AOZ are nonconforming uses and may continue. No increase in density for non-conforming residential land uses is permitted. Non-conforming buildings and uses shall comply with Perris Municipal Code Chapter 19.80 (Nonconforming Building and Uses) provisions for expiration of nonconforming status and proposed changes to land use that does not conform to the AOZ. Development or land uses shall be considered “existing” if one of the following conditions are met:

- A vesting tentative map has been approved and has not expired or all discretionary approvals have been obtained and have not expired.
- Building permits have been issued and have not expired.
- The structures and site development have been legally established and physically exist.

Procedures (Chapter 12.1.2 of the PVCCSP)

Approval

All ministerial and discretionary actions within the AOZ shall be reviewed for consistency with this Chapter prior to approval.

Mandatory findings for approval

When a project, use or activity is subject to discretionary actions requiring a public hearing or notice, the applicable review authority shall make all of the following findings, as applicable:

- The project, use or activity complies with the noise compatibility policies of the AOZ.
- The project, use or activity complies with residential and non-residential density standards and other development conditions as per Table 12.0-1, March ARB/IP Basic Compatibility Criteria Table.
- The project, use or activity complies with Figure 12.0-1, March ARB/IP Compatibility Map.
- The project, use or activity complies with the airspace protection policies of the AOZ.
- The project, use or activity complies with the overflight policies of the AOZ.

Amendments

Other than General Plan, Specific Plan, or Zoning Code changes addressed through a previous referral to the Riverside County Airport Land Use Commission (RCALUC), or any action to overrule any determination of the March ARB/IP ALUCP, proposed general plan land use amendments, zoning amendments, and specific plan amendments that impact density or intensity of development within the AOZ shall be referred to the RCALUC for a determination of compatibility with the adopted March ARB/IP ALUCP.

Override Provisions

Should the RCALUC update the March ARB/IP ALUCP, the City Council of the City of Perris shall review the updated March ARB/IP ALUCP and either make changes to applicable General Plan sections,

zoning, and implementing ordinances, or the City Council may, pursuant to Public Utilities Code Section 21676(b), overrule the RCALUC.

Compatibility with March ARB/IP ALUCP (Chapter 12.1.3 of the PVCCSP)

The Perris Valley Commerce Center is located in March ARB/IP safety zones and therefore all development shall comply with the following measures:

Avigation Easement

Development projects shall provide an executed avigation easement to the March Joint Powers Authority (MJPA). Avigation easement forms and instructions are available on the MJPA website, www.marchjpa.com.

Noise Standard

All building office areas shall be constructed with appropriate sound mitigation measures as determined by an acoustical engineer or architect to ensure appropriate interior sound levels.

Land Use and Activities

Compatible and approved land uses and activities shall not be altered or amended without City consent. The following shall be prohibited:

- Any use that would direct a steady light or flashing light of red, white, green or amber colors (associated with airport operations) towards an aircraft engaged in a climb following takeoff or landing at an airport, other than FAA-approved navigational lights and systems.
- Any use that would cause sunlight to be reflected towards an aircraft engaged in a climb following takeoff or descent towards a landing at an airport.
- Any use that would generate excessive smoke or water vapor or attract large concentrations of birds, or that would otherwise affect safe air navigation within the AIA.
- Any use that would generate electrical interference that may be detrimental to the operation of aircraft or the aircraft's navigation instrumentation.

Retention and Water Quality Basins

All retention and water quality basins shall be designed to dewater within 48 hours of a rainfall event.

Notice of Airport in the Vicinity

Prior to approval of new development projects, all applicants shall prepare an aerial photograph identifying the location of the March ARB/IP in relationship to the project site, and a Notice of Airport in the Vicinity. Because the entire PVCC SP lies within the MARB Airport Influence Area, notice must be provided to all potential purchasers or tenants and shall consist of the following:

NOTICE OF AIRPORT IN VICINITY

This property is presently located in the vicinity of an airport, within what is known as an airport influence area. For that reason, the property may be subject to some of the annoyances or inconveniences associated with proximity to airport operations (for example: noise, vibration or odors). Individual sensitivities to those annoyances can vary from person to person. You may wish to consider what airport annoyances, if any, are associated with the property before you complete your purchase and determine whether they are acceptable to you. Business & Professions Code Section 11010 (b)(13)(A)

Disclosure

The applicant shall provide full disclosure of the aviation easement and Notice of Airport in the Vicinity to all prospective purchasers or tenants.

Lighting Plans

Prior to issuance of a building permit, lighting plans shall be submitted to an airport lighting consultant or March ARB/IP), for review and comment prior to issuance of building permits.

Height Restrictions per Federal Aviation Regulations Part 77

The federal government has developed standards for determining obstructions in navigable airspace. Federal Aviation Regulations Part 77 defines a variety of imaginary surfaces at certain altitudes around airports. The Part 77 surfaces include the primary surface, approach surface, transitional surface, horizontal surface and conical surface. Collectively, the Part 77 surfaces around an airport define a bowl-shaped area with ramps sloping up from each runway end. The Part 77 regulations identify elevations at which structures may present a potential hazard to air navigation and require FAA review. Please see Appendix D of the 2005 March ARB/IP AICUZ that describes FAR Part 77 height obstruction criteria surrounding the airport.

Form 7460

Development projects in the AOZ shall submit FAA Form 7460-1 (Notice of Proposed Construction or Alteration) through the process outlined at oaaaa.faa.gov, and shall receive and provide the City of Perris a copy of the FAA's "Determination of No Hazard to Air Navigation" prior to project construction. Should cranes or vertical equipment be used during the construction process, a separate Form 7460-1 is required for construction equipment to be submitted.

Infill

Infill: Where development not in conformance with the criteria set forth in this Compatibility Plan already exists, additional infill development of similar lands uses may be allowed to occur even if such lands uses are to be prohibited elsewhere in the zone. This exception does not apply within Compatibility Zones A or B1.

- (a) A parcel can be considered for infill development if it meets all of the following criteria plus the applicable provisions of either sub-policy (b) or (c) below:
 - (1) The parcel size is no larger than 20.0 acres.
 - (2) At least 50 % of the site's perimeter is bounded (disregarding roads) by existing uses similar to, or more intensive than, those proposed.
 - (3) The proposed project would not extend the perimeter of the area defined by the surrounding, already developed, incompatible uses.
 - (4) Further increases in the residential density, nonresidential usage intensity, and/or other incompatible design or usage characteristics (e.g., through use permits, density transfers, addition of second units on the same parcel, height variance, or other strategy) are prohibited.
 - (5) The area to be developed cannot previously have been set aside as open land in accordance with policies contained in this Plan unless replacement open land is provided within the same compatibility zone.

- (b) For residential development, the average development density (dwelling units per gross acre) of the site shall not exceed the lesser of:
 - (1) The average density represented by all existing lots that lie fully or partially within a distance of 300 feet from the boundary of the parcel to be divided; or

- (2) Double the density permitted in accordance with the criteria for that location as indicated in the Compatibility Criteria Table 1 in Chapter 19.51, Airport Overlay Zone, of the City of Perris zoning code.
- (c) For nonresidential development, the average usage intensity (the number of people per gross acre) of the site's proposed use shall not exceed the lesser of:
- (1) The average intensity of all existing uses that lie fully or partially within a distance of 300 feet from the boundary of the proposed development; or
 - (2) Double the intensity permitted in accordance with the criteria for that location as indicated in the March ARB/IP COMPATIBILITY CRITERIA Table 1 in Chapter 19.51, Airport Overlay Zone, of the City of Perris zoning code.
- (d) The single-acre and risk-reduction design density and intensity multipliers described in the Compatibility Criteria Table 1 in Chapter 19.51, Airport Overlay Zone, of the City of Perris zoning code are applicable to infill development.
- (e) Infill development on some parcels should not enable additional parcels to then meet the qualifications for infill. The intent is that parcels eligible for infill be determined just once. The burden for demonstrating that a proposed.

The proposed Project is also required to adhere to PVCCSP Mitigation Measures MM Noise-1 through MM Noise-5. During all project site excavation and grading, PVCCSP EIR Mitigation Measure MM Noise-1 requires the project contractor to equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers consistent with manufacturers' standards. PVCCSP Mitigation Measure MM Noise-1 also requires the project contractor to place all stationary construction equipment so that emitted noise is directed away from the noise sensitive receptors nearest the project site. During project construction, PVCCSP Mitigation Measure MM Noise-2 requires stationary construction equipment, stockpiling, and vehicle staging areas a minimum of 446 feet away from the closest sensitive receptor. PVCCSP Mitigation Measure MM Noise-3 prohibits the use of combustion-powered equipment, such as pumps or generators, within 446 feet of any occupied residence unless the equipment is surrounded by a noise protection barrier. PVCCSP Mitigation Measure MM Noise-4 requires construction contractors of implementing development projects to limit haul truck deliveries to the same hours specified for construction equipment, and to the extent feasible, prohibits haul routes from passing sensitive land uses or residential dwellings.

A *Noise Impact Analysis Report* was prepared by MIG, Inc. dated September 11, 2020 to evaluate and document noise levels associated with construction and operation of the proposed convenience store, car wash, and gasoline refueling station (See Appendix D). The information in this section is taken from the *Noise Impact Analysis Report* for the proposed Project. Additional detail regarding how noise is defined and measured can be found in the report in Appendix D.

Environmental Setting

The proposed Project is located at the southeast corner of the intersection of North Perris Boulevard and East Rider Street, in an area of mixed residential, commercial, and light industrial land uses. The City's General Plan Circulation Element considers North Perris Boulevard and East Rider Street to be primary and secondary arterial roadways, respectively (City of Perris, 2013). According to the General Plan Noise Element, measured ambient noise levels on East Rider Street (approximately one mile east of the Project site) and Perris Boulevard (approximately 0.5 miles south of the Project site) were 62 and 68.4 dBA Leq, respectively, in 2003 (City of Perris, 2016, Exhibit N-2 and Table N-2). Traffic noise modeling conducted for the General Plan Noise Element indicates that 2003 average daily traffic (ADT) volumes on the segments of North Perris Boulevard and East Rider Street close to the Project site were

17,974 and 2,100, respectively; these traffic volumes were estimated to generate noise levels of 73.1 and 61.0 CNEL at a distance of 50 feet from the center of North Perris Boulevard and East Rider Street.

Under 2030 conditions, the traffic noise modeling conducted for the General Plan Noise Element showed ADT volumes on North Perris Boulevard and East Rider Street would increase to 25,500 and 4,000, respectively. These future traffic volumes would generate noise levels of 74.7 and 62.7 CNEL at a distance of 50 feet from the center of North Perris Boulevard and East Rider Street, respectively.^{viii}

In addition to traffic noise, the Project site is located approximately 2.5 miles southeast of March Air Reserve Base/ Inland Port (ARB/IP) and is within March ARB/IP Airport Land Use Compatibility Plan (ALUCP) Zone B1 (Inner Approach/Departure Zone; Riverside County ALUC, 2005 and 2014). This zone is an area of high noise impact because it is within or near the airport's 65 CNEL contour zone and single-event noise levels are sufficient to disrupt many land use activities. According to the City's General Plan Noise Element, the Project site is located within the 65 CNEL noise contour associated with March ARB/IP. Zone B1 is also an area of high airport-related risk. Specifically, the Project site lies within Accident Protection Zone (APZ) II. APZ II measures 3,000 feet wide by 7,000 feet in length and is centered on the extended centerline of Runway 14/32. APZ II possesses a reduced potential for accidents versus APZ I, and permits development of properties consistent with low intensity.

Ambient Noise Levels at the Project Site

Based on the traffic noise modeling contained in the City's General Plan, as well as the Project site's location within March ARB/IP ALUCP Zone B1-APZII, the existing ambient noise levels at the Project site are assumed to be 75 CNEL within 50 feet of the center of North Perris Boulevard, 70 CNEL within 86 feet of the center of North Perris Boulevard, and at least 65 CNEL within 186 feet of the center of North Perris Boulevard (City of Perris, 2016, Table N-8). The remainder of the Project site and surrounding lands are assumed to have an ambient noise level of 65 to 70 CNEL due primarily to March ARB/IP operations.

Noise Sensitive Receptors

Noise sensitive receptors are buildings or areas where unwanted sound or increases in sound may have an adverse effect on people or land uses. The City's Municipal Code defines sensitive receptors to include residences, schools, libraries, hospitals, churches, offices, hotels, motels, and outdoor recreation areas. The noise sensitive receptors near the proposed Project site include the adjacent residences (within the R-10,000 zone) to the south and east on Santo Tomas Avenue and El Rosario Drive, respectively, as well as the Sprit Life Church located approximately 250 feet north of the Project site.

a) **Less than Significant with Mitigation Incorporated.** The proposed Project would involve the construction of the new 7-Eleven building, fueling canopy, and car wash. Project construction would include site preparation, grading, building construction, paving, and architectural coating phases. The site is currently undeveloped and flat and cut and fill would be balanced on-site. Construction of the

^{viii} 2003 traffic noise modeling data are reported for Perris Boulevard, from Placentia Street to Walnut Street, and Rider Street, from Indian Avenue to Perris Boulevard (City of Perris, 2016, Table N-6). 2030 traffic noise modeling data are reported for Perris Boulevard, from Rider Street to Placentia Avenue, and Rider Street, from Perris Boulevard to Wilson Street (City of Perris, 2016, Table N-8). These roadway segments are the closest modeled segments to the Project site and are considered representative of traffic levels on North Perris Boulevard and East Rider Street directly adjacent to the Project site due to similar ADT and roadway geometry conditions.

proposed Project is anticipated to take approximately twelve months to complete. Table 10, *Construction Activity, Duration, and Typical Equipment*, summarizes the proposed Project’s construction phasing and the typical pieces of heavy-duty, off-road construction equipment that would be required during each phase.

**Table 10
Construction Activity, Duration, and Typical Equipment**

Construction Activity	Duration (Days) ^(A)	Typical Equipment Used ^(B)
Site Preparation	3	Dozer, Backhoe
Grading	6	Excavator, Grader, Dozer, Backhoe
Building Construction	220	Crane, Forklift, Generator, Backhoe, Welder
Paving	10	Paver, Roller, Paving Equipment
Architectural Coating	10	Air Compressor
Source: MIG, Inc. 2020		
(A) Days refers to total active workdays in the construction phase, not calendar days.		
(B) The typical equipment list does not reflect all equipment that would be used during the construction phase. Not all equipment would operate eight hours per day each workday.		

Construction Noise Impact Analysis

Construction of the proposed Project would generate noise from heavy equipment operations throughout the Project area. Some heavy equipment would consist of mobile equipment such as a loader, excavator, etc., that would move around work areas; other equipment would consist of stationary equipment (e.g., generators, air compressors) that would generally operate in a fixed location until work activities are complete. Heavy equipment generates noise from engine operation, mechanical systems and components (e.g., fans, gears, propulsion of wheels or tracks), and other sources such as back-up alarms. Mobile equipment generally operates at different loads or power outputs, and produces higher or lower noise levels depending on the operating load. Stationary equipment generally operates at a steady power output that produces a constant noise level. Construction of the proposed Project would also generate noise from vehicle trips, including worker, vendor, and haul truck trips. These trips would occur on the roads that provide access to the Project site, primarily North Perris Boulevard and East Rider Street.

Since Project-specific construction equipment information is not available at this time, potential construction-related noise impacts can only be evaluated based on the typical construction activities associated with an industrial development project. Table 11, *Typical Construction Equipment Noise Levels (dBA)*, presents the estimated, worst-case noise levels that could occur from the operation of typical construction equipment used to develop an industrial land use project. The equipment assumptions used are based on, and consistent with, the California Emissions Estimator Model (CalEEMod) construction phasing, equipment usage, and operating schedules used to evaluate the proposed Project’s potential construction air quality impacts (See Appendix A).

**Table 11
Typical Construction Equipment Noise Levels (dBA)**

Equipment	Reference Noise Level at 50 Feet (L _{max}) ^(A)	Percent Usage Factor ^(B)	Predicted Noise Levels (L _{eq}) at Distance ^(C)		
			25 Feet	50 Feet	250 Feet
Backhoe	80	40	82	76	62
Bulldozer	85	40	87	81	67
Compact Roller	80	20	79	73	59

Concrete Mixer	85	40	87	81	67
Crane	85	16	83	77	63
Delivery Truck	85	40	87	81	67
Excavator	85	40	87	81	67
Generator	82	50	85	79	65
Paver	85	50	88	82	68
Pneumatic Tools	85	50	88	82	68
Scraper	85	40	87	81	67
Tractor	84	40	86	80	66

Sources: Caltrans, 2013; FHWA, 2010; MIG (see Appendix D - Appendix A, Sheet 1).

- (A) L_{max} noise levels based on manufacturer's specifications.
- (B) Usage factor refers to the amount of time the equipment produces noise over the time period.
- (C) Estimate does not account for any atmospheric or ground attenuation factors. Calculated noise levels based on Caltrans, 2013: L_{eq} (hourly) = L_{max} at 50 feet – $20\log(D/50) + 10\log(UF)$, where: L_{max} = reference L_{max} from manufacturer or other source; D = distance of interest; UF = usage fraction or fraction of time period of interest equipment is in use.

During site preparation, grading, and paving activities, construction equipment would operate throughout the site, moving closer to one property line and farther away from another; building construction and architectural coating activities would be concentrated in the center of the site where the proposed building and fueling canopy would be located. For these reasons, potential construction noise and vibration levels were estimated for worst-case equipment operations (50 feet from any property line), average equipment operations based on the distance from the center of the site to adjacent property lines (approximately 100 feet to the east property line and 160 feet to the south property line), and the shortest distance between the Project site and the New Creation Church (250 feet to the north). A summary of predicted construction noise levels is presented in Table 12, *Summary of Predicted Construction Noise Levels*.

Table 12
Summary of Predicted Construction Noise Levels

Scenario	Estimated Duration ^(A)	Single Equipment Use ^(B)		Multiple Equipment Use ^(C)	
		$L_{eq}(h)$	L_{max}	$L_{eq}(h)$	L_{max}
Worst-Case Construction (50 feet from property line) ^(D)	1 Week	82	85	85	88
Typical Construction (100 feet from east property line)	10 Months	76	79	79	82
Typical Construction (160 feet from south property line)	10 Months	72	75	75	78
Typical Construction (250 feet away) ^(E)	10 Months	68	71	71	74

Source: MIG (see Appendix D - Appendix A, Sheet 1).

- (A) Estimated duration represents the period of time site preparation, grading, and paving activities would occur (see Appendix D - Appendix A, Table 2-1). For the worst-case construction scenario, the duration assumes equipment would not operate within 50 feet of the same property line location for more than 1 week.
- (B) Values represent the highest estimated noise level for one piece of construction equipment (see Appendix D - Table 5-1).
- (C) Values represent the highest estimated noise level for two pieces of construction equipment (see Appendix D - footnote 5).
- (D) Construction activities may occur closer than 50 feet from a property line for short periods of time (hours) that are not representative of overall construction activities. The worst-case construction

scenario reflects the duration that heavy equipment may operate in the same general area near a property line location. (E) Measurement is based on the distance between the Project site boundary and the New Creation Church façade.

As shown in Table 12, the worst-case Leq and Lmax noise levels associated with the operation of a dozer, excavator, scraper, etc., are predicted to be approximately 82 and 85 dBA, respectively, at a distance of 50 feet from the equipment operating area. At an active construction site, it is not uncommon for two or more pieces of construction equipment to operate in the same area at the same time. The concurrent operation of two or more pieces of construction equipment would result in noise levels of approximately 85 dBA Leq and 88 dBA Lmax at a distance of 50 feet from equipment operating areas.^{ix} These maximum noise levels would occur for a short period of time (less than three total weeks). As site preparation (3 days) and grading (6 days) is completed and building construction begins, work activities would occur further from property lines, require less large heavy-duty equipment (i.e., grader), and generate lower construction noise levels. Typical construction activities would generate noise levels (68 – 75 dBA Leq) at residential property lines and other sensitive receptor locations that are similar to the existing ambient noise environment on North Perris Boulevard and East Rider Street (65 to 75 CNEL).

Section 7.34.060 of the City’s Municipal Code sets forth that construction noise levels are exempt from City noise standards provided the activities take place between 7 AM and 7 PM, Monday to Saturday (not to include federal holidays), and do not create noise levels that exceed 80 dBA in residential zones. As shown in Table 12, predicted construction noise levels would exceed the 80 dBA noise standard for residential zones contained in the City’s Municipal Code; however, the Applicant has designed the Project to minimize potential construction noise and vibration levels. Substantial site preparation and grading would not be required since the Project site is flat. The use of tilt-up concrete and wood panels for building walls and other components partially eliminates on-site fabrication of exterior walls and reduces the amount of equipment needed to erect the building. However, to ensure that Project noise does not exceed allowable noise levels during construction, **Mitigation Measure NOI-1** has been incorporated to reduce construction noise to acceptable levels. **Mitigation Measure NOI-1** requires the use of construction management and equipment controls to reduce potential noise from construction activities. These measures restrict work hours in accordance with the Municipal Code, require staging and stationary noise sources to be located as far from neighboring land uses as possible, and require a temporary noise barrier be erected along the southern property line capable of reducing noise levels by 10 dBA. These BMPs would render the proposed Project’s construction noise levels consistent with Chapter 7.34.060. Finally, the proposed Project would be required to adhere to PVCCSP **Mitigation Measures MM Air-1** through **MM Air-4**. Therefore, with the incorporation of mitigation measures, impacts from construction will be less than significant.

Operational Noise Impact Analysis

Once constructed, the proposed convenience store and gasoline refueling station would operate 24 hours a day, seven days a week; however, the car wash will only operate during normal business hours. Operation of the Project will generate noise from the following activities: automobile travel to parking

^{ix} As shown in Table 11 a single bulldozer provides a sound level of 81 dBA Leq at a distance of 50 feet; when two identical sound levels are combined, the noise level increases to 84 dBA Leq and when three identical sound levels are combined, the noise level increases to 86 dBA Leq (see Equation 4). These estimates assume no shielding or other noise control measures are in place at or near the work areas.

spaces and fuel pumps, automobile parking, and other miscellaneous automobile noise sources such as doors closing and engine start-up and revving; fuel tanker truck travel, braking, and underground storage tank (UST) loading operations; vacuum operation; rooftop-mounted heating, ventilation, and air conditioning (HVAC) units; car wash operations; mechanical equipment such as condensers for ice machines and coolers/freezers; other miscellaneous noise sources, including pneumatic air hoses, water hoses, fuel pump operation, refuse collection, and human speech.

Automated Car Wash Noise Description

An automated car wash generates noise from vehicles maneuvering into and out of the car wash and from the operation of the automated system itself. An automated system generates noise during two main cycles: the water spraying/washing cycle and the drying cycle. The factors that affect the noise levels generated by these sources include: 1) the size of the automated washing (e.g., brushes, spray nozzles, etc.) and drying equipment (e.g., fans and blowers); 2) the duration of each duty cycle (i.e., how many minutes it takes to complete an individual wash or dry cycle); the total duration of the entire washing cycle (i.e., how many minutes to complete an individual car wash); the presence of any noise attenuating design features in the car wash frame/tunnel design, such as sound-absorbing materials, low noise dryers, or doors at tunnel entrances and exits. Typically, the drying cycle generates the highest operational noise level (PC&D, 2005).

For the purposes of this analysis, the Ryko SoftGloss MAXX system is assumed to generate a maximum noise level of 86 dBA at a distance of 10 feet from the car wash entrance and exit. This maximum noise level assumes the car wash is equipped with standard manufacturer on-board dryers and does not include any noise attenuation design features (sound-absorbing materials, entrance, and exit doors that close); this assumption is based on MIG's professional experience evaluating car wash noise levels and a literature search for projects involving the Ryko SoftGloss MAXX automatic car wash system. It is also consistent with other predicted noise levels for automatic car washes approved by the City (City of Perris, 2019). The typical automatic car wash requires four to five minutes for a vehicle to enter the tunnel, complete the full wash and dry cycle, and exit the tunnel. The drying cycle typically lasts for one minute. Therefore, the maximum noise levels are assumed to occur for up to 12 minutes in any one hour. At this operational rate, the effective hourly average noise level associated with car wash operations will be 79.6 dBA at a distance of 10 feet.^x

Operational Noise Level Estimates

The proposed Project's operational noise levels were estimated using standard theoretical equations for predicting environmental noise levels (Caltrans, 2013). Reference and potential hourly average noise levels associated with the proposed Project's noise sources are summarized in Table 13, *Project Noise Source - Reference and Hourly L_{eq} Noise Levels*. All reference noise levels are presented at a distance of three (3) feet from the source.

^x See Equation 3 for the methodology used to estimate variable noise levels. This value does not represent the ambient noise level that would occur during one hour of car wash operation. This value is independent of ambient noise levels and assumes the car wash operates at maximum noise levels for 12 minutes in one hour and 15 dB less than maximum noise levels for 48 minutes in one hour.

**Table 13
Project Noise Source - Reference and Hourly L_{eq} Noise Levels**

Noise Source	Reference dBA(A)	Duration(B)	Hourly L_{eq}(C)
Automobile Trips			
<i>Low speed travel (15 mph)/parking</i>	55	<i>60 seconds</i>	37.2
<i>Door closing</i>	95	<i>1 second</i>	59.4
<i>Engine start and revving</i>	95	<i>5 seconds</i>	66.4
<i>Total Combined Noise Level</i>			67.2
On-Site Truck Trips			
<i>Low speed travel (15 mph)</i>	90	<i>60 seconds</i>	72.2
<i>UST maneuvering (w/ back-up alarm)</i>	100	<i>60 seconds</i>	82.2
<i>Air brake release</i>	100	<i>3 seconds</i>	69.2
<i>Main engine idling</i>	80	<i>900 seconds</i>	74.0
<i>Door closing</i>	95	<i>1 second</i>	59.4
<i>Engine start and revving</i>	100	<i>10 seconds</i>	74.4
<i>Total Combined Noise Level</i>			83.9
HVAC Unit			
<i>Operation (3-ton, with parapet wall)</i>	76	<i>1,200 seconds</i>	71.2
Vacuum			
<i>Operation</i>	80	<i>600 seconds</i>	72.2
Fuel Storage and Dispensing			
<i>Max Operation (with drying cycle)</i>	96.5	<i>720 seconds</i>	89.5
<i>Typical Operation (wash cycle)</i>	81.5	<i>2,880 seconds</i>	80.5
<i>Total Combined Noise Level</i>			90.0
Source: MIG (See Appendix D - Appendix C, Sheet 1)			
(A) Reference dBA is based on a distance of 3 feet.			
(B) Duration is used to estimate the percentage of time the noise is generated per Equation 3 (out of 3,600 seconds in an hour).			
(C) Hourly L _{eq} estimated using Equation 3.			

Automobile travel and related noise were estimated based on the maximum hourly vehicle trip rates (128 trips) identified in the TIA prepared for the Project. These trips were distributed assuming an equal percentage of ingress and egress from the Project's two driveways. Once on-site, 80% of the vehicle trips were assumed to travel to the fueling canopy, and 20% were assumed to travel onto the car wash. Other activities (HVAC operations, vacuum operations, car wash operations, etc.) were assumed to be consistent throughout the day (i.e., no single hour would be substantially louder). The Project could operate 24-hours a day.

The proposed Project's potential noise levels were estimated using the reference and calculated hourly L_{eq} noise levels identified in Table 13, adjusted for distance (between the noise source and property line) and activity levels (e.g., number of automobile trips, vacuums, etc.). In general, the estimated noise levels did not account for potential reflection or any atmospheric or ground absorption or attenuation due to the presence of predominantly paved surfaces between the noise source and modeled receiver locations (i.e., property line). For multiple sources such as HVAC units, car parking, etc., noise levels were modeled from a single location to conservatively (i.e., overestimate) aggregate noise levels from an area. Project noise levels were estimated at 8 receptor locations spread along the Project's north (R1), east (R2, R3, and R4), south (R5 and R6), and west (R7 and R8) property lines, as shown in Figure 5-1 of the Noise Impact Analysis Report.

- *Automobile travel:* Each on-site automobile trip was assumed to travel at low speed (no more than 15 mph) and produce an average hourly noise level of approximately 37.2 dBA at a distance of 3 feet. Travel lanes would surround the proposed building. At their closest, the center of a travel lane would be approximately 36 to 96 feet from the Project's eastern and southern property line, respectively. At this distance, each automobile trip would generate an average hourly noise level of 15.6 and 7.1 dBA, respectively. The combined noise level at the property line from 20 (eastern property line) and 64 (southern property line) such trips occurring in one hour would be 28.6 and 25.2 dBA.
- *Automobile parking:* The proposed parking areas would surround the building. At their closest, the center of the parking areas would be approximately 58 and 77 feet from the Project's eastern and southern property lines, respectively. At this distance, each automobile trip would generate an average hourly noise level of 41.5 dBA (eastern property line) and 39.0 dBA (southern property line). The combined noise level at the property line from 8 such trips occurring at the same time would be 50.5 dBA (eastern property line) and 48.1 dBA (southern property line).
- *Truck trip noise:* Fuel truck deliveries would produce an hourly average noise level of 83.9 dBA. Fuel truck maneuvering and idling would occur near the northwest corner of the site, more than 200 feet from the sensitive property lines. At this distance, each fuel delivery would generate an average hourly noise level of 47.3 dBA. It is possible, although unlikely that more than one fuel delivery could occur in a single day; however, due to space and maneuverability constraints, only one delivery would occur in any single hour.
- *HVAC noise:* HVAC equipment would produce an average hourly noise level of approximately 71.2 dBA at a distance of 3 feet (without attenuation from a parapet wall). These units would be located near the center of the proposed building, behind a parapet wall, at least 100 feet from any property line. At this distance, each HVAC unit would generate a noise level of approximately 40.4 dBA Leq. The concurrent operation of up to 4 units at the same time, which is highly unlikely, would generate a combined HVAC noise level of 46.5 dBA.
- *Vacuum:* Vacuum operation would produce an average hourly noise level of approximately 78.2 dBA at a distance of 3 feet. The vacuums would be located on the north side of the car wash, more than 100 feet from the eastern property line. The car wash would also serve to partially shield vacuum noise from the southern property line. Each vacuum would generate a noise level of up to approximately 49.8 dBA Leq at the eastern property line.
- *Car Wash:* At their closest, the car wash entrance and exit would be located approximately 55 feet from the southern property lines. At this distance, the car wash would generate a noise level of 64.8 dBA Leq at these locations. Maximum car wash noise levels would be approximately 71.2 dBA Lmax during drying cycle operations.

The average hourly noise level from all Project noise sources at the Project's property lines is summarized in Table 14, *Summary of Project Increase in Noise Levels at Property Lines (Hourly Leq dBA)*, below; car wash operating noise levels are summarized in Table 15, *Summary of project Car Wash Noise Levels at Residential Property Lines*.

Table 14
Summary of Project Increase in Noise Levels at Property Lines (Hourly L_{eq} dBA)

Property Line	Existing Ambient Noise Level	Project Noise Level, All Sources	Combined Noise Level	Project Increase in Ambient Noise Levels
North (R1)	66	57.3	66.5	+0.5
East (R2)	66	55.4	66.4	+0.4
East (R3)	66	57.7	66.6	+0.6
East (R4)	66	60.9	67.2	+1.2
South (R5)	66	64.9	68.5	+2.5
South (R6)	66	64.9	68.5	+2.5
West (R7)	75	56.2	75.1	+0.1
West (R8)	75	56.3	75.1	+0.1

Source: MIG, Inc. (See Appendix D - Appendix C, Sheet 2)

Table 15
Summary of Project Car Wash Noise Levels at Residential Property Lines

Property Line	Existing Ambient Noise Level (Hourly L _{eq} dBA)	Average Car Wash Noise Levels (Hourly L _{eq} dBA)	Maximum Car Wash Noise Levels (dBA L _{max} dBA)
East (R3)	66	55.7	62.2
East (R4)	66	60.3	66.8
South (R5)	66	64.8	71.2
South (R6)	66	64.8	71.2

Source: MIG, Inc. (See Appendix D - Appendix C, Sheet 2)

As shown in Table 14, the proposed Project would generate combined noise levels in the range of 55 to 65 dBA L_{eq}. Noise levels would be lowest at the north, east, and west property lines due to setbacks and the limited noise sources operating in these areas. Car wash Noise levels would be highest along the southern property line due to car wash operations (64.8 dBA L_{eq} and up 71.2 dBA L_{max}; see Table 15). Predicted project noise levels would be equal to or less than the assumed ambient noise level (66 or 75 dBA) at all property line locations. At the southern property line, the proposed Project could increase ambient noise levels by approximately 2.5 dBA (from 66 CNEL to 68.5 CNEL) if it were to operate 24 hours a day, which would represent a barely perceptible change in the ambient noise environment; however, in no case would the Project’s noise levels cause a change in noise/land use compatibility exposure. The City’s General Plan generally establishes that noise levels between 65 and 75 CNEL are normally unacceptable for the single-family residential land uses that border the Project site on the east and south. The existing residential lands to the east and south are already exposed to existing noise levels of 66 to 70 CNEL due primarily to March ARB/IP operations (and vehicle traffic on North Perris Boulevard). Due to this high ambient noise level, which is considered normally unacceptable for single-family residential land uses, a 2.5 dBA increase in ambient noise levels is considered substantial.

In addition, car wash operations would specifically generate noise levels of 64.8 dBA L_{eq} and 71.2 dBA L_{max}. This noise level is less than the City’s maximum daytime noise standard of 80dBA set by Municipal Code Sections 7.34.040 and 7.34.050; however, it exceeds the City’s maximum nighttime noise standard of 60 dBA. To ensure the proposed Project does not produce noise levels that would exceed a City standard or otherwise result in a substantial permanent increase in noise levels in the vicinity of the Project, **Mitigation Measure NOI-2** has been incorporated to reduce operational noise to acceptable levels. **Mitigation Measure NOI-2** would ensure installed equipment produces levels

consistent with the assumptions in this Report and either prohibit nighttime operation of the car wash or limit car wash noise levels to 60 dBA L_{max} at adjacent residential receptor locations. If car wash operations are prohibited at night, the proposed car wash will not exceed City nighttime standards, and the proposed Project would not result in a substantial change in the existing CNEL at and near the site (because the Project would not increase nighttime noise levels above existing conditions). If the installation of acoustical treatments or a physical barrier is selected, the proposed Project would comply with City standards for daytime and nighttime noise levels and generate noise levels that are substantially less than the ambient noise environment (60 dBA L_{max} vs. 66 CNEL). The amount of attenuation provided by a physical noise barrier would vary depending on the barrier design. As shown in Table 15, up to 11.2 dBA reduction is necessary at the southern property line to comply with City’s nighttime 60 dBA L_{max} standard. The material selected for the barrier would therefore need to have a transmission loss value of at least 22 dBA. For reference, a standard light concrete block measuring 8 inches high by 8 inches wide by 16 inches long has a transmission loss value of 34 dBA (Caltrans, 2013). As shown in Table 16, *Preliminary Barrier Attenuation Summary*, Preliminary noise barrier attenuation estimates indicate a barrier with a transmission loss value of 22 dBA would need to be six feet tall along the eastern property line and eight feet tall along the southern property line to meet a 60 dBA L_{max} standard during nighttime hours.

**Table 16
Preliminary Barrier Attenuation Summary**

Property Line	6-Foot-Tall Barrier	7-Foot-Tall Barrier	8-Foot-Tall Barrier
East (R3)	6.60	9.48	12.12
East (R4)	6.74	9.67	12.32
South (R5)	6.97	9.98	12.63
South (R6)	6.97	9.98	12.63
Source: MIG, Inc. (See Appendix D - Appendix C, Sheet 3)			

For the reasons described above, the proposed Project would not result in noise levels that exceed City standards or otherwise result in a substantial permanent increase in ambient noise levels with the incorporation of the recommended noise control practices. Impacts will be less than significant.

Mitigation Measure

NOI-1 Construction Noise Control Best Management Practices (BMP’s). To reduce potential noise levels associated with the construction of the proposed Project, the Applicant and/or its designated contractor, contractor’s representatives, or other appropriate personnel shall implement the following measures:

- *Restrict work hours/equipment noise.* All work shall be subject to the requirements in City Municipal Code Section 7.34.060. Construction activities, including deliveries, shall only occur from 7 AM to 7 PM Monday through Saturday (and not on holidays). The Applicant and/or its contractor shall post a sign at all entrances to the construction site informing contractors, subcontractors, construction workers, etc., of this requirement. The sign shall also provide a name (or title) and phone number for an appropriate on-site and City representative to contact to submit a noise complaint.
- *Construction equipment care, siting, and design measures.* The following construction equipment care, siting, and design measures shall apply during construction activities:

- Heavy equipment engines shall be covered, and exhaust pipes shall include a muffler in good working condition. Pneumatic tools shall include a noise suppression device on the compressed air exhaust.
- All stationary noise-generating equipment such as pumps, compressors, and welding machines shall be located as far from neighboring property lines as practical.
- If feasible, the Applicant and/or his contractor shall connect to existing electrical service at the site to avoid the use of stationary, diesel- or other alternatively-fueled power generators.
- **Construct/Install Temporary Noise Barrier:** The Applicant and/or his contractor shall install and maintain throughout the duration of all site preparation, grading, and other construction activities requiring large heavy-duty equipment operations within 50 feet of a residential property line a physical noise barrier capable of achieving a minimum reduction in predicted construction noise levels of 10 dB. Potential barrier options capable of achieving a 10 dB reduction in predicted construction noise levels include:
 - An 8-foot-high concrete, wood, or other barrier installed at-grade (or mounted to structures located at-grade, such as a K-Rail) along the Project's eastern and southern property line. Such a wall/barrier shall consist of solid material (i.e., free of openings or gaps other than weep holes) that have a minimum rated transmission loss value of 20 dBA.
 - Commercially available acoustic panels or other products such as acoustic barrier blankets installed along the Project southern property line that have a minimum sound transmission class (STC) or transmission loss value of 20 dBA. The rated STC or transmission loss value of the barrier would be confirmed by the manufacturer's specifications prior to installation.
 - Any combination of noise barriers and commercial products capable of achieving a 10 dBA reduction in construction noise levels at neighboring land uses.

NOI-2 Operational Noise Control Best Management Practices: To ensure the proposed Project complies with City Municipal Code Section 7.34.040 and 7.34.050 and does not result in a substantial permanent increase in ambient noise levels, the Applicant shall prepare and submit a final acoustical analysis, report, or other documentation to the City that:

- Provides evidence (manufacturer specifications or acceptable ambient noise monitoring data) confirming that the final selected car wash make and model does not produce noise levels that exceed 86 dBA L_{max} and 79.6 dBA L_{eq} at a distance of 10 feet from the car wash entrance or exit.
- Limits car wash noise levels to no more than 60 dBA L_{max} during the nighttime time period (10 PM to 7 AM) by:
 - Prohibiting vacuum and car wash operations during the nighttime period; or
 - Installing dampeners, acoustic panels, tunnel entrance and exit doors, or other acoustic treatments that reduce total car wash noise levels to 60 dBA L_{max} or less; or
 - Incorporate a solid concrete, wood, or other barrier of sufficient height and density to reduce noise levels to 60 dBA L_{max} or less at adjacent residential property lines.

Off-Site Operational Noise Levels

The proposed Project would generate vehicle trips that would be distributed onto the local roadway system and potentially increase noise levels along travel routes. Caltrans considers a doubling of total traffic volume to result in a three dBA increase in traffic-related noise levels (Caltrans, 2013). If the proposed Project would not result in a doubling of traffic volumes on the local roadway system, it would

not result in a substantial permanent increase in traffic-related noise levels. The proposed Project would result in a net increase in trip generation equal to 2,404 total daily trips, including 128 trips during the AM peak hour (Ganddini Group, Inc. 2020). These trips would end up on North Perris Boulevard or Rider Street, which have estimated ADT levels equal to at least 17,974 and 2,100, respectively (see Appendix D - Section 4.2). Assuming an approximately 50% distribution of trips, up to 1,202 total daily trips could end up on North Perris Boulevard and East Rider Street. This increase in trips would represent an approximately 7% and 57% increase in traffic volumes on North Perris Boulevard and East Rider Street, respectively. The proposed Project would result in substantially less than a doubling of peak hour and daily traffic volumes on roadways used to access the site and, therefore, would not result in a substantial, permanent increase in off-site noise levels on North Perris Boulevard or Rider Street. Impacts will be less than significant.

Noise and Land Use Compatibility

The measured 24-hour noise exposure level at the proposed Project site is between 65 and 70 CNEL. This value is within the City’s conditionally acceptable noise limit for office buildings, business, commercial, professional, and mixed-use developments (up to 75 CNEL). For this exposure level, conventional construction is sufficient to ensure interior noise levels are compatible with the proposed activities. Impacts will be less than significant.

b) **Less than Significant Impact.** The California Department of Transportation’ (Caltrans) *Transportation and Construction Vibration Guidance Manual* provides a summary of human vibration responses and structural damage criteria that have been reported by researchers, organizations, and governmental agencies (Caltrans, 2020). These thresholds are summarized in Table 17, *Vibration Threshold Criteria for Building Damage*, and Table 18, *Vibration Threshold Criteria for Human Response*.

**Table 17
Vibration Threshold Criteria for Building Damage**

Structural Integrity	Maximum PPV (in/sec)	
	Transient	Continuous
Historic and some older buildings	0.50	0.12 to 0.2
Older residential structures	0.50	0.30
New residential structures	1.00	0.50
Modern industrial and commercial structures	2.00	0.50
Source: Caltrans, 2020.		

**Table 18
Vibration Threshold Criteria for Human Response**

Human Response	Maximum PPV (in/sec)	
	Transient	Continuous
Slightly perceptible	0.035	0.012
Distinctly perceptible	0.24	0.035
Strongly perceptible	0.90	0.10
Severe/Disturbing	2.0	0.7 (at 2 Hz) to 0.17 (at 20 Hz)
Very Disturbing	--	3.6 (at 2Hz) to 0.4 (at 20 Hz)
Source: Caltrans, 2020.		

Project construction activities would involve the use of large equipment capable of generating groundborne vibrations. Since Project-specific construction equipment information is not available at

this time, potential construction-related vibration impacts can only be evaluated based on the typical construction activities associated with an industrial development project. Table 19, *Potential Groundborne Vibration Levels*, presents the estimated, worst-case vibration levels that could occur from the operation of the typically large and/or vibration-inducing construction equipment used to develop an industrial land use project. The equipment assumptions used in this Report are based on, and consistent with, the CalEEMod construction phasing, equipment usage, and operating schedules used to evaluate the proposed Project’s potential construction air quality impacts (MIG, Inc. 2020).

**Table 19
Potential Groundborne Vibration Levels**

Equipment	PPV(A) (Inches/Second) at Distance		
	25 Feet	50 Feet	250 Feet
Vibratory Roller	0.21	0.098	0.017
Large Bulldozer	0.089	0.042	0.007
Small Bulldozer	0.03	0.014	0.002
Loaded Truck	0.076	0.035	0.006
Jackhammer	0.035	0.016	0.003
Source: MIG (See Appendix D - Appendix A, Sheet 2)			
(A) Estimated PPV calculated as: $PPV(D)=PPV(ref)*(25/D)^{1.3}$ where PPV(D)= Estimated PPV at distance; PPVref= Reference PPV at 25 ft; D= Distance from equipment to receiver; and n= ground attenuation rate (1.3 for competent sands, sandy clays, silty clays, and silts).			

The potential for groundborne vibration and noise is typically greatest when vibratory or large equipment such as rollers, impact drivers, or bulldozers are in operation. For the proposed Project, these types of equipment would primarily operate during site preparation, grading, and paving work. This equipment would, at worst-case and for a very limited period of times, operate adjacent to the site’s property lines and within approximately 25 feet of the residential buildings immediately east and south; however, most site work would occur at least 50 feet from Project property lines and adjacent buildings. Accordingly, similar to the construction noise analysis presented above, potential construction vibration levels were estimated for worst-case equipment operations (50 feet from adjacent buildings), average equipment operations based on the distance from the center of the site to adjacent buildings (approximately 150 feet), and the shortest distance between the Project site and the nearest sensitive residential receptor building façade on Grand Terrace Road (approximately 250 feet). A summary of predicted construction vibration levels is presented in Table 20, *Summary of Predicted Construction Vibration Noise Levels*.

**Table 20
Summary of Predicted Construction Vibration Levels**

Scenario	Estimated Duration ^(A)	Maximum PPV (inches/second) ^(B)
Worst-Case Construction (50 feet from adjacent buildings) ^(C)	1 Week	0.098
Typical Construction (100 feet from the east property line)	2 to 3 Months	0.046
Typical Construction (160 feet from the south property line)	2 to 3 Months	0.027
Typical Construction (250 feet away) ^(D)	2 to 3 Months	0.017
Source: MIG (see Appendix D - Appendix A, Sheet 2).		
(A) Estimated duration represents the period of time site preparation, grading, and paving activities would occur (see Appendix D - Appendix A, Table 2-1). For the worst-case		

- construction scenario, the duration assumes equipment would not operate within 50 feet of the same property line location for more than 1 week.
- (B) Values represent the highest estimated groundborne vibration level for typical construction equipment (see Appendix D - Appendix A).
 - (C) Construction activities may occur closer than 50 feet from a property line for short periods of time (hours) that are not representative of overall construction activities. The worst-case construction scenario reflects the duration that heavy equipment may operate in the same general area near a property line location
 - (D) Measurement is based on the distance between the Project site boundary and the New Creation Church façade.

The City does not maintain numeric significance thresholds for groundborne vibration or groundborne noise; however, as shown in Table 20, construction equipment vibration levels at adjacent building locations could exceed commonly accepted vibration detection thresholds (see Table 17) for “slightly perceptible” (0.035 inches/second) when operating in close proximity to the adjacent residential buildings and would, therefore, likely be perceptible at these building locations. This, however, is not considered to be excessive because any worst-case equipment operations near adjacent buildings would be short in duration and intermittent (lasting only a few hours each day and no more than a few days or week in total near specific building locations). Additionally, potential construction vibration levels would not result in structural damage because the estimated vibration levels are substantially below commonly accepted thresholds for potential damage to modern industrial and commercial buildings (0.5 inches/second; see Table 18). Thus, short-term, intermittent construction equipment vibration levels would not be excessive at adjacent residential buildings. Construction vibration levels would also be substantially below human perception, and structural damage thresholds at the New Creation Church located 250 feet northwest of the Project site. For these reasons, the proposed Project would not result in a significant groundborne vibration or groundborne noise impact from construction activities. Impacts will be less than significant.

c) **Less than Significant Impact.** The proposed Project is located approximately 2.5 miles southeast of the March Air Reserve Base/ Inland Port (ARB/IP) and is within March ARB/IP ALUCP Zone B1 (Inner Approach/Departure Zone; Riverside County ALUC, 2005 and 2014). The Project site is also located within the 65 CNEL noise contour associated with March ARB/IP. The March ARB/IP ALUCP, the PVCC SP, and Chapter 16.22 of the City’s Municipal Code establish specific requirements for the review and control of airport-related noise at the proposed Project site. The Riverside County ALUC will review the proposed Project for compatibility with the March ARB/IP ALUCP, including the basic compatibility factors and criteria established by Tables MA-1 and MA-2 of the ALUCP. Both the ALUCP and the PVCC SP require all building office areas to be constructed with appropriate noise attenuation measures to meet a 45 CNEL interior noise level, which is more restrictive than the 50 dBA L_{eq} established by the State Building Code (see Section 4.3.2.1). Both the March ARB/IP ALUCP and the PVCC SP also set forth that standard building construction is presumed to provide adequate sound attenuation where the difference between the exterior noise exposure and the interior standard is 20 dB or less, which may be the case for the proposed Project (65 CNEL – 20 dB = 45 CNEL).

As stated above, the proposed Project site is within the 65 CNEL noise contour for March ARB/IP, meaning actual airport-related noise exposure may range between 65 CNEL and 70 CNEL. The proposed Project, therefore, may require an exterior to interior airport noise level reduction of up to 25 CNEL to meet ALUCP computability requirements.

The proposed Project is not a noise-sensitive land use. As a local-serving commercial retail business, elevated interior noise levels are not likely to interfere with speech or other communications. Patrons are unlikely to expect or require quiet conditions and would therefore likely judge the exterior and interior ambient noise levels at the site to be acceptable. In addition, the proposed building would include no

habitable rooms where sleep would occur. The proposed building would include approximately 40 square feet of office space. The conceptual layout for the building indicates this office space would be located along with the building's western exterior wall. Standard construction techniques typically provide a minimum exterior to interior noise attenuation (i.e., reduction) of 30 to 32 dBA and are likely to be sufficient to meet a 45 CNEL standard in the proposed building's office area.^{xi} To ensure the proposed Project is compatible with the March ARB ALUCP, PVCC SP, and City code requirements and does not expose people working at the Project site to excessive airport-related noise levels, BMP have been incorporated into the Project as a Condition of Approval. To ensure the proposed Project is compatible with the March ARB/IP ALUCP and the PVCC SP, the Applicant shall prepare and submit to the City a final acoustical analysis, report, or other documentation that demonstrates the final exterior wall design and assembly will achieve an exterior to interior noise level reduction of 25 dB at all building office areas that have at least one wall that is part of the building façade/ exterior wall assembly. With the preparation of the final acoustical analysis showing a 25 dB reduction and adherence to existing regulations, airport-related impacts will be less than significant.

^{xi} The U.S. Department of Housing and Urban Development (HUD) Noise Guidebook and supplement (2009a, 2009b) includes information on noise attenuation provided by building materials and different construction techniques. As a reference, a standard exterior wall consisting of 5/8-inch siding, wall sheathing, fiberglass insulation, two by four wall studs on 16-inch centers, and 1/2-inch gypsum wall board with single strength windows provides approximately 35 dBs of attenuation between exterior and interior noise levels.

4.14 – Population and Housing

Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	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)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Applicable PVCCSP Standards and Guidelines and Mitigation Measures

No Standards and Guidelines or mitigation measures related to population and housing are included in the PVCCSP or associated PVCCSP EIR.

a) **No Impact.** The proposed Project includes the development of a convenience store, gasoline refueling station, and car wash on a vacant site. The Project would employ approximately 4 to 6 employees. These employees would most likely come from the existing population of the City. The Project does not include the development of residential uses. Because of these reasons, the Project will not induce substantial unplanned population growth in the area. No impact will occur.

b) **No Impact.** The Project site is vacant and does not contain residential uses or residents. The proposed Project would not displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere. No impact will occur.

4.15 – Public Services

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:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Fire protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Police protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Parks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Other public facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Applicable PVCCSP Standards and Guidelines and Mitigation Measures

The PVCCSP includes Standards and Guidelines applicable to the Project in terms of public services impacts. These Standards and Guidelines summarized below are incorporated as part of the Project and are assumed in the analysis presented in this section. The chapters/section numbers provided correspond to the PVCCSP chapters/sections.

General On-Site Project Development Standards and Guidelines (Chapter 4.2.1 of the PVCCSP)

Crime Prevention Measures

Development projects should take precautions by installing on-site security measures. Security areas include, but are not limited to, entry areas for automated teller machines (ATM's), display areas and bus stops. It is recommended that these areas provide for 30-feet of candlepower. Security and safety of future users of facilities constructed within the Perris Valley Commerce Center Specific Plan should be considered in the design concepts for each individual development proposal such as:

- Sensored lights that automatically operate at night.
- Installation of building alarm, fire systems and video surveillance.
- Special lighting to improve visibility of the address.
- Graffiti prevention measures such as vines on wall, and anti-graffiti covering.
- Downward lighting through development site.

Water Standards and Guidelines (Chapter 5.4.1 of the PVCCSP)

Fire Protection

All water facilities shall be sized to provide adequate fire protection per the requirements of the City of Perris Building and Safety Department.

Community Improvements (Chapter 13.3.4 of the PVCCSP)

Community improvements typically associated with commercial and industrial development are related to infrastructure needs such as improved roadways or parkways, extension or upgrades to water and sewer, and other services relevant to business operation. In some instances, improvements of facilities beyond what is minimally necessary to serve a proposed project may be required where deemed to be in the best public interest. In addition, the installation or funding of other public facilities, such as a fire station or library, may be considered a Community Improvement.

Financing and Maintenance Mechanisms (Chapter 13.4 of the PVCCSP)

North Perris Public Safety Community Facilities District

Implementing development projects within PVCC Specific Plan will be required to annex to the North Perris Public Safety Community Facilities District (CFD) and pay a special tax for the provision of public Safety (i.e. police and fire) services. These special tax proceeds help finance public safety services, including police protection.

The PVCCSP EIR does not include mitigation measures for this topic.

a) **Less than Significant Impact.** The City of Perris contracts with the Riverside County Fire Department to provide fire protection services within the City; the City has two fire stations within its boundaries that are served by and 14 firefighters.²² The proposed Project consists of a convenience store, gasoline refueling station, and car wash. All facilities would be constructed to existing code requirements using materials that would minimize potential fire related issues. The Project would not spur the growth of the region in an unplanned manner that would place unexpected future demands on existing fire services. The Project would also not represent a use that would require unique or expanded fire protection services. The Project would not require the building of new fire protection related buildings or structures. The Project will be required to pay a Development Impact Fee (DIF) for fire services of \$102.00 per 1,000 square feet of commercial floor area. With the payment of DIF for fire protection services, impacts would be less than significant.

b) **Less than Significant Impact.** The City of Perris contracts with the Riverside County Sheriff's Department.²³ The Project will include security lighting and cameras. No other increased demands for security would occur as a result of the proposed Project. The Project would not result in increased demand for police services and subsequently not result in the provision of new or expanded police facilities. The Project will be required to pay a Development Impact Fee (DIF) for police services of \$17.00 per 1,000 square feet of commercial floor area. With the payment of DIF for police protection services, impacts would be less than significant.

c) **No Impact.** The City of Perris is served by three school districts: (1) the Perris Elementary School District, (2) the Perris Union High School District, and (3) the Val Verde Unified School District.²⁴ Including charter schools, the Perris Elementary School District has eight elementary schools and one middle school. The Perris Union High School District is comprised of five high schools (this includes the California Military Institute). The Val Verde Unified School District contains six elementary schools, two middle schools, and three high schools. The proposed commercial Project would not directly impact

area schools, nor would it result in the demand for additional schools as there would be no increase in population. The Project would not require the construction or expansion of schools or education related facilities. There would be no impact to schools as a result of the proposed Project.

d) **No Impact.** The City of Perris maintains 17 parks and/or facilities (e.g., Senior Center) throughout the City.²⁵ The proposed commercial Project would not directly impact existing parks, nor would it result in the demand for additional parks as there would be no increase of population. There would be no impact on parks.

e) **Less than Significant Impact.** The Project would not result in an increase in residents that would generate additional demand for public facilities such as libraries or hospitals. Therefore, impacts related to the expansion of library facilities or hospitals would not occur as a result of the Project.

4.16 – Recreation

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Applicable PVCCSP Standards and Guidelines and Mitigation Measures

No Standards and Guidelines or mitigation measures related to recreation are included in the PVCCSP or associated PVCCSP EIR.

a) **No Impact.** The City of Perris maintains 17 parks and/or facilities (e.g., Senior Center) throughout the City.²⁶ The proposed Project includes the construction of a convenience store, gasoline refueling station, and car wash on a vacant site. The proposed Project would not directly impact existing parks, nor would it result in the demand for additional parks as there would be no increase of population. Therefore, the Project would not result in the increased deterioration of a recreational facility. Therefore, there would be no impact.

b) **No Impact.** The Project does not include any recreational facilities or require the construction of new facilities, and there would not be an adverse physical effect to the environment. Therefore, there would be no impact.

4.17 – Transportation

Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Result in inadequate emergency access?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Applicable PVCCSP Standards and Guidelines and Mitigation Measures

Vehicular Access and On-Site Circulation (Chapter 4.2.2.2 of the PVCCSP)

Site design should address the intended functions of the facility beginning with safe, definable site access that creates a sense of arrival.

Establish Truck Routes

Truck routes are required for trucks having a maximum gross weight of 5 tons. These routes (Figure 3.0-3) should avoid conflicts with established communities and be separated from passenger vehicles where possible.

Driveway Spacing

Refer to Table 4.0-2 for appropriate driveway spacing.

Minimize Vehicular Conflict

Site access should promote safety, efficiency, convenience, and minimize conflict between employee/customer vehicles and large trucks by creating separate access points when possible as shown in Figure 4.0-2.

Access Points Easily Identifiable

Entry drives should be easily identifiable through the use of enhanced landscaping and special pavements (accent colors, textures, and patterns). Landscaped medians should be provided on major

project entrances as shown on Figure 4.0-3. Signage should also be used to identify customer and service entrances. Driveways used exclusively for deliveries or loading activities are excluded.

Shared Access

The City encourages shared driveway access whenever possible. Reciprocal ingress/egress access easements shall be provided for circulation and parking to facilitate ease of vehicular movement between properties and to limit the number of vehicular access points to adjoining streets.

Emergency Vehicle Access

Design of primary drive aisles must allow for emergency vehicle access. Typically, this requirement is a minimum of 20 feet. However, applicants are encouraged to check with the City's Fire Marshall.

Visual Link to Building and Entry

A well designed entry should offer a visual link to the building and entry through the use of business signs, paving, and landscaping.

Primary Entry Drive/Location of Building

The primary entry drive should be oriented toward the main entrance of the building as shown in Figure 4.0-4.

Entry Median

A landscaped center median shall be provided at the primary entrance for sites requiring 100 or more parking spaces.

Landscape Parkways/Sides of Entry

Landscaped parkways shall border both sides of all entry drives to create a sense of arrival.

Dual Axle Entrances

Entrances used primarily or solely by dual axle vehicles shall provide a minimum 50' radius curb returns.

Avoid Back-up onto Public Streets

To avoid back-up onto public streets, entry drive approaches shall avoid conflict points such as parking stalls, internal drive aisles, or pedestrian crossings. Final determination of the driveway approach length shall be determined by the Planning Manager and the City Engineer after consideration of the project site design.

Minimize Interactions

Minimize interactions between trucks, cars and pedestrians by having separate circulation. The placement of loading areas and dock facilities should minimize the interaction between trucks and visitor/customer automobiles. Access to loading and delivery areas should be separated from parking areas to the greatest extent feasible.

Consideration of Large Truck Maneuverability

The design and location of loading facilities should take into consideration the specific dimensions required for the maneuvering of large trucks and trailers into and out of loading positions at docks or in stalls and driveways.

Pedestrian Access and On-Site Circulation (Chapter 4.2.2.3 of the PVCCSP)

Avoid Conflicts Between Pedestrian and Vehicular Circulation

Provide a system of pedestrian walkways that avoid conflicts between vehicle circulation through the utilization of separated pathways for direct pedestrian access from public rights-of-way and parking areas to building entries and throughout the site with internal pedestrian linkages as shown in Figure 4.0-5.

Adequate Vehicle Spacing For Drive-Through Service

Businesses with drive-through service shall provide adequate stacking to accommodate eight (8) vehicles in the drive-through lane from the prior to each pick-up window to avoid conflict with on-site circulation.

Primary Walkway

Primary walkways should be 5 feet wide at a minimum and conform to ADA/Title 24 standards for surfacing, slope, and other requirements.

Pedestrian Linkages to Public Realm

A minimum five-foot wide sidewalk or pathway, at or near the primary drive aisle, should be provided as a connecting pedestrian link from the public street to the building(s), as well as to systems of mass transit, and other on-site building(s).

Parking and Loading (Chapter 4.2.2.4 of the PVCCSP)

Refer to Chapter 19.69 of the City of Perris Zoning Ordinance for parking and loading standards.

Shared Parking

Shared parking with adjacent neighboring uses is encouraged provided minimum parking requirements are met and uses have alternating peak hour parking demands. Refer to Chapter 19.69 of the City of Perris Zoning Ordinance for shared parking standards.

Avoid Long Continuous Drive Aisles

Large parking lots should avoid long, continuous drive aisles to limit the opportunity for high-speed vehicular travel. Where long drive aisles best serve a site, they should utilize curves and stop signs or textured pavement at strategic locations in place of speed bumps.

Pass-Through Aisles

Parking aisles should include pass through aisles if their length exceeds thirty (30) stalls.

Screening Parking Lot

Parking lots should be screened from public view through the use of berms, low walls and/or plant materials.

Ends of Parking Aisle

The ends of all parking aisles and rows shall be protected by a landscaped island or finger. Landscape fingers should be provided on average every ten contiguous parking spaces. The parking island/finger shall be a minimum of 8' wide including a 12" concrete step-out on both sides as depicted in Figure 4.0-6 with the end stalls a minimum of 11' wide.

Bicycle Racks

Facilities with 200 or more required parking spaces shall provide a bicycle parking area to accommodate no less than 5 locking bicycles. Facilities with 500 or more required parking spaces shall provide bicycle parking to accommodate no less than 15 locking bicycles. Bicycle parking shall be located near main entrances of buildings, adjacent to landscape areas.

Motorcycle Parking

Facilities with 200 or more required parking spaces may provide a motorcycle parking area with an overall dimension of 7 feet in length and area not less than 56 square feet. Facilities with 500 or more required parking spaces shall provide a motorcycle parking area with an overall dimension of 7 feet in length and area not less than 70 square feet. For every two motorcycle spaces, credit for one parking space shall be given.

ADA Compliant Parking

All parking lots and parking areas shall be ADA compliant.

Loading Area Placement

Consideration should be given to the placement of loading areas away from sensitive receptors (schools, residences, hospitals, etc.), public gathering areas or other uses that might be impacted by noise and associated loading activities, as well as locating away from public view. Additional setback requirement has been provided for projects adjoining residential uses (Table 4.0-1 and Figure 4.0-16). In other cases where placement of loading facilities cannot be accommodated away from these areas, additional setbacks, sound walls, screening or combination thereof may be required.

Commercial Site Layout (Chapter 7.2.1 of the PVCCSP)

Vehicular Access and On-Site Circulation (Chapter 7.2.1.1 of the PVCCSP)

Adequate Vehicle Spacing For Drive-Thru's

Businesses with drive-thru service(s) shall provide adequate stacking to accommodate eight (8) vehicles prior to each pick-up window to avoid conflict with on-site circulation.

Pedestrian Access and On-Site Circulation (Chapter 7.2.1.2 of the PVCCSP)

Internal Pedestrian Walkways

Internal walkway should provide connection between building entries, plazas, and courtyards within the project and be covered when possible.

Paving For Walkways Visible from Public Rights-of-Way/Public Access

Enhanced paving is preferred in areas visible from public rights-of-way or utilized for public access to define business entries, pedestrian walkways, and within plazas and patios.

Walkways through Parking Lots

Pedestrian walkways through commercial development parking lots should be accented with special design features such as raised, colored and/or textured pavement, a widened roadway, or a combination of the preceding.

Pedestrian Access Between Buildings/Parking Areas/Amenities On/Off-Site

Pedestrian walkways should be embellished and defined by landscaping, trees, lighting, textured paving, and/or trellises.

Parking and Loading (Chapter 7.2.1.3 of the PVCCSP)

Parking Requirements

Refer to City of Perris Zoning Ordinance, Chapter 19.69.

Disperse Parking Areas

When possible, disperse parking into multiple smaller lots or separated parking blocks as opposed to one large lot so that cars are not the dominant visual element of the site from the street.

Limited Store Front Parking

To promote visibility of the business, store parking should be limited as shown in Figure 7.0-1. Should store front parking be provided, landscaping treatments shall be required to provide a more visually appealing store front and parking should be limited to the greatest extent possible.

Parking and Loading (Chapter 7.2.1.4 of the PVCCSP)

Plazas Required for Over 100,000 S.F. Commercial Centers

Commercial centers over 100,000 square feet require a plaza of at least one (1) square foot per 100 square feet of building area.

Commercial Plaza Elements

Plazas and open space areas provide a friendly and inviting vision and environment by incorporating some of the following elements:

- Enhanced visitor area(s) (i.e., a plaza, patio, courtyard, linear promenade, terrace, or usable landscaped area) scaled accordingly to the size and demands of the particular user or facility.
- Architectural features and site furniture, adhering to a consistent theme.
- Seating, such as benches, tables and chairs, and/or low seating walls.
- Enhanced paving using a combination of textures and patterns, site walls including tree grates.
- Decorative light fixtures and pedestrian scale, bollards and other accent lighting. Enhanced walkway lighting shall not act as sole lighting.
- Landscaping of special interest, landscape buffering, screen walls, trellises, pergola structures and large scale canopy trees.
- Public art or other focal point amenity. Public art is highly encouraged and incentivized by the City. Refer to Section 14.0 for additional incentive information.

Plaza Locations

Plazas should be oriented toward the public view whenever possible as shown in Figure 7.0-2, and placed in areas where high levels of pedestrian activity is likely to occur. They should complement the associated facilities and draw attention to the primary business entry and/or serve as a common area for multiple businesses, adjacent to building entrances, in food service areas, or between building clusters.

Higher Level of Design Treatments

Enhanced plazas and open space areas should exhibit a higher level of design treatments that incorporate seating, water features, sculptures, trash receptacles, ash urns, pedestrian scaled lighting enhancements, and other furnishings as appropriate for the specific user.

Shelter and Buffer Plazas

Plazas should be sheltered and buffered as much as possible from the sun, noise and traffic of adjacent streets, trash receptacles, parking, loading areas, or other incompatible land uses.

Outdoor Seating Area (Over 10,000 S.F. Building Area)

Outdoor seating areas accessible to patrons shall be provided for retail and food service areas over 10,000 square feet of building area.

Separate Employee Break Areas

Site design layout is encouraged to separate employee break areas from the public plaza areas.

Connection to Adjacent Amenities

Site design should include provisions for pedestrian access when adjacent to area wide open space, trails, parks, or other community amenities.

a) **Less than Significant Impact.** A vehicle miles traveled (VMT) screening analysis for the proposed Project was prepared by Ganddini Group, dated August 18, 2020 (See Appendix E).²⁷ The analysis was prepared to meet the VMT requirements for the City of Perris and evaluates whether the Project screens out from needing to conduct a detailed VMT analysis based on City of Perris guidelines. However, the Project was not required to prepare a traffic study by the City of Perris. Table 21, *Project Trip Generation*, shows the estimated trip generation for the Project based upon trip generation rates obtained from the Institute of Transportation Engineers (ITE) Trip Generation Manual (10th Edition, 2017). The Project trip generation forecast is determined by multiplying the trip generation rates by the land use quantity. Based on review of ITE land use descriptions, trip generation rates for ITE Land Use Code 960-Super Convenience Market/Gas Station were determined to most closely represent the proposed Project, which is described as having a gross floor area of at least 3,000 square feet for the convenience market and at least 10 vehicle fueling positions. As shown in Table 21, the proposed Project is forecast to generate approximately 2,404 daily trips, including 128 trips during the AM peak hour and 122 trips during the PM peak hour. Land uses such as shopping centers, restaurants, gasoline stations, and convenience stores will often locate next to busy roadways to attract motorists already on the street. Since the trip generation rates contained in the ITE Trip Generation Manual represent vehicles entering and exiting at the site driveway(s), it is appropriate to reduce the initial trip generation forecast by the applicable pass-by trip rate when calculating the net new trips that will be added to the surrounding street system. This analysis applies a pass-by trip reduction for the gas station with convenience market land-use based upon rates from the ITE Trip Generation Handbook (3rd Edition, 2017).

**Table 21
Project Trip Generation**

Trip Generation rates									
Land Use	Source	Units	AM Peak Hour			PM Peak Hour			Daily Rate
			% In	% Out	Rate	% In	% Out	Rate	
Super Convenience Market/ Gas Station	ITE 960	VFP	50%	50%	28.08	50%	50%	22.96	230.52
Trips Generated									
Land Use	Quantity	Units	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Super Convenience Market/ Gas Station	12	VFP	168	168	336	138	138	276	2,766
- Pass-By Trip Reduction (62% AM, 56% PM)			-104	-104	-208	-77	-77	-154	-362
New Project Trips Generated			64	64	128	61	61	122	2,404
Source: Ganddini, 2020. (See Appendix E)									
Notes:									
VFP = Vehicle Fueling Positions									

As detailed in Section 4.17.b, the proposed Project is presumed to have a less than significant impact on VMT since it satisfies one or more of the VMT screening criteria established by the City of Perris. Therefore, the Project will not conflict with a program plan, ordinance, or policy addressing the roadway circulation system. Impacts will be less than significant.

Public Transit

There are several Riverside Transit Agency (RTA) bus stops serving multiple RTA bus routes in the immediate vicinity of the proposed Project. At the northern edge of the Project site, along Rider Street, is a bus stop serving Route 41 (Mead Valley Community Center - Moreno Valley College - Riverside University Medical Center (RUMC)). There is another bus stop to the west of the Project site on the opposite side of Perris Boulevard that serves Route 19 (Moreno Valley Mall to Perris Station Transit Center). Additionally, there is a bus stop located at the northeastern corner of Perris Boulevard and Rider Street that serves both Routes 19 and 41. Finally, there is a bus stop on Perris Boulevard south of the Project site and just north of Ensenada Drive that serves Route 19, a bus stop on Perris Boulevard north of the Project and just south of Sinclair Street that serves both Routes 19 and 41, and a bus stop on Perris Boulevard north of the Project site and just north of Sinclair Street that serves both Routes 19 and 41. The proposed Project will not remove or impact any of these bus stops and will not interrupt service to any of these bus stops during either construction or operation. The proposed Project would also not significantly increase or decrease the use of these facilities as a result of construction or operation. As such, the Project will not have an impact on transit.

Pedestrian and Bicycle Facilities

The proposed Project site is currently vacant. While there is a concrete sidewalk along the western Project site boundary along Perris Boulevard, there is no concrete sidewalk along the northern Project site boundary along Rider Street (the pedestrian right-of-way along Rider Street at this location consists of dirt). According to the Perris Active Transportation Plan, there is a Class II Bicycle Lane along Rider Street and a Class IIB Buffered Bicycle Lane along Perris Boulevard. A Class II Bicycle Lane is a dedicated lane for bicycle travel adjacent to traffic with a painted white line that separates the bicycle lane from motor vehicle traffic. A Class IIB Buffered Bicycle Lane is a dedicated lane for bicycle travel separated from vehicle traffic by a painted buffer that provides additional comfort for users by providing space from motor vehicles or parked cars. As a result of Project construction, the existing sidewalk along Perris Boulevard will be improved and widened, and a new sidewalk will be constructed along Rider Street. In addition, the proposed Project will provide bicycle parking racks. Therefore, the Project will have the effect of improving pedestrian and bicycle facilities in the immediate vicinity and providing added connectivity where current facilities do not exist. As such, the Project represents an improvement over existing conditions. Impacts will be less than significant.

b) **Less than Significant Impact.** California Senate Bill 743 (SB 743) directs the State Office of Planning and Research (OPR) to amend the California Environmental Quality Act (CEQA) Guidelines for evaluating transportation impacts to provide alternatives to Level of Service that “promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses.” In December 2018, the California Natural Resources Agency certified and adopted the updated CEQA Guidelines package. The amended CEQA Guidelines, specifically Section 15064.3, recommend the use of Vehicle Miles Travelled (VMT) as the primary metric for the evaluation of transportation impacts, under CEQA, associated with land use and transportation projects. In general terms, VMT quantifies the amount and distance of automobile travel attributable to a project or region. All agencies and projects State-wide are required to utilize the updated CEQA guidelines recommending the use of VMT for evaluating transportation impacts as of July 1, 2020.

The updated CEQA Guidelines allow for lead agency discretion in establishing methodologies and thresholds provided there is substantial evidence to demonstrate that the established procedures promote the intended goals of the legislation. Where quantitative models or methods are unavailable, Section 15064.3 allows agencies to assess VMT qualitatively using factors such as availability of transit and proximity to other destinations. The Office of Planning and Research (OPR) Technical Advisory on Evaluating Transportation Impacts in CEQA (State of California, December 2018) [“OPR Technical Advisory”] provides technical considerations regarding methodologies and thresholds with a focus on office, residential, and retail developments as these projects tend to have the greatest influence on VMT. The proposed Project’s VMT impact has been assessed in accordance with guidance from the City of Perris Transportation Impact Analysis Guidelines for CEQA (May 12, 2020) [“City of Perris TIA Guidelines”]. The transportation guidelines provide a framework for “screening thresholds” for when a project is expected to cause a less than significant impact without conducting a detailed VMT study. The Project requirements for evaluation of transportation impacts under CEQA was assessed using the City of Perris VMT Scoping Form for Land Use Projects as appended to the City of Perris TIA Guidelines and included in Appendix D. As documented in the VMT Scoping Form, the proposed Project satisfies the following VMT screening criteria:

- | | |
|--|-----|
| B. Is the project within ½ mile of qualifying transit? | Yes |
| C. Is the project a local serving land use? | Yes |
| D. Is the project in a low VMT area? | Yes |

Therefore, the proposed Project is presumed to have a less than significant impact on VMT since it satisfies one or more of the VMT screening criteria established by the City of Perris. No additional VMT modeling or mitigation measures are required.

c) **Less than Significant Impact.** A significant impact would occur if the proposed Project substantially increased an existing hazardous design feature or introduced incompatible uses to the existing traffic pattern. Access to the site will be provided via two separate driveways: one at the southwest corner of the site along Perris Boulevard and the other at the northeast corner of the site along Rider Street. Both driveways will be 35-foot wide and will be restricted to right-in/right-out turning movements. The design of the proposed Project would comply with all applicable City regulations. Furthermore, the proposed Project does not involve changes in the alignment of any local roadway, and the proposed Project is consistent with existing uses in the vicinity of the Project site. The operation of the Project would occur within one parcel and would not impact surrounding roads or create dangerous curves or intersections. During construction, the proposed Project would comply will all local regulations regarding temporary road closures or and/or one-way traffic controls. The proposed Project would not result in a traffic safety hazard due to any design features. Impacts would be less than significant.

d) **Less than Significant Impact.** A significant impact would occur if the design of the proposed Project would not satisfy emergency access requirements of the Riverside County Fire Department or in any other way threaten the ability of emergency vehicles to access and serve the Project site or adjacent uses. The proposed Project would not result in inadequate emergency access. As discussed above, access to the site will be provided via two separate driveways: one at the southwest corner of the site along Perris Boulevard and the other at the northeast corner of the site along Rider Street, and both driveways will be 35-foot wide and will be restricted to right-in/right-out turning movements. The driveway width is sufficient to provide access to fire and emergency vehicles and is consistent with the California Fire Code requires a minimum of 20 feet. All access features are subject to and must satisfy the City of Perris design requirements, including the Fire Department’s requirements. This Project would therefore not result in adverse impacts with regard to emergency access. Impacts will be less than significant.

4.18 – Tribal Cultural Resources

Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 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 Cultural Native American tribe, and that is:				
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 Section 5020.1(k), or	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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 Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Applicable PVCCSP Standards and Guidelines and Mitigation Measures

No Standards and Guidelines related to cultural resources are included in the PVCCSP.

The proposed Project is required to adhere to PVCCSP Mitigation Measures MM Cultural-1, MM Cultural 2, and MM Cultural-4. PVCCSP EIR Mitigation Measure MM Cultural-1 requires preparation of a Phase I Cultural Resources Study that shall, at a minimum, include the results of the following:

1. *Records searches at the Eastern Information Center (EIC) the National or State Registry of Historic Places and any appropriate public, private, and tribal archives.*
2. *Sacred Land File record search with the NAHC followed by project scoping with tribes recommended by the NAHC.*

3. *Field Survey of the implementing development or infrastructure project.*

The proponents of the subject implementing development projects and the professional archaeologists are also encouraged to contact the local Native American tribes (as identified by the California Native Heritage Commission and the City of Perris) to obtain input regarding the potential for Native American resources to occur at the project site.

Finally, measures shall be identified to mitigate the known and potential significant effects of the implementing development or infrastructure, if any. The Phase 1 Cultural Resources Study submitted for each implementing development or infrastructure project shall have been completed no more than three (3) years prior to the submittal of the application for the subject property or the start of construction of an implementing infrastructure project.

PVCCSP Mitigation Measure MM Cultural-2 requires monitoring by a professional archaeologist if the Phase I Cultural Resources Study Required in MM Cultural-1 determines that such monitoring is necessary. PVCCSP Mitigation Measure MM Cultural-2 also includes avoidance measures in the case that archaeological resources are discovered during Project implementation. PVCCSP Mitigation Measure MM Cultural-4 requires avoidance measures and reporting in the event of the discovery of humans remains, including consultation with the County coroner and potentially affected Native American tribes.

a.i) **Less than Significant with Mitigation Incorporated.** As stated in Section 4.5.b above, the HPSR (LSA 2012) and Supplemental HPSRs (LSA 2015; LSA 2018; LSA 2019a, LSA 2019b) for the nearby MCP Project and the I-215/ Placentia Avenue Interchange Project identified five archaeological resources within the MCP Project APE eligible for inclusion in the National Register. The resources consist of four bedrock milling sites (P-33-19862, P-33-19863, P-33-19864, and P-33-19866) and one village site (P-33-16598). No additional cultural resources were identified within the revised APE in the fourth Supplemental HPSR (November 2019) prepared for the I-215/Placentia Avenue Interchange Project. In addition, the records search conducted for the MCP Project found no recorded archaeological resources on the proposed Project site. Based on the urbanized nature of the Project area, there is little potential for the proposed Project to impact known archaeological resources during construction. However, regardless of negative results, there is the possibility that resources could be unearthed during clearing and grading. Potential unknown impacts would be mitigated to less than significant with the incorporation of **Mitigation Measure CUL-1** and **CUL-2**.

a.ii) **Less than Significant with Mitigation Incorporated.** California Government Code, Section 65352.3 incorporates the protection of California traditional tribal cultural places into land use planning for cities, counties, and agencies by establishing responsibilities for local governments to contact, refer plans to, and consult with California Native American tribes as part of the adoption or amendment of any general or specific plan proposed on or after March 1, 2005. SB18 requires public notice to be sent to tribes listed on the Native American Heritage Commission's SB18 Tribal Consultation list within the geographical areas affected by the proposed changes. Tribes must respond to a local government notice within 90 days (unless a shorter time frame has been agreed upon by the tribe), indicating whether or not they want to consult with the local government. Consultations are for the purpose of preserving or mitigating impacts to places, features, and objects described in Sections 5097.9 and 5097.993 of the Public Resources Code that may be affected by the proposed adoption or amendment to a general or specific plan. California Assembly Bill (AB) 52, through its implementing regulations, requires that lead agencies consult with California Native American tribes that are traditionally and culturally affiliated with the geographic area of the Proposed Project and who have requested in writing to be informed by the lead agency of proposed projects in the tribe's geographic area (PRC Section 21080.3.1(b) and (d)). Pursuant to AB 52, as the CEQA Lead Agency, the City of Perris sent AB 52

consultation notification letters via email on November 2, 2020, to the following Tribes: Soboba Band of Luiseño Indians (Soboba Tribe), Rincon Band of Luiseño Indians (Rincon Tribe), and Morongo Band of Mission Indians (Morongo Tribe). On November 30, 2020, the City received a response from Joe Ontiveros, Tribal Historic Preservation Officer for the Soboba Tribe, requesting consultation. As a result of this request, a consultation meeting was scheduled between the City and the Soboba Tribe on December 7, 2020, at 1:30 p.m. At this consultation meeting, Joe Ontiveros stated that there are no cultural resources on the Project site; however, he made it known that the Project site is close to the nearest resource on Cajalco Road and Interstate 215 (I-215). As such, Mr. Ontiveros requested to review the Project mitigation measures, and the draft IS/MND section related to cultural resources. On December 8, 2020, the City provided the draft cultural mitigation measures to Mr. Ontiveros, and on December 22, 2020, the City forwarded the draft IS/MND sections related to cultural resources to Mr. Ontiveros for his review and comment. After review, Mr. Ontiveros notified the City that the Soboba Tribe agreed with the proposed cultural mitigation measures and requested continued consultation throughout the life of the Project. On December 8, 2020, the City received a letter from Cheryl Mandrigal, Tribal Historic Preservation Officer for the Rincon Tribe, requesting consultation. On December 18, 2020, City Staff consulted with Mrs. Mandrigal and provided an overview of the proposed Project. At this meeting, Mrs. Mandrigal requested a copy of the cultural report and records search conducted for the Project. At this time, City staff notified Mrs. Mandrigal that a cultural report and site-specific records search was not conducted for the proposed Project site. However, the City also notified Mrs. Mandrigal that the cultural resources section of the draft IS/MND includes reference to a cultural report and records search that was recently performed for a transportation project in the vicinity of the proposed Project and that the buffer area for the records search included the proposed Project site and did not identify any cultural resources as being located on the site. After reviewing the cultural resources section of the draft IS/MND, and the proposed cultural mitigation measures, Mrs. Mandrigal agreed that the cultural report and records search that was recently performed for the nearby transportation project suffices for the proposed Project, and no new report or records search is necessary. Mrs. Mandrigal also requested to be notified of any Project changes. Therefore, the City will continue consultation with the Soboba Tribe and the Rincon Tribe throughout the life of the Project to ensure **Mitigation Measures CUL-1** and **CUL-2** are properly implemented to the satisfaction of the Tribes. With the incorporation of mitigation, impacts to listed or eligible tribal cultural resources will be less than significant.

4.19 – Utilities and Service Systems

Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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 project's projected demand in addition to the provider's existing commitments?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Generate solid waste in excess of State and local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Applicable PVCCSP Standards and Guidelines and Mitigation Measures

General On-Site Project Development Standards and Guidelines (Chapter 4.2.1 of the PVCCSP)

Trash and Recyclable Materials

Development of all Perris Valley Commerce Center Specific Plan sites shall contain enclosures (or compactors) for collection of trash and recyclable materials subject to water quality and best management practices. All trash enclosures shall comply with City of Perris Standards and with applicable City of Perris recycling requirements.

Waste Hauling

Construction and other waste disposal shall be hauled to a city approved facility.

Utilities (Chapter 4.2.7 of the PVCCSP)

Utility Connections and Meters

All utility connections and meters shall be coordinated with the development of the site and should not be exposed, except where deemed appropriate or necessary by the building official. To the greatest extent possible, these utility connections should be integrated into the building or the architectural design.

Pad-Mounted Transformers and Meter Box Locations

Pad-mounted transformers and/or meter box locations shall be screened from view from surrounding properties and public rights-of-way. Utilities shall be located underground, unless waived by the City Engineer.

Electrical, Telephone, CATV and Similar Service Wires and Cables

All electrical, telephone, CATV and similar service wires and cables which provide direct service to the property being developed, within the exterior boundary lines of such property, shall be installed underground.

Electrical Transmission Lines

Electrical transmission lines 66kv and less shall be installed underground.

All Equipment Shall be Internalized

All equipment shall be internalized into the building design to the greatest extent possible. When unfeasible, they shall be screened and not prominently visible from public rights-of-way.

a) **Less than Significant Impact.** Perris residents and businesses are served by Eastern Municipal Water District (EMWD). Water is imported via the California Aqueduct from northern and central California, which is managed by the Metropolitan Water District of Southern California (MWD). A secondary source of imported water is provided by the Colorado River Aqueduct. According to the 2015 Urban Water Management Plan for EMWD, EMWD will continue to rely on imported water from MWD as the main source of supply. The water used within the EMWD service area as of 2015 was approximately 147,300 AFY and is expected to increase to 268,200 AFY (during a normal year) by the year 2040, an increase of 120,900 AFY.²⁸ Based on the CalEEMod assumptions for water usage, the proposed Project's estimated water demand is approximately 1.65 AFY, within the estimated increase in water demand. According to the 2015 Urban Water Management Plan for EMWD, there is sufficient supply to accommodate demand under normal and single- and multiple-dry year conditions utilizing imported water.²⁹ Local supplies would supplement imported supplies and provide additional supply reliability. Local supplies include groundwater pumped from the San Jacinto groundwater Basin, desalinated groundwater, and recycled water. The proposed Project is not anticipated to significantly increase water demand and will be within the estimated increase in water demand for the EMWD.

The UWMP is based on area population Projections as provided by SCAG. The Project is consistent with SCAG Projections for the service area. As the estimated increase in water use is within the anticipated increase in the UWMP and the Project is consistent with regional population Projections, impacts would be less than significant.

With regard to wastewater, a new development in the City is required to install wastewater infrastructure concurrent with Project development. Wastewater in the City is treated by EMWD at the Perris Valley

Regional Water Reclamation Facility (PVRWRF); the facility has typical inflows of 13.8 million gallons per day (mgd) (Eastern Municipal Water District, 2014). Currently, the facility has the capacity to treat 22.0 mgd, so the facility has the capacity for potential future increases in wastewater. The Project includes the construction of a new convenience market, gasoline refueling station, and car wash. All wastewater generated by the interior plumbing system of the convenience market would be discharged into the local sewer main and conveyed for treatment at the City's treatment facility. All wastewater generated by the interior plumbing system of the car wash would also be discharged into the local sewer main and conveyed for treatment. Wastewater flows associated with the car wash would consist of the same kinds of substances typically generated by commercial uses, and no modifications to any existing wastewater treatment systems or construction of any new ones would be needed to treat this Project's wastewater. Wastewater is typically estimated to be 80 percent of total water use. Based on the CalEEMod assumptions, the proposed Project's total estimated water demand is approximately 536,120 gallons per year (1,469 gpd). Therefore, estimated wastewater generation from interior demand and outdoor irrigation demand for the proposed Project is 428,896 (1,175 gpd). This volume is within the remaining capacity of the PVRWRF's 13.8 mgd total treatment capacity. This Project would thus have a less-than-significant impact on the ability of the PVRWRF to operate within its established wastewater treatment requirements, which are enforced via the facility's NPDES permit authorized by the Santa Ana Regional Water Quality Control Board (SARWQCB). Therefore, the proposed Project would have a less than significant impact related to wastewater treatment requirements of the SARWQCB.

Potentially significant impacts could occur as a result of the Project if stormwater runoff was increased to a level that would require the construction of new storm drainage facilities. As discussed in the Hydrology section of this document, the Project would not generate any increased runoff from the site that would require the construction of new storm drainage facilities. A NPDES permit would be required for the convenience market, fueling station, and car wash. Pursuant to Municipal Code Section 12.60.250, all construction Projects shall prepare and submit a Storm Water Pollution Prevention Plan (SWPPP). Best Management Practices (BMPs) that include drainage controls such as detention ponds, dikes, filter berms, and downdrains to prevent runoff and utilizing plastic covering to prevent erosion shall also be applied pursuant to Municipal Code Section 19.20.110. Implementation of BMPs would reduce pollutants in stormwater and urban runoff from the Project site. The proposed storm drainage system and BMPs must be designed to the satisfaction of the City's WQMP consultant and Capital Improvement Manager and in conformance with all applicable permits and regulations. The Project applicant/developer would be required to provide all necessary on-site infrastructure. Impacts would be less than significant, and no mitigation beyond compliance with existing regulations is required. The proposed Project would have a less than significant impact on requiring the construction of new facilities or expansion of existing storm drainage facilities.

Impacts related to electric power, natural gas, and telecommunications facilities would also be less than significant. The Project will connect to existing facilities and will not require any extension of services. Therefore, the proposed convenience market and fueling station would not require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause a significant environmental effect. Less than significant impacts will occur.

b) **Less than Significant Impact.** The Eastern Municipal Water District (EMWD) would supply water to the Project. Water is imported via the California Aqueduct from northern and central California, which is managed by the Metropolitan Water District of Southern California (MWD). A secondary source of imported water is provided by the Colorado Rivers Aqueduct.

According to the 2015 Urban Water Management Plan for EMWD, EMWD will continue to rely on imported water from MWD as the main source of supply. The water supplied within the EMWD service area as of 2015 was approximately 147,300 AFY and is expected to increase to 268,200 AFY (during a normal year) by the year 2040, an increase of 120,900 AFY.³⁰ Based on the CalEEMod assumptions, the proposed Project's estimated water demand is approximately 1.65 AFY, within the estimated increase in the water supply. According to the 2015 Urban Water Management Plan for EMWD, there is sufficient supply to accommodate demand under normal and single- and multiple-dry year conditions utilizing imported water.³¹ Local supplies would supplement imported supplies and provide additional supply reliability. Local supplies include groundwater pumped from the San Jacinto groundwater Basin, desalinated groundwater, and recycled water.

Connections to local water mains would involve temporary and less than significant construction impacts that would occur in conjunction with other on-site improvements. The project site is located within the existing service area of EMWD and is surrounded by existing development that is currently connected to existing EMWD water lines. No additional improvements are needed to water lines or facilities to serve the proposed Project. Standard connection fees would address any incremental impacts of the proposed Project. Therefore, the proposed Project will have sufficient water supplies available to serve the Project and reasonably foreseeable future development during normal, dry, and multiple dry years. Impacts will be less than significant.

c) **Less than Significant Impact.** Potentially significant impacts could occur as a result of this Project if it results in a determination by the wastewater treatment provider which serves or may serve the Project that it does not have adequate capacity to serve the Project's projected demand in addition to the provider's existing commitments. Wastewater is treated by EMWD at the Perris Valley Regional Water Reclamation Facility (PVRWRF); the facility has typical inflows of 13.8 million gallons per day (mgd) (Eastern Municipal Water District, 2014). Currently, the facility has the capacity to treat 22.0 mgd, so the facility has the capacity for potential future increases in wastewater. The proposed Project is estimated to have a wastewater generation of approximately 1,175 gpd. This generation is well within the existing remaining treatment capacity of the PVRWRF. Therefore, the expansion of the existing facility would not be required, and impacts will be less than significant.

Connections to local water and sewer mains would involve temporary and less than significant construction impacts that would occur in conjunction with other on-site improvements. The Project site is located within the existing service area of EMWD and is surrounded by existing development that is currently connected to existing EMWD water and wastewater lines. No additional improvements are needed to either water lines, sewer lines, or treatment facilities to serve the Project. Standard connection fees would address any incremental impacts of the Project. Therefore, the Project would result in less than significant impacts with regard to the need for new or expanded wastewater treatment facilities.

d) **Less than Significant Impact.** Significant impacts could occur if the proposed Project would exceed the existing permitted landfill capacity or violates federal, state, and local statutes and regulations. Solid waste disposal services in the City of Perris are provided by CR&R Incorporated – Environmental Services. Waste from Perris is primarily transferred to the El Sobrante Landfill in Corona or the Badlands Landfill in Moreno Valley. Several other landfills received substantially smaller amounts of waste, including the Sycamore Landfill in Santee and Lamb Canyon Sanitary Landfill in Beaumont. According to CalRecycle, solid waste facilities serving Riverside County are projected to have a combined annual disposal limit of 3,633,512 tons and an annual remaining lifetime capacity surplus of 154,709,576 tons in the year 2025.³² (Cal Recycle 2016). Construction of the facility is anticipated to result in the production of some solid waste. Project operations are anticipated to generate approximately 13.49 tons (9.6 cubic yards) of solid waste annually. Overall, the amount of solid waste

produced as a result of this Project is negligible compared to the daily waste produced in the City of Perris and in comparison to the capacity available at the two primary landfills. Compliance with County waste reduction programs and policies would also reduce the volume of solid waste entering landfills. Individual development projects within the County would be required to comply with applicable state and local regulations, thus reducing the amount of landfill waste by at least 50 percent. Therefore, because there would be adequate landfill capacity in the region to accommodate Project-generated waste, and the proposed Project is not expected to generate a substantial quantity of solid waste, the impact would be less than significant.

e) **No Impact.** The proposed Project is required to comply with all applicable federal, state, County, and City statutes and regulations related to solid waste as a standard project condition of approval. Therefore, no impact would occur.

4.20 – Wildfire

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Applicable PVCCSP Standards and Guidelines and Mitigation Measures

No Standards and Guidelines or mitigation measures related to wildfire are included in the PVCCSP or associated PVCCSP EIR.

a) **No Impact.** The Project Site is not located within or near any State Responsibility Areas³³ or other wildland areas. The nearest such area is approximately 1.15 miles east of the Project site. There are no wildland conditions in the urbanized area where the Project site is located. Therefore, the Project will not substantially impair an adopted emergency response plan or emergency evacuation plan, and no impact will occur.

b) **No Impact.** The Project site is not located within a fire hazard zone, as identified on the latest Fire Hazard Severity Zone (FHSZ) maps prepared by the California Department of Forestry and Fire Protection (CALFIRE). There are no wildland conditions in the urbanized area where the Project site is located. Therefore, the Project will not exacerbate wildfire risks, thereby exposing Project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire. No impact will occur.

c) **No Impact.** The Project Site is not located within or near any State Responsibility Areas. As a result, none of the Project improvements would exacerbate fire risk or will result in a temporary or ongoing impact from wildfires requiring the installation or maintenance of associated infrastructure that may exacerbate fire risk, or that may result in temporary or ongoing impacts to the environment. No impact will occur.

d) **No Impact.** The Project Site is not located within or near any State Responsibility Areas. The Project site is also not located in any FEMA 100-year flood floodplain. No impact would occur.

4.21 – Mandatory Findings of Significance

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Does the project have impacts that are individually limited, but cumulatively considerable?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

a) **Less than Significant with Mitigation Incorporated.** The proposed Project would not substantially impact any scenic vistas, scenic resources, or the visual character of the area, as discussed in Section 4.1, and would not result in excessive light or glare. The Project site is located within a developed area with no natural habitat. The proposed Project would not significantly impact any sensitive plants, plant communities, fish, wildlife, or habitat for any sensitive species. Impacts to burrowing owl and migratory birds will be less than significant with mitigation and adherence to existing regulations. There are no jurisdictional waters on the Project site. Adverse impacts to historic resources would not occur.

Construction-phase procedures would be implemented in the event any important cultural or archaeological resources are discovered during grading, consistent with Mitigation Measures CUL-1 and CUL-2. Construction-phase procedures would be implemented in the event any important paleontological resources are discovered during grading, consistent with Mitigation Measures GEO-1 through GEO-4. This site is not known to have any association with an important example of California’s history or prehistory. The environmental analysis provided in Section 4.3 concludes that impacts related to emissions of criteria pollutants and other air quality impacts would be less than significant with mitigation. Sections 4.8 concludes that impacts related to climate change would be less than significant. Sections 4.10 concludes that impacts related to hydrology and water quality would be less than significant with mitigation incorporated. Based on the preceding analysis of potential impacts in the responses to items 4.1 thru 4.20, no evidence is presented that this proposed Project would degrade the quality of the environment. Impacts related to degradation of the environment, biological resources,

hydrology and water quality, and cultural resources would be less than significant with mitigation incorporated.

b) **Less than Significant with Mitigation Incorporated.** Cumulative impacts can result from the interactions of environmental changes resulting from one proposed project with changes resulting from other past, present, and future projects that affect the same resources, utilities and infrastructure systems, public services, transportation network elements, air basin, watershed, or other physical conditions. Such impacts could be short-term and temporary, usually consisting of overlapping construction impacts, as well as long-term, due to the permanent land-use changes and operational characteristics involved with the proposed Project. Cumulative impacts would be less than significant with mitigation incorporated, as further discussed herein.

Aesthetics

Impacts related to aesthetics at the project-level have no potential for cumulative impacts because impacts are limited to on-site conditions and include no component that could result in similar impacts over time or space. Therefore, no cumulative impacts related to this topic would occur.

Agricultural Resources

The analysis provided in Sections 4.2 found that no individual impacts would occur; therefore, the Project could not contribute considerably to local agriculture or forestry.

Air Quality

The analysis provided in Section 4.3 related to air quality found that impacts would be less than significant; therefore, the Project would not contribute to localized or regional cumulative impacts.

Biological Resources

The analysis provided in Section 4.4 found that no individual impacts to sensitive species or migratory birds would occur; therefore, the Project could not contribute considerably to regional impacts on such species. It was also found that potential impacts to burrowing owls and nesting birds would be less than significant with adherence to existing regulations. The Project would have no other impacts on biological resources and would not result in localized or regional cumulative impacts.

Cultural Resources

Loss of on-site archaeological resources could reduce or eliminate important information relevant to the County of Riverside and the City of Perris. Impacts related to cultural resources were found to be potentially significant and require mitigation to reduce to less than significant levels; therefore, the Project could contribute considerably to significant localized cumulative impacts in this topic area. Mitigation Measures CUL-1 and CUL-2 have been incorporated to reduce impacts to archaeological resources and to buried human remains. Implementation of Mitigation Measures CUL-1 and CUL-2 would eliminate any potential loss of important local archaeological information or human remains that may be buried under the Project site; therefore, the proposed Project would have no contribution to a cumulative loss of important local or regional archaeological knowledge.

Energy

The analysis provided in Section 4.6 found that no individual impacts related to energy use would occur as a result of the proposed Project. Therefore, the Project will not contribute to cumulative energy impacts.

Geology and Soils

Impacts related to geology at the project-level have no potential for cumulative impacts because impacts are limited to on-site conditions and include no component that could result in similar impacts over time

or space. Impacts related to paleontological resources were found to be potentially significant and require mitigation to reduce to less than significant levels; therefore, the Project could contribute considerably to significant localized cumulative impacts in this topic area. Implementation of Mitigation Measures GEO-1 through GEO-4 would eliminate any potential loss of important local paleontological information that may be buried under the Project site; therefore, the proposed Project would have no contribution to a cumulative loss of important local or regional paleontological knowledge. As such, no cumulative impacts related to this topic would occur.

Greenhouse Gas Emissions

As discussed in Section 4.8, climate change is the result of numerous, cumulative sources of greenhouse gas emissions all over the world. The Project would not contribute considerably to global climate change.

Hazardous Materials

The analysis provided in Section 4.9 related to hazards and hazardous materials found that impacts would be less than significant. Compliance with all regulations related to the disposal and storage of household hazardous waste would ensure that impacts would be less than significant.

Airport Hazards

Impacts related to airport hazards at the project-level have no potential for cumulative impacts because impacts are limited to on-site conditions and include no component that could result in similar impacts over time or space. Therefore, no cumulative impacts related to this topic would occur.

Wildfires

The analysis provided in Section 4.9(g) and 4.20 found that no individual, local, or regional impacts would occur; therefore, no cumulative impacts related to this topic would occur.

Groundwater Levels

The analysis provided in Section 4.10 (b) found that less than significant local or regional impacts would occur; therefore, while the Project would contribute to individual, localized, or regional cumulative impacts, the Project contribution would not be considerable.

Drainage/Water Quality

The analysis provided in Section 4.10 (a), (c), (d), (e), and (f), found that less than significant individual, local, or regional impacts would occur; therefore, while the proposed Project would contribute to individual, localized or regional cumulative impacts, its contribution would not be considerable.

Flooding

The analysis provided in Section 4.10 (d) found that no regional impacts would occur; therefore, no cumulative impacts related to this topic would occur.

Land Use and Planning

The analysis provided in Section 4.11 related to Land Use and Planning found that impacts would be less than significant; therefore, while the proposed Project would contribute to individual, localized, or regional cumulative impacts, its contribution would not be considerable.

Mineral Resources

The analysis provided in Section 4.12 related to mineral resources found that there would be no impact; therefore, while the Project would contribute to localized or regional cumulative impacts, the Project contribution would not be considerable.

Noise

As discussed in Section 4.12, on-site operational noise is not anticipated to result in perceptible increases in ambient noise with the implementation of Best Management Practices. Therefore, the proposed Project would not contribute considerably to noise levels in the immediate vicinity of the Project. The Project would contribute to temporary increases in noise levels in the immediate Project vicinity during construction activities; however, Best Management Practices would be incorporated to ensure that impacts to nearby sensitive receptors remain less than significant. The Project would increase traffic in the Project area; however, Project traffic-related noise would not be discernible (as discussed in Section 4.13.a) to the public and, therefore, would have no considerable contribution to cumulative traffic-related noise.

Population and Housing

The analysis provided in Section 4.14 related to Population and Housing found that no impacts would result; therefore, no cumulative impacts related to this topic would occur.

Public Services

The analysis provided in Section 4.15 related to Public Services found that impacts would be less than significant; therefore, while the proposed Project would contribute to localized cumulative impacts, the contribution would not be cumulatively considerable.

Recreation

The analysis provided in Section 4.16 related to Recreation found that impacts would be less than significant; therefore, no cumulative impacts related to this topic would occur.

Traffic and Transportation

Traffic conditions were analyzed in Section 4.17. a and found to be less than significant. There is and would be adequate capacity to serve the uses along Perris Boulevard and Rider Street with the addition of the proposed Project. Therefore, the proposed Project's contribution to cumulative impacts to local and regional transportation facilities would not be considerable.

Tribal Cultural Resources

The analysis provided in Section 4.18 related to Tribal Cultural Resources (TCRs) identified that despite the previous disturbances of the Project site and developed nature of the Project area that may have displaced or submerged archaeological resources relating to TCRs on the surface, it is possible that intact tribal cultural resources exist at depth. Due to this uncertainty, Mitigation Measures CUL-1 and CUL-2 have been incorporated to address any previously undiscovered archaeological resources (including buried human remains) relating to TCRs encountered during Project implementation. Incorporation of these mitigation measures would ensure that potential impacts to buried TCRs are less than significant through requirements for evaluation, salvage, curation, and reporting.

Utilities and Service Systems

The analysis provided in Section 4.19 related to Utilities and Service Systems found that impacts would be less than significant; therefore, while the Project would contribute to localized or regional cumulative impacts, the Project contribution would not be considerable.

Wildfire

The analysis provided in Section 4.20 related to Wildfire found that no impacts would result; therefore, no cumulative impacts related to this topic would occur.

c) **Less than Significant with Mitigation Incorporated.** Based on the analysis of the Project's impacts in the responses to items 4.1 thru 4.20, there is no indication that this Project could result in

substantial adverse effects on human beings. While there would be a variety of temporary adverse effects during construction related to noise, these would be reduced to less than significant levels through mitigation. Long-term effects include increased vehicular traffic, traffic-related noise, use of household hazardous materials, emissions of criteria pollutants and greenhouse gas emissions, and increased demand for emergency response services. The analysis herein concludes that direct and indirect environmental effects would at worst require mitigation to reduce to less than significant levels. Environmental effects would result in less than significant impacts. Based on the analysis in this Initial Study, the City finds that direct and indirect impacts to human beings would be less than significant with mitigation incorporated.

5 Mitigation Summary

- BIO-1** No more than 14 days prior to ground disturbance a focused survey for burrowing owl will be required to ensure take avoidance. Even though burrowing owls were not located as part of the general biological survey, a pre-construction survey for burrowing owl is required by the MSHCP because burrowing owls may encroach or migrate to the property at any time, and therefore steps should be taken to ensure avoidance, including reevaluating the locations/presence of burrowing owl or burrows. Pre-construction surveys shall be conducted in accordance with the survey requirements outlined in Appendix D of the California Department of Fish and Wildlife's *Staff Report on Burrowing Owl Mitigation*, dated March 7, 2012. If burrowing owl are found on the Project Site during preconstruction surveys, the biologist conducting surveys shall immediately contact the CDFW to develop a plan for avoidance and/or translocation prior to construction crews initiating any ground disturbance on the Project Site.
- BIO-2** If construction is proposed between February 1st and September 15th, a qualified biologist must conduct a nesting bird survey(s) no more than three (3) days prior to initiation of grading to document the presence or absence of nesting birds within or directly adjacent (100 feet) to the Project Site. The survey(s) would focus on identifying any bird or raptor nests that would be directly or indirectly affected by construction activities. If active nests are documented, species-specific measures shall be prepared by a qualified biologist and implemented to prevent abandonment of the active nest. At a minimum, grading in the vicinity of a nest shall be deferred until the young birds have fledged. A minimum exclusion buffer of 100 feet shall be maintained during construction, depending on the species and location. The perimeter of the nest setback zone shall be fenced or adequately demarcated with stakes and flagging at 20-foot intervals and construction personnel and activities restricted from the area. A survey report by a qualified biologist verifying that no active nests are present or that the young have fledged shall be submitted to the City of Perris for review and approval prior to initiation of grading in the nest-setback zone. The qualified biologist shall serve as a construction monitor during those periods when construction activities occur near active nest areas to ensure that no inadvertent impacts on these nests occur. Any nest permanently vacated for the season would not warrant protection pursuant to the CDFG Code Sections 3503, 3503.5, and 3513. Therefore, with adherence to existing regulations, the proposed Project will have a less than significant impact on nesting birds.
- CUL-1** The developer shall retain a professional archaeologist prior to the issuance of grading permits. The task of the archaeologist shall be to monitor the initial ground-altering activities at the subject site and off-site improvement areas for the unearthing of previously unknown archaeological and/or cultural resources. Selection of the archaeologist shall be subject to the approval of the City of Perris Director of Development Services and no grading activities shall occur at the site or within the offsite improvement areas until the archaeologist has been approved by the City. The archaeological monitor shall be responsible for maintaining daily field notes and a photographic record, and for reporting all finds to the developer and the City of Perris in a timely manner. The archaeologist shall be equipped to record and salvage cultural resources that may be unearthed during grading activities. The archaeologist shall be empowered to temporarily halt or divert grading equipment to allow recording and removal of the unearthed cultural resources.

In the event that archaeological resources are discovered at the site or within the off-site improvement areas, the handling of the discovered resources will differ. However, it is understood that all artifacts with the exception of human remains and related grave goods or sacred/ceremonial objects belong to the property owner. All artifacts discovered at the development site shall be inventoried and analyzed by the professional archaeologist. If any

artifacts of Native American origin are discovered, all activities in the immediate vicinity of the find (within a 50-foot radius) shall stop and the project proponent and project archaeologist shall notify the City of Perris Planning Division, the Pechanga Band of Luiseño Indians and the Soboba Band of Luiseño Indians. A designated Native American observer from either the Pechanga Band of Luiseño Indians or the Soboba Band of Luiseño Indians shall be retained to help analyze the Native American artifacts for identification as everyday life and/or religious or sacred items, cultural affiliation, temporal placement, and function, as deemed possible. Consistent with California Public Resources Code Section 21083.2(b) and Assembly Bill 52 (Chapter 532, Statutes of 2014), avoidance shall be the preferred method of preservation for tribal cultural resources and archaeological resources.

The significance of Native American resources shall be evaluated in accordance with the provisions of CEQA and shall consider the religious beliefs, customs, and practices of the Luiseño tribes. All items found in association with Native American human remains shall be considered grave goods or sacred in origin and subject to special handling.

Native American artifacts that are relocated/reburied at the site would be subject to a fully executed relocation/reburial agreement with the assisting Native American tribes or bands. This shall include measures and provisions to protect the reburial area from any future impacts. Relocation/reburial shall not occur until all cataloging and basic recordation have been completed.

Native American artifacts that cannot be avoided or relocated at the site shall be prepared in a manner for curation at an accredited curation facility in Riverside County that meets federal standards per 36 CFR Part 79 and makes the artifacts available to other archaeologists/researchers for further study such as University of California, Riverside Archaeological Research Unit (UCR-ARU) or the Western Center for Archaeology and Paleontology. If more than one Native American group is involved with the proposed project and they cannot come to an agreement as to the disposition of Native American artifacts, they shall be curated, on a rotational basis, at curation facilities located within Riverside County that meet or exceed the standards contained in 36 C.F.R. Part 79. The archaeological consultant shall deliver the Native American artifacts, including title, to the accredited curation facility within a reasonable amount of time along with the fees necessary for permanent curation.

Non-Native American artifacts shall be inventoried, assessed, and analyzed for cultural affiliation, personal affiliation (prior ownership), function, and temporal placement. Subsequent to analysis and reporting, these artifacts will be subjected to curation or returned to the property owner, as deemed appropriate.

Once grading activities have ceased or the archaeologist, in consultation with the designated Native American observer, determines that monitoring is no longer necessary, monitoring activities can be discontinued following notification to the City of Perris Planning Division.

A report of findings, including an itemized inventory of recovered artifacts, shall be prepared upon completion of the steps outlined above. The report shall include a discussion of the significance of all recovered artifacts. The report shall provide evidence that any Native American and Non-Native American archaeological resources recovered during development have been avoided, reburied, or curated at an accredited curation facility. A copy of the report shall also be filed with the Eastern Information Center (EIC) and submitted to the Pechanga Band of Luiseño Indians and the Soboba Band of Luiseño Indians.

CUL-2 In the event that human remains (or remains that may be human) are discovered at the site during grading or earthmoving, the construction contractors, project archaeologist, and/or designated Native American observer shall immediately stop all activities within 100 feet of the find. The

project proponent shall then inform the Riverside County Coroner and the City of Perris Planning Division immediately, and the coroner shall be permitted to examine the remains as required by California Health and Safety Code Section 7050.5(b). If the coroner determines that the remains are of Native American origin, the coroner would notify the Native American Heritage Commission (NAHC), which will identify the "Most Likely Descendent" (MLD). Despite the 4 affiliation with any Native American representatives at the site, the NAHC's identification of the MLD will stand.

The MLD shall be granted access to inspect the site of the discovery of Native American human remains and may recommend to the project proponent means for treatment or disposition, with appropriate dignity of the human remains and any associated grave goods. The MLD shall complete his or her inspection and make recommendations or preferences for treatment within 48 hours of being granted access to the site. The disposition of the remains will be determined in consultation between the project proponent and the MLD. In the event that the project proponent and the MLD are in disagreement regarding the disposition of the remains, State law will apply and the mediation and decision process will occur with the NAHC (see Public Resources Code Section 5097.98(e) and 5097.94(k)).

The specific locations of Native American burials and reburials will be proprietary and not disclosed to the general public. The locations will be documented by the consulting archaeologist in conjunction with the various stakeholders and a report of findings will be filed with the Eastern Information Center (EIC).

GEO-1 Prior to the issuance of grading permits, the project applicant shall submit to and receive approval from the City, a Paleontological Resource Impact Mitigation Monitoring Program (PRIMMP).

The PRIMMP shall include the provision of a qualified professional paleontologist (or his or her trained paleontological monitor representative) during onsite and off-site subsurface excavation that exceeds three (3) feet in depth. Selection of the paleontologist shall be subject to approval of the City of Perris Director of Development Services and no grading activities shall occur at the site until the paleontologist has been approved by the City.

Monitoring shall be restricted to undisturbed subsurface areas of older alluvium, which might be present below the surface. The approved paleontologist shall be prepared to quickly salvage fossils as they are unearthed to avoid construction delays. The paleontologist shall also remove samples of sediments which are likely to contain the remains of small fossil invertebrates and vertebrates. The paleontologist shall have the power to temporarily halt or divert grading equipment to allow for removal of abundant or large specimens.

Collected samples of sediments shall be washed to recover small invertebrate and vertebrate fossils. Recovered specimens shall be prepared so that they can be identified and permanently preserved. Specimens shall be identified and curated and placed into an accredited repository (such as the Western Science Center or the Riverside Metropolitan Museum) with permanent curation and retrievable storage.

A report of findings, including an itemized inventory of recovered specimens, shall be prepared upon completion of the steps outlined above. The report shall include a discussion of the significance of all recovered specimens. The report and inventory, when submitted to the City of Perris Planning Division, would signify completion of the program to mitigate impacts to paleontological resources.

HAZ-1 The Applicant shall prepare and submit to the City a final acoustical analysis, report, or other documentation that demonstrates the final exterior wall design and assembly will achieve an

exterior to interior noise level reduction of 25 dB at all building office areas that have at least one wall that is part of the building façade/ exterior wall assembly. Demonstration of said exterior to interior noise level reduction of 25 dB shall occur prior to issuance of building permits.

HYD-1: *Requirements for Contractors to Implement BMPs and Best Available Technologies.* EMWD would require contractors to implement BMPs and the best available technologies to reduce potential impacts to water quality that would result from construction activities. To reduce or eliminate construction-related water quality impacts before the onset of construction activities, EMWD would obtain coverage under the National Pollutant Discharge Elimination System (NPDES) General Construction Permit. Construction activities would comply with the conditions of the permit, including preparation of a stormwater pollution prevention plan, implementation of BMP's, and monitoring impacts, if any, to water quality. As part of this process, multiple BMP's should be implemented to provide effective erosion and sediment control. BMP's to be implemented as part of this mitigation measure may include, but not be limited to, the following:

- Temporary erosion control measures such as silt fences, staked straw bales, silt/sediment basins and traps, check dams, sandbag dikes, and temporary re-vegetation or other groundcover shall be employed for disturbed areas.
- Storm drain inlets on the site and in downstream offsite areas shall be protected from sediment with the use of BMP's acceptable to EMWD, local jurisdictions, and the California Regional Water Quality Control Board, Santa Ana Region.
- Dirt and debris shall be swept from the construction zone on a regular basis, particularly before predicted rainfall events.
- No disturbed surfaces shall be left without erosion control measures in place from early fall to early spring (October 15 and April 15).

NOI-1 **Construction Noise Control Best Management Practices (BMP's).** To reduce potential noise levels associated with the construction of the proposed Project, the Applicant and/or its designated contractor, contractor's representatives, or other appropriate personnel shall implement the following measures:

- *Restrict work hours/equipment noise.* All work shall be subject to the requirements in City Municipal Code Section 7.34.060. Construction activities, including deliveries, shall only occur from 7 AM to 7 PM Monday through Saturday (and not on holidays). The Applicant and/or its contractor shall post a sign at all entrances to the construction site informing contractors, subcontractors, construction workers, etc., of this requirement. The sign shall also provide a name (or title) and phone number for an appropriate on-site and City representative to contact to submit a noise complaint.
- *Construction equipment care, siting, and design measures.* The following construction equipment care, siting, and design measures shall apply during construction activities:
 - Heavy equipment engines shall be covered, and exhaust pipes shall include a muffler in good working condition. Pneumatic tools shall consist of a noise suppression device on the compressed air exhaust.
 - All stationary noise-generating equipment such as pumps, compressors, and welding machines shall be located as far from neighboring property lines as practical.
 - If feasible, the Applicant and/or his contractor shall connect to existing electrical service at the site to avoid the use of stationary, diesel- or other alternatively-fueled power generators.
- *Construct/Install Temporary Noise Barrier.* The Applicant and/or his contractor shall install and maintain throughout the duration of all site preparation, grading, and other construction

activities requiring large heavy-duty equipment operations within 50 feet of a residential property line a physical noise barrier capable of achieving a minimum reduction in predicted construction noise levels of 10 dB. Potential barrier options capable of achieving a 10 dB reduction in predicted construction noise levels include:

- An 8-foot-high concrete, wood, or other barrier installed at-grade (or mounted to structures located at-grade, such as a K-Rail) along the Project's eastern and southern property line. Such a wall/barrier shall consist of solid material (i.e., free of openings or gaps other than weep holes) that have a minimum rated transmission loss value of 20 dBA.
- Commercially available acoustic panels or other products such as acoustic barrier blankets installed along the Project southern property line that have a minimum sound transmission class (STC) or transmission loss value of 20 dBA. The rated STC or transmission loss value of the barrier would be confirmed by the manufacturer's specifications prior to installation.
- Any combination of noise barriers and commercial products capable of achieving a 10 dBA reduction in construction noise levels at neighboring land uses.

NOI-2 Operational Noise Control Best Management Practices: To ensure the proposed Project complies with City Municipal Code Section 7.34.040 and 7.34.050 and does not result in a substantial permanent increase in ambient noise levels, the Applicant shall prepare and submit a final acoustical analysis, report, or other documentation to the City that:

- Provides evidence (manufacturer specifications or acceptable ambient noise monitoring data) confirming that the final selected car wash make and model does not produce noise levels that exceed 86 dBA L_{max} and 79.6 dBA L_{eq} at a distance of 10 feet from the car wash entrance or exit.
- Limits car wash noise levels to no more than 60 dBA L_{max} during the nighttime time period (10 PM to 7 AM) by:
 - Prohibiting vacuum and car wash operations during the nighttime period; or
 - Installing dampeners, acoustic panels, tunnel entrance and exit doors, or other acoustic treatments that reduce total car wash noise levels to 60 dBA L_{max} or less; or
 - Incorporate a solid concrete, wood, or other barrier of sufficient height and density to reduce noise levels to 60 dBA L_{max} or less at adjacent residential property lines

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6.2 – Persons and Organizations Consulted

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6.3 – Bibliography

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Appendix A Air Quality Analysis Memorandum

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Memo

To: Jack Lee
CC: Larry Roberts, TAIT & Associates, Inc. and Bob Prasse, MIG
From: Chris Dugan and Phil Gleason
Date: September 11, 2020

SUBJECT: Air Quality Analysis for 7-Eleven Project at 23 East Rider Street, Perris, CA

MIG, Inc. (MIG) has prepared this memorandum at the request of Mr. Jack Lee. This memorandum estimates the potential air quality emissions for the proposed 7-Eleven Project (proposed project) at the southeast corner of the Perris Boulevard and Rider Street intersection in the City of Perris, and evaluates project emissions against applicable South Coast Air Quality Management District (SCAQMD)-recommended California Environmental Quality Act (CEQA) significance thresholds.

PROJECT DESCRIPTION

The proposed Project would involve the development of a new, small 7-Eleven building with fueling canopy and automated car wash. The proposed Project would be located at 23 East Rider Street (Assessor's Parcel Number (APN) 300-300-026). The Project site is located at the northwest corner of General Plan Planning Area 5 and consists of a square, approximately 2.06-acre undeveloped parcel of land currently classified as Commercial Neighborhood (CN) by the City's Zoning Code, Neighborhood Commercial (NC) by the City's General Plan, and Business/Professional Office (BPO) by the Perris Valley Commerce Center Specific Plan (City of Perris 2013, 2020a, and 2020b).

The proposed Project's conceptual site plan calls for the 3,227 square-foot 7-Eleven building to be situated near the center of the Project site (Tait and Associates, 2020; see Attachment 1). The north-south oriented building would front North Perris Boulevard and be set back a total of approximately 92 feet from the northern property line (adjacent to East Rider Street), 130 feet from the southern property line (R-10,000 lands on Santo Tomas Avenue), 83 feet from the eastern property line (R-10,000 lands on El Rosario Drive), and 172 feet from the western property line (adjacent to North Perris Boulevard). The single-story building would be surrounded by parking and other ancillary structures such as a bike rack, air and water hoses (for vehicle use), a trash enclosure, and electrical equipment.

The proposed fueling canopy would be located between the 7-Eleven building and North Perris Boulevard. The approximately 136-foot-long by 20-foot-wide canopy (2,720 square feet) would run parallel to North Perris Boulevard. The canopy would be set back approximately 77 feet from the western property line and 93 feet from the southern property line. The fueling canopy would include six multi-product dispensing stations and 12 total fuel pumps. On-site fuel storage would occur in two, new double wall fiberglass underground storage tanks (UST). One UST would have a 20,000-gallon capacity for storing unleaded gasoline. The other UST would have a 20,000-gallon split capacity with approximately 12,000 gallons storage available for diesel fuel and 8,000 gallons storage available for premium gasoline (or other fuels, if market conditions warrant). The new USTs would be located north of the fuel service canopy and installed at a depth of approximately 15 to 20 feet below ground surface. All fueling infrastructure would

comply with the latest State requirements for the control of vapors from gasoline dispensing facilities.

The proposed automated car wash would be located between the 7-Eleven building and the site's southern property line. The approximately 43-foot-long by 23-foot-wide car wash (approximately 990 square feet) would run parallel to the southern property lines; vehicles would queue and enter the car wash from the east and pass through the car wash to the west. Two vacuums would be located on the north side of the car wash (i.e., the car wash would be in between the vacuums and the southern property line). At this time, the Tait and Associates has not yet selected the specific make and model for the automated car wash or vacuums. The proposed project would include other site improvements, including 25,190 square feet of landscaping areas and a proposed monument sign.

The proposed Project would add one right in/out driveway on North Perris Boulevard, in the southwest corner of the site, and improve and combine the two existing site driveways on East Rider Street into a single, right in/out access point. Vehicles would travel the perimeter of the site to access parking areas, fueling stations, and the car wash. A total of 35 parking spaces would be provided on-site, including one Americans with Disabilities Act (ADA) accessible stall and one electric vehicle stall. This parking would be provided in two areas; 26 stalls would surround the 7-Eleven building and 8 stalls would be located on the north side of the automated car wash.

The proposed Project, including fuel service and car wash operations, would generally operate 24-hours a day 365 days per year. 7-Eleven estimates the monthly and annual fuel gasoline throughput for the proposed Project would be approximately 133,330 gallons and 1,600,000 gallons, respectively. Refueling activities would occur as needed; however, due to the size of the facility, no more than two refueling trucks are anticipated to access the site on any given day.

AIR QUALITY ANALYSIS

The proposed project is located within the South Coast Air Basin (Basin), where efforts to attain state and federal air quality standards are governed by the SCAQMD. Both the State of California and the federal government have established health-based ambient air quality standards (AAQS) for seven air pollutants (known as criteria pollutants). These pollutants include ozone (O₃), carbon monoxide (CO), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), inhalable particulate matter with a diameter of 10 microns or less (PM₁₀), fine particulate matter with a diameter of 2.5 microns or less (PM_{2.5}), and lead (Pb). The state has also established AAQS for additional pollutants. The AAQS are designed to protect the health and welfare of the populace within a reasonable margin of safety. Where the state and federal standards differ, California AAQS (CAAQS) are more stringent than the national AAQS (NAAQS). The U.S. Environmental Protection Agency (U.S. EPA), California Air Resources Board (CARB), and the SCAQMD assess the air quality of an area by measuring and monitoring the amount of pollutants in the ambient air and comparing pollutant levels against NAAQS and CAAQS. Based on these comparisons, regions are classified into one of the following categories:

- **Attainment.** A region is "in attainment" if monitoring shows ambient concentrations of a specific pollutant are less than or equal to NAAQS or CAAQS. In addition, an area that has been re-designated from nonattainment to attainment is classified as a "maintenance area" for 10 years to ensure that the air quality improvements are sustained.
- **Nonattainment.** If the NAAQS or CAAQS are exceeded for a pollutant, the region is designated as nonattainment for that pollutant. It is important to note that some NAAQS and CAAQS require multiple exceedances of the standard in order for a region to be

classified as nonattainment. Federal and state laws require nonattainment areas to develop strategies, plans, and control measures to reduce pollutant concentrations to levels that meet, or attain, standards.

- **Unclassified.** An area is unclassified if the ambient air monitoring data are incomplete and do not support a designation of attainment or nonattainment.

Air pollution levels are measured at monitoring stations located throughout the Basin. Table 1, *South Coast Air Basin Attainment Status*, summarizes the Basin's attainment status for the NAAQS and CAAQS.

Table 1: South Coast Air Basin Attainment Status		
Pollutant	Attainment Status^(A)	
	NAAQS	CAAQS
O ₃ (1-hr)	Nonattainment	Nonattainment
O ₃ (8-hr)	Nonattainment	Nonattainment
PM ₁₀ (24-hr and Annual)	Attainment	Nonattainment
PM _{2.5} (24-hr)	Nonattainment	--
PM _{2.5} (Annual)	Nonattainment	Nonattainment
CO	Attainment (Maintenance)	Attainment
NO ₂ (1-hr)	Attainment	Attainment
NO ₂ (Annual)	Attainment (Maintenance)	Attainment
SO ₂	Attainment	Attainment
Lead	Partial Nonattainment	Attainment
Visibility Reducing Particles	--	Unclassified
SO ₄	--	Attainment
H ₂ S	--	Attainment

Source: SCAQMD, 2018
(A) This table summarizes the Basin's attainments status for the NAAQS and CAAQS (as of September 2018). This table does not prevent comprehensive information regarding the CAAQS and NAAQS. Each CAAQS and NAAQS has its own averaging time, standard unit of measurement, measurement method, and statistical test for determining if a specific standard has been exceeded. Refer to the table source for detailed information on the NAAQS and CAAQS.

The proposed project would generate both short-term construction emissions and long-term operational emissions. The SCAQMD adopts rules that establish permissible air pollutant emissions levels for a variety of business, processes, operations, and products to subject to Federal and State air quality requirements. In general, the proposed project and its potential emissions sources would be subject to the following State and SCAQMD rules:

- **SCAQMD Rule 401 (Visible Emissions)** prohibits discharge into the atmosphere from any single source of emission for any contaminant for a period or periods aggregating more than three minutes in any one hour that is as dark or darker in shade than that designated as No. 1 on the Ringelmann Chart, as published by the U.S. Bureau of Mines.
- **SCAQMD Rule 402 (Nuisance)** prohibits discharges of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property.
- **SCAQMD Rule 403 (Fugitive Dust)** prohibits emissions of fugitive dust from any grading activity, storage pile, or other disturbed surface area if it crosses the project property line or if emissions caused by vehicle movement cause substantial impairment of visibility (defined as exceeding 20 percent capacity in the air). Rule 403 requires the implementation of Best Available Control Measures and includes additional provisions for projects disturbing more than five acres and those disturbing more than fifty acres.

- **SCAQMD Rule 461 (Gasoline Transfer and Dispensing)** applies to the transfer of gasoline from any tank truck, trailer, or railroad tank car into any stationary storage tank or mobile fueler, and from any stationary storage tank or mobile fueler into any mobile fueler or vehicle fuel tank. The rule prohibits transfer and dispensing of gasoline in equipment that does not meet CARB Phase I and Phase II vapor recovery requirements that provide between 95% and 98% control of gasoline vapors.
- **SCAQMD Rule 1108 (Cutback Asphalt)** prohibits the sale or use of any cutback asphalt containing more than 0.5 percent by volume organic compounds which evaporate at 260°C (500°F) or lower.
- **Rule 1113 (Architectural Coatings)** establishes maximum concentrations of VOCs in paints and other applications and establishes the thresholds for low-VOC coatings.
- **Rule 1143 (Consumer Paint Thinners and Multi-Purpose Solvents)** prohibits the supply, sale, manufacture, blend, package or repackaging of any consumer paint thinner or multi-purpose solvent for use in the District unless consumer paint thinners or other multi-purpose solvents comply with applicable VOC content limits.

These SCAQMD rules would serve to limit and control the proposed project's potential to emit air pollutants. As described in more detail below, the proposed project would not generate short-term or long-term emissions that exceed SCAQMD-recommended pollutant thresholds.

Regional Construction and Operational Emissions

The proposed project involves site preparation and grading of the approximately 2.06-acre site, and constructing a new, approximately 3,227 square-foot 7-Eleven store that has 12 fuel pump stations and a detached, approximately 991 square-foot automated carwash at the south-eastern corner of the Perris Boulevard and Rider Street intersection. Construction activities would disturb the entire approximately 2.06-acre site and involve site preparation, grading, construction, paving, and architectural coating work. It is anticipated soils would be balanced on site (i.e., the project would not involve any import or export of soil).

The proposed project's potential construction emissions were estimated using the California Emissions Estimator Model (CalEEMod), Version (V.) 2016.3.2. Construction phase and duration and the type and amount of equipment used during construction were generated using CalEEMod default assumptions and modified as necessary to reflect the following project-specific context, information, and details:

- The demolition phase assumed by CalEEMod was removed, since the site is undeveloped; and
- Fugitive dust control measures were incorporated into the model consistent with requirements contained in SCAQMD Rule 403, Fugitive Dust.

The proposed project's maximum daily unmitigated construction emissions are shown in Table 2, *Unmitigated Maximum Daily Regional Construction Emissions*. Please refer to Attachment 2 for CalEEMod output files and detailed construction emissions assumptions.

Table 2: Unmitigated Maximum Daily Regional Construction Emissions						
Construction Season	Maximum Pollutant Emissions (Pounds Per Day)					
	ROG	NO_x	CO	SO₂	PM₁₀	PM_{2.5}
Summer 2020	2.5	21.4	16.7	0.03	3.7	2.3
Winter 2020	2.5	21.4	16.4	0.03	3.7	2.3
Summer 2021	6.5	17.5	16.2	0.03	1.3	0.9
Winter 2021	6.5	17.5	16.0	0.03	1.3	0.9
SCAQMD Regional Threshold^(A)	75	100	550	150	150	55
Exceeds Threshold?	No	No	No	No	No	No

Source: MIG, 2020 (See Attachment 2) and SCAQMD, 2020.

As shown in Table 2, the proposed project’s maximum daily, unmitigated criteria air pollutant emissions would be well below the SCAQMD’s recommended regional pollutant thresholds. Project construction, therefore, would not generate criteria air pollutant emissions levels that exceed SCAQMD regional CEQA thresholds.

Once operational, the proposed project would generate long-term emissions from the following sources:

- **“Area” Sources.** The proposed project would generate emissions from small area sources, including landscaping equipment, the use of consumer products (e.g., paints, cleaners, and fertilizers) that result in the evaporation of chemicals into the atmosphere during product use.
- **Energy Use and Consumption.** The proposed project would generate emissions from the combustion of natural gas in water and space heating equipment, as well as industrial processes.
- **Mobile Sources.** The proposed project would generate emissions from vehicles traveling to and from the project site.

The proposed project’s operational emissions were also estimated using CalEEMod, V. 2016.3.2. The modeling is based on the project’s first full year of operations (assumed to be 2021), using default data assumptions generated by CalEEMod, modified as necessary to reflect the following project-specific context, information, and details:

- Project-specific land use information (i.e., lot acreage, building square footage, etc.) was applied to the model; and
- Fugitive ROG emissions associated with retail gasoline dispensing facilities are not estimated by CalEEMod. Therefore, MIG estimated emissions for the following activities separately using publicly available CARB and SCAQMD emission factor information:¹

¹ Gasoline dispensing facilities are subject to CARB’s Phase 1 and Phase 2 vapor recovery systems that control and reduce potential fugitive ROG emission. In addition, gasoline dispensing facilities are subject to SCAQMD permitting requirements pursuant SCAQMD Rule 461, Gasoline Transfer and Dispensing. Fugitive gasoline dispensing facility ROG emissions were estimates using the emission factor information in Table X-1 of the SCAQMD’s Risk Assessment Procedures for Rules 1401, 1401.1, and 212 (SCAQMD, 2017a). See Attachment 3 for VOC emissions estimates.

- Fuel loading generates emissions occur when a fuel tanker truck unloads gasoline to the storage tanks. The storage tank vapors, displaced during loading, are emitted through its vent pipe. A pressure/vacuum valve installed on the tank vent pipe significantly reduces these emissions.
- Breathing emissions occur through the storage tank vent pipe as a result of temperature and pressure changes in the tank vapor space.
- Refueling emissions occur during motor vehicle refueling when gasoline vapors escape either through the vehicle/nozzle interface or the on-board vapor recovery (ORVR) system.
- Spillage emissions occur from evaporating gasoline that spills during vehicle refueling.
- Hose permeation emissions occur when liquid gasoline or gasoline vapors diffuse through the dispensing hose outer surface to the atmosphere.

The proposed project’s maximum daily unmitigated operational emissions are shown in Table 3, *Unmitigated Maximum Daily Regional Operational Emissions*. Please refer to Attachment 2 for CalEEMod output files and detailed construction emissions assumptions.

Table 3: Unmitigated Maximum Daily Regional Operational Emissions						
Emissions Source	Maximum Daily Pollutant Emission (Pounds Per Day)^(A)					
	ROG	NO_x	CO	SO₂	PM₁₀	PM_{2.5}
Area Sources	0.1	<0.0 ^(C)	<0.0 ^(C)	<0.0 ^(C)	<0.0 ^(C)	<0.0 ^(C)
Gasoline Dispensing ^(B)	7.3	--	--	--	--	--
Energy Demand	<0.0 ^(C)	<0.0 ^(C)	<0.0 ^(C)	<0.0 ^(C)	<0.0 ^(C)	<0.0 ^(C)
Mobile Sources	3.3	41.3	31.9	0.1	6.0	1.7
Total Daily Emissions ^(D)	10.7	41.3	31.9	0.1	6.0	1.7
SCAQMD Regional Threshold	55	55	550	150	150	55
Exceeds Threshold?	No	No	No	No	No	No
Source: MIG, 2020 (See Attachments 2 and 3) and SCAQMD, 2020.						
(A) Emissions presented are worst-case emissions and may reflect summer or winter emissions levels. Maximum daily ROG, NO _x , and SO _x emissions occur during the summer. Maximum daily CO emissions occur during the winter. In general, due to rounding, there is no difference between summer and winter PM ₁₀ and PM _{2.5} emissions levels for the purposes of this table.						
(B) Gasoline dispensing emissions assume 1.6 million gallons of annual throughput. See Attachment 3.						
(C) “<0.0” does not mean emissions are zero; rather, it means emissions are less than 0.05 but greater than 0.						
(D) Totals may not equal due to rounding.						

As shown in Table 3, the proposed project’s maximum daily, unmitigated operational criteria air pollutant emissions would be well below the SCAQMD’s-recommended regional pollutant thresholds. Project operation, therefore, would not generate criteria air pollutant emissions levels that exceed SCAQMD regional CEQA thresholds.

Localized Construction and Operational Emissions

In addition to regional CEQA thresholds, the SCAQMD has also developed Local Significance Thresholds (LSTs) that represent the maximum emissions from a project that are expected to cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standards, which would result in significant adverse localized air quality impacts.

The project's maximum daily construction emissions are compared against the SCAQMD's-recommended LSTs thresholds in Table 4, *Local Significance Threshold (LST) Construction Analysis*. Consistent with the SCAQMD's LST methodology, the emissions included in the construction LST analysis are on-site emissions only, and the LST against which these on-site emissions are compared are based on the project size, in acres, as determined using the equipment assumptions generated by CalEEMod and the SCAQMD's Fact Sheet for Applying CalEEMod to Localized Significance Thresholds.² The LST thresholds are for source receptor area (SRA) 24 (Perris Valley), the SRA in which the proposed project is located, and are based on a receptor distance of 25 meters (82 feet), the closest LST receptor distance thresholds recommended for use by the SCAQMD.

Construction Phase ^(A, B)	Maximum Pollutant Emissions (Pounds Per Day)			
	NO _x	CO	PM ₁₀	PM _{2.5}
Site Preparation	19.9	11.3	1.4	0.8
Grading	21.3	9.9	3.5	2.2
Building Construction	17.4	16.0	0.9	0.9
Paving	10.6	11.8	0.6	0.5
Architectural Coating	1.5	1.8	0.1	0.1
SCAQMD LST Threshold^(C)	170	883	7	4
Exceeds Threshold?	No	No	No	No

Source: MIG, 2020 (See Attachment 2) and SCAQMD, 2009.

(A) Emissions estimated using CalEEMod, v. 2016.3.2. Estimates are based on default model assumptions unless otherwise noted in this document.

(B) Emissions presented are worst-case emissions and may reflect summer or winter emission levels. In general, due to rounding, there is no difference between summer and winter emission levels for the purposes of this table.

(C) The LSTs are based on 2.0-acre project size and 25-meter receptor distance.

As shown in Table 4, the proposed project's construction emissions would not exceed the SCAQMD's recommended construction LSTs. Project construction, therefore, would not generate criteria air pollutant emissions levels that exceed SCAQMD local CEQA thresholds.

Typically, operations related LSTs become a concern when there are substantial on-site stationary or on-site mobile sources (e.g., heavy duty or idling trucks) that could impact surrounding receptors, which is not the case for the proposed project. Nonetheless, the proposed project's maximum daily operational emissions are compared against the SCAQMD's-

² According to the SCAQMD's *Fact Sheet for Applying CalEEMod to Localized Significance Thresholds*, the maximum number of acres disturbed on the peak day of use per crawler tractor, grader, and rubber tired dozer is 0.5 acres per 8 hour day, while the maximum number of acres disturbed on the peak day of use per scraper is 1 acre per 8 hour day (SCAQMD, 2016).

recommended LSTs in Table 5. The LSTs are for SRA 24 in which the proposed project is located and a project size of 2.0 acres.

Table 5: Local Significance Threshold Operational Analysis				
Emissions	Maximum On-Site Pollutant Emissions (Pounds Per Day) ^(A)			
	NO_x	CO	PM₁₀	PM_{2.5}
Area Sources	<0.0 ^(B)	<0.0 ^(B)	<0.0 ^(B)	<0.0 ^(B)
Energy Sources	<0.0 ^(B)	<0.0 ^(B)	<0.0 ^(B)	<0.0 ^(B)
Mobile Sources ^(C)	0.8	0.6	0.1	<0.0 ^(B)
Total On-site Emissions ^(D)	0.8	0.6	0.1	<0.0 ^(B)
SCAQMD LST Threshold^(E)	170	883	2	1
Threshold Exceeded?	No	No	No	No

Source: MIG 2020 (see Attachment 2) and SCAQMD, 2009.

(A) Emissions presented are worst-case emissions and may reflect summer or winter emissions levels. In general, due to rounding, there is no difference between summer and winter emissions levels for the purposes of this table.

(B) "<0.0" does not indicate the emissions are equal to 0. It indicates the emission is greater than 0 but less than 0.05.

(C) Mobile source emissions estimates reflect potential on-site vehicle emissions only and were derived by assuming 2% of operational mobile source emissions in Table 3 will occur on site.

(D) Totals may not equal due to rounding.

(E) LST threshold is conservatively based on a 2.0-acre project size and 25-meter (82-foot) receptor distance.

As shown in Table 5, the proposed project's on-site operational emissions would not exceed the SCAQMD's recommended operational LSTs. Project operation, therefore, would not generate criteria air pollutant emissions levels that exceed SCAQMD local CEQA thresholds.

Sensitive Air Quality Receptors/Health Risks

The SCAQMD identifies sensitive receptors as populations more susceptible to the effects of air pollution than the general population. Some people are more affected by air pollution than others. Sensitive air quality receptors include specific subsets of the general population that are susceptible to poor air quality and the potential adverse health effects associated with poor air quality. Both CARB and the SCAQMD consider residences, schools, parks and playgrounds, childcare centers, athletic facilities, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes to be sensitive air quality land uses and receptors (SCAQMD 2017a; CARB 2005). The potential sensitive air quality receptors adjacent or in close proximity to the perimeter of the Project area (i.e., within 1,000 feet) include:

- Single-family homes on El Rosario Drive, San Felipe Drive, and Santo Tomas Ave, adjacent to the project site's southern and eastern property lines.

In addition to criteria air pollutants, the U.S. EPA and CARB have classified certain pollutants as Hazardous Air Pollutants (HAPs) (by U.S. EPA) or Toxic Air Contaminants (TACs) (by CARB), respectively. These pollutants can cause severe health effects at very low concentrations (non-cancer effects), and many are suspected or confirmed carcinogens (i.e., can cause cancer). People exposed to HAPs/TACs at sufficient concentrations and durations may have an increased chance of getting cancer or experiencing other serious health effects. These health effects can include damage to the immune system, as well as neurological, reproductive (e.g., reduced fertility), developmental, respiratory, and/or other health problems.

A portion of the PM₁₀ and PM_{2.5} emissions generated during construction of the project would be diesel particulate matter, or DPM, a known TAC. The proposed project's construction activities would not expose adjacent residential receptors to substantial levels of DPM that would pose a substantial adverse health risk for several reasons. First, the proposed project does not involve substantial earthmoving or grading activities that would require large amounts of heavy-duty equipment associated with the highest DPM emissions. Second, construction activities associated with the project would short-term; as estimated in CalEEMod total project construction is estimated to last less than a year. Finally, potential long-term adverse health risks from DPM are evaluated assuming a constant exposure to emissions over a 70-year lifetime, 24 hours a day, seven days a week, with increased risks generally associated with increased proximity to emissions sources. Since construction activities would only generate DPM emissions on an intermittent, short-term basis, DPM emissions from construction activities would be unlikely to result in adverse health effects to existing sensitive receptors that exceed the SCAQMD's significance criteria.³

Once operational, the proposed project would result in the release of fugitive gasoline emissions gasoline storage, transfer, and dispensing activities. These sources could expose sensitive receptors in close proximity to the proposed project to TACs, specifically benzene, ethylbenzene, and naphthalene, associated with adverse health risks. As such, the SCAQMD recommends Lead Agencies perform a health risk assessment that evaluates potential health risks associated with TACs emitted by the gasoline dispensing stations. MIG estimated potential adverse health risks resulting from fugitive gasoline vapors from the proposed project using the SCAQMD's Risk Tool for Gasoline Dispensing Service Stations, V. 1.103 (see Attachment 4). The facility throughput (1.6 million gallons per year) was estimated to produce an incremental carcinogenic risk of 4.9 per million population at a distance of 30 meters (the distance between the fuel pumps and the closest residential receptors south of the site) and 0.2 at a distance of 50 meters (the distance between fuel pumps and the closest commercial receptors west of the project site). These incremental carcinogenic risk values are below the SCAQMD's recommended CEQA threshold of 10 excess cancers per million population. The proposed project would be required to comply with SCAQMD Rule 461 – Gasoline Transfer and Dispensing, as well as Rule 1401 – New Source Review of Toxic Air Contaminants. During the SCAQMD permitting process, the SCAQMD would establish a gasoline throughput that would ensure the proposed project would not pose a significant health risk to adjacent nearby the receptors. Based on the preceding analysis and compliance with SCAQMD Rule 1401, the proposed project would not result in unacceptable health risks at nearby receptors.

Conflict with or Obstruct Implementation of the Applicable Air Quality Plan

A project that conflicts with or obstructs the implementation of the South Coast Air Quality Management District's (SCAQMD) South Coast Air Basin 2016 Air Quality Management Plan (AQMP) could hinder implementation of the AQMP, delay efforts to meet attainment deadlines, and/or interfere with SCAQMD efforts to maintain compliance with, and attainment of, applicable air quality standards. Pursuant to the methodology provided in Chapter 12 of the SCAQMD *CEQA Air Quality Handbook*, consistency with the AQMP is affirmed if the project (SCAQMD, 1993):

- 1) Is consistent with the growth assumptions in the AQMP; and

³ The SCAQMD (2019) has established the following thresholds of significance for projects that generate TAC emissions: Maximum Incremental Cancer Risk ≥ 10 in 1 million; Cancer Burden > 0.5 excess cancer cases (in areas ≥ 1 in 1 million); Chronic & Acute Hazard Index ≥ 1.0 (project increment).

- 2) Does not increase the frequency or severity of an air quality standards violation or cause a new one.

The proposed project would not induce population growth, and the employment induced by the project would be well within that accounted for in the Southern California Association of Governments 2016 Regional Transportation Plan / Sustainable Communities Strategy (2016 RTP/SCS), which forms the growth assumptions for the AQMP.⁴ Therefore, the proposed project would not conflict with the first consistency criterion. As described in the preceding analysis, the proposed project would not exceed the construction or operational air quality thresholds maintained by the SCAQMD. Accordingly, the proposed project would not conflict with or obstruct implementation of the SCAQMD 2016 AQMP (SCAQMD, 2017b).

Odors

According to the SCAQMD CEQA Air Quality Handbook, land uses associated with odor complaints include agricultural operations, wastewater treatment plants, landfills, and certain industrial operations (such as manufacturing uses that produce chemicals, paper, etc.). Odors are typically associated with industrial projects involving the use of chemicals, solvents, petroleum products, and other strong-smelling elements used in manufacturing processes, as well as sewage treatment facilities and landfills. Operation of the proposed gasoline dispensing facility could result in localized odors during fuel transfer; however, these odors would be controlled via vapor recovery systems, be quick to disperse, and would not affect a substantial number of people.

CONCLUSION

As described in this memorandum, the proposed project would not exceed any applicable SCAQMD-recommended CEQA thresholds of significance and is consistent with all applicable air quality plans, policies and regulations adopted for the purposes of reducing air quality impacts. The proposed project, therefore, would not result in substantial adverse air quality-related effect on the environment.

REFERENCES

The following references were used to prepare this memorandum:

- California Air Resources Board (CARB) 2005. *Air Quality and Land Use Handbook: A Community Health Perspective*. Sacramento, CA. April 2005.
- South Coast Air Quality Management District (SCAQMD) 1993. *Air Quality Analysis Handbook*. Diamond Bar, CA. 1993. Available online at:
<<http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook>>
- _____. 2009. *Mass Rate LST Lookup Table*. Diamond Bar, CA. October 2009. Available online at: <<http://www.aqmd.gov/home/rules-compliance/ceqa/air-quality-analysis-handbook/localized-significance-thresholds>>
- _____. 2016. *Fact Sheet for Applying CalEEMod to Localized Significance Thresholds*. Diamond Bar, CA. February 2016. Available online at:
<<http://www.aqmd.gov/docs/default-source/ceqa/handbook/localized-significance-thresholds/caleemod-guidance.pdf?sfvrsn=2>>

⁴ The 2016 RTP/SCS accounted for 17,100 new jobs being formed in the City between 2012 and 2040 (SCAG, 2016).

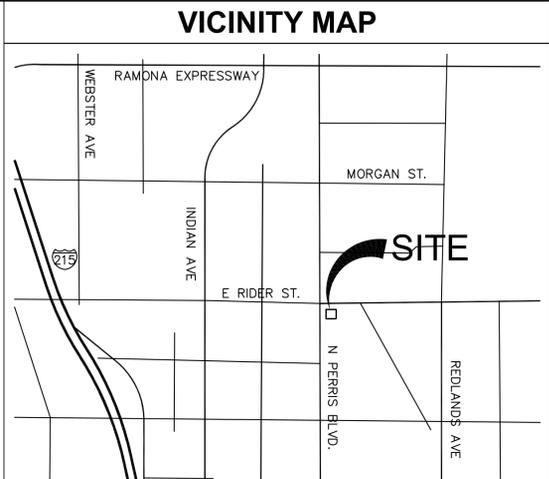
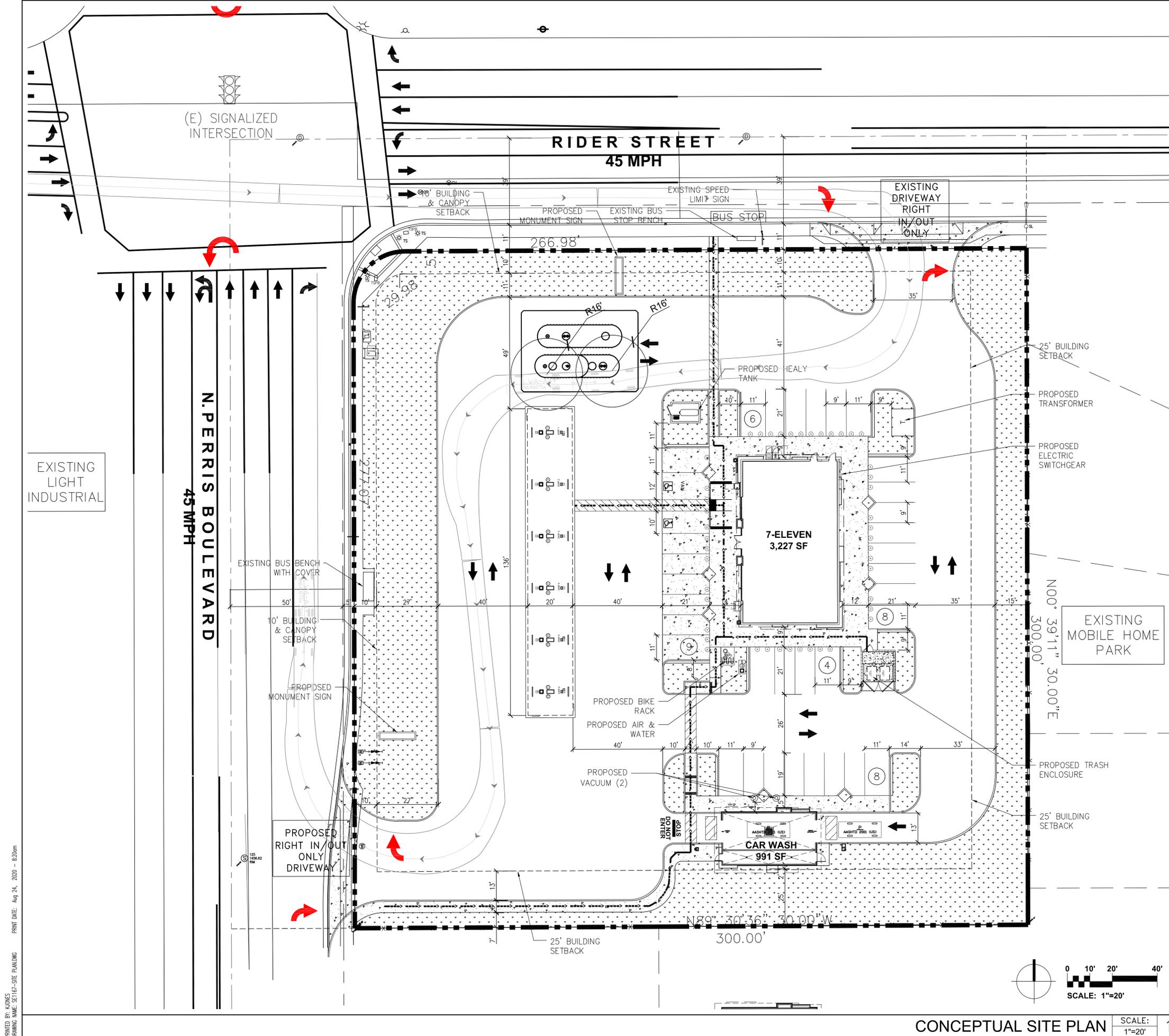
- _____ 2017a. *Risk Assessment Procedures for Rules 1401, 1401.1, and 212, Version 8.1*. Diamond Bar, CA. September 2017. Available online at: <<http://www.aqmd.gov/home/permits/risk-assessment>>
- _____ 2017b. *Final 2016 Air Quality Management Plan*. Diamond Bar, CA. March 2017.
- _____ 2018. *National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) Attainment Status for South Coast Air Basin*. Diamond Bar, CA. September 2018. Available online at: <<http://www.aqmd.gov/home/air-quality/clean-air-plans>>
- _____ 2019. *South Coast AQMD Air Quality Significance Thresholds*. Diamond Bar, CA. April 2019. Available online at: <<http://www.aqmd.gov/home/rules-compliance/ceqa/air-quality-analysis-handbook>>
- Southern California Association of Governments (SCAG) 2016. *2016 Regional Transportation Plan / Sustainable Communities Strategy*. "Demographics & Growth Forecast Appendix." April 2016.
<http://scagrtpscs.net/Documents/2016/final/f2016RTPSCS_DemographicsGrowthForecast.pdf>
- TAIT & Associates, 2020. *7-11 #1045028 Rider St. & Perris Blvd. Perris, CA 92571*. "Conceptual Site Plan". August 24, 2020.

CD / PTG

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Attachment 1
TAIT & Associates Conceptual Site Plan (August 24, 2020)

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PROJECT DATA

PROJECT INFORMATION:	
APPLICANT:	TAIT & ASSOCIATES, INC. ATTN: MIKE MACFARLAND 701 N. PARKCENTER DR. SANTA ANA, CA 92705 TEL: (714) 560-8600 MMACFARLAND@TAIT.COM
ARCHITECT:	TAIT & ASSOCIATES, INC. ATTN: TIM VIRUS 701 N. PARKCENTER DR. SANTA ANA, CA 92705 TEL: (714) 560-8624 CEL: (714) 529-7992 TVIRUS@TAIT.COM
ASSESSOR'S PARCEL NUMBER(S):	300-300-026
ADDRESS:	23 EAST RIDER AVE PERRIS, CA 92571
PROJECT DESCRIPTION:	GROUND-UP GAS STATION- CONVENIENCE STORE
CONSTRUCTION TYPE:	CONSTRUCTION TYPE V
ADJACENT ZONING:	NORTH: LIGHT INDUSTRIAL (LI) SOUTH: RESIDENTIAL - 10,000 (R-10,000) EAST: RESIDENTIAL - 10,000 (R-10,000) WEST: LIGHT INDUSTRIAL (LI)
EXISTING ZONING:	BUSINESS/PROFESSIONAL OFFICE - BPO
EXISTING LAND USE:	VACANT LOT
PROPOSED ZONING:	COMMERCIAL (C)
PROPOSED LAND USE:	GROUND-UP GAS STATION- CONVENIENCE STORE & CAR WASH
BUILDING INFORMATION:	
GROSS ACREAGE:	±89,888 (2.06 ACRES)
PROPOSED BUILDING AREA:	3,227 SF
CANOPY AREA:	2,720 SF
PROPOSED CAR WASH AREA:	991 SF
BUILDING HEIGHT:	ALLOWABLE BUILDING HEIGHT: 35'
LOT COVERAGE:	7.7% (6,938 SF)
LANDSCAPING LOT COVERAGE:	28.0% (25,190 SF)
REQUIRED BUILDING SETBACKS	
FRONT	10' FT
REAR	25' FT (IF ADJACENT RES. 25' IS REQUIRED)
SIDE 1 INTERIOR	25' FT (IF ADJACENT RES. 25' IS REQUIRED)
SIDE 2 STREET	10' FT
REQUIRED LANDSCAPING SETBACKS	
FRONT	10' FT
REAR	10' FT
SIDE 1	10' FT
SIDE 2 (STREET)	10' FT
PARKING REQUIREMENTS:	
PARKING REQUIRED:	16 (1 STALLS PER 250 SF)
PARKING PROVIDED:	35 STALLS (INCL. 1 ACCESSIBLE, 1 EV STALL & BIKE RACKS)
UTILITY INFORMATION:	
ELECTRICAL:	SOUTHERN CALIFORNIA EDISON (SCE)
GAS:	SOCAL GAS
WATER:	EASTERN MUNICIPAL WATER DISTRICT (EMWD)
STORM DRAIN:	N/A
SEWER:	EASTERN MUNICIPAL WATER DISTRICT (EMWD)

SITE LEGEND

	PATH OF TRAVEL		ACCESSIBLE PARKING SPACE
	BUILDING SETBACK		(E) UTILITY POLE
	LANDSCAPE SETBACK		(E) FIRE HYDRANT
	DEMO BUILDING		(E) STREET LIGHT
	CONCRETE PAVING/SIDEWALK		
	STANDARD A.C. PAVING		
	LANDSCAPE AREA		
	OFF SITE PLANTING		

SE1167
Scale: AS NOTED
Date: 08/24/2020
Drawn By: KJ
Checked By: LR

Job#: SE1167
Scale: AS NOTED
Date: 08/24/2020
Drawn By: KJ
Checked By: LR

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Denver
Ontario
Sacramento
Seattle
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PROTO 4-30-2018
7-ELEVEN, INC.
3200 HACKBERRY RD., IRVING, TEXAS 75063
7-11 #1045028
RIDER ST. & PERRIS BLVD.
PERRIS, CA 92571
CONCEPTUAL SITE PLAN

CONCEPTUAL SITE PLAN SCALE: 1"=20' 1

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Attachment 2
CalEEMod Project File Outputs

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7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Summer

7-Eleven Project: Perris Blvd and Rider St (City of Perris)
Riverside-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Convenience Market With Gas Pumps	3.23	1000sqft	0.07	3,227.00	0
Automobile Care Center	0.99	1000sqft	0.02	991.00	0
Other Non-Asphalt Surfaces	25.19	1000sqft	0.58	25,190.00	0
Parking Lot	1.39	Acre	1.39	60,330.60	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.4	Precipitation Freq (Days)	28
Climate Zone	10			Operational Year	2022
Utility Company	Southern California Edison				
CO2 Intensity (lb/MW hr)	702.44	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - MIG Modeler: Phil Gleason

Land Use - Convenience Market With Gas Pumps = 7-Eleven facility; Auto-care center = carwash; Non-asphalt surface = landscaping; Parking lot = paved areas. References: CSP-3 (dated 8/24/20).

Construction Phase - Demo phase removed - Site is currently vacant.

Vehicle Trips - Weekday trip rate updated per trip gen provided in Ganddini Traffic Report (2,404 trips / 3.227 ksf = 744.96 trips / ksf).

Water And Wastewater -

Construction Off-road Equipment Mitigation - Assumes water 3X per day to comply with SCAQMD Rule 403.

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Summer

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	20.00	0.00
tblConstructionPhase	PhaseEndDate	9/28/2020	8/31/2020
tblVehicleTrips	ST_TR	23.72	0.00
tblVehicleTrips	SU_TR	11.88	0.00
tblVehicleTrips	WD_TR	23.72	0.00
tblVehicleTrips	WD_TR	845.60	744.96

2.0 Emissions Summary

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Summer

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.1313	3.0000e-005	3.1500e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		6.7400e-003	6.7400e-003	2.0000e-005		7.1800e-003
Energy	1.1600e-003	0.0106	8.8800e-003	6.0000e-005		8.0000e-004	8.0000e-004		8.0000e-004	8.0000e-004		12.6870	12.6870	2.4000e-004	2.3000e-004	12.7624
Mobile	6.3934	41.3078	31.8721	0.1237	5.9491	0.0758	6.0250	1.5917	0.0709	1.6625		12,738.3300	12,738.3300	1.2571		12,769.7561
Total	6.5259	41.3184	31.8841	0.1238	5.9491	0.0766	6.0258	1.5917	0.0717	1.6633		12,751.0237	12,751.0237	1.2573	2.3000e-004	12,782.5257

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.1313	3.0000e-005	3.1500e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		6.7400e-003	6.7400e-003	2.0000e-005		7.1800e-003
Energy	1.1600e-003	0.0106	8.8800e-003	6.0000e-005		8.0000e-004	8.0000e-004		8.0000e-004	8.0000e-004		12.6870	12.6870	2.4000e-004	2.3000e-004	12.7624
Mobile	6.3934	41.3078	31.8721	0.1237	5.9491	0.0758	6.0250	1.5917	0.0709	1.6625		12,738.3300	12,738.3300	1.2571		12,769.7561
Total	6.5259	41.3184	31.8841	0.1238	5.9491	0.0766	6.0258	1.5917	0.0717	1.6633		12,751.0237	12,751.0237	1.2573	2.3000e-004	12,782.5257

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Summer

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	9/1/2020	8/31/2020	5	0	
2	Site Preparation	Site Preparation	9/29/2020	10/1/2020	5	3	
3	Grading	Grading	10/2/2020	10/9/2020	5	6	
4	Building Construction	Building Construction	10/10/2020	8/13/2021	5	220	
5	Paving	Paving	8/14/2021	8/27/2021	5	10	
6	Architectural Coating	Architectural Coating	8/28/2021	9/10/2021	5	10	

Acres of Grading (Site Preparation Phase): 4.5

Acres of Grading (Grading Phase): 3

Acres of Paving: 1.97

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 6,327; Non-Residential Outdoor: 2,109; Striped Parking Area: 5,131 (Architectural Coating – sqft)

OffRoad Equipment

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Summer

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Cement and Mortar Mixers	1	8.00	9	0.56
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Cranes	1	8.00	231	0.29
Building Construction	Forklifts	2	7.00	89	0.20
Site Preparation	Graders	1	8.00	187	0.41
Paving	Pavers	1	8.00	130	0.42
Paving	Rollers	2	8.00	80	0.38
Demolition	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Demolition	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Grading	Tractors/Loaders/Backhoes	2	7.00	97	0.37
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Grading	Graders	1	8.00	187	0.41
Paving	Paving Equipment	1	8.00	132	0.36
Site Preparation	Scrapers	1	8.00	367	0.48
Building Construction	Welders	3	8.00	46	0.45

Trips and VMT

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Summer

3.2 Demolition - 2020

Mitigated Construction Off-Site

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

3.3 Site Preparation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.5908	0.0000	1.5908	0.1718	0.0000	0.1718			0.0000			0.0000
Off-Road	1.6521	19.9196	11.2678	0.0245		0.7771	0.7771		0.7149	0.7149		2,372.906 2	2,372.906 2	0.7675		2,392.092 4
Total	1.6521	19.9196	11.2678	0.0245	1.5908	0.7771	2.3678	0.1718	0.7149	0.8867		2,372.906 2	2,372.906 2	0.7675		2,392.092 4

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Summer

3.3 Site Preparation - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0407	0.0241	0.3226	8.8000e-004	0.0894	5.4000e-004	0.0900	0.0237	5.0000e-004	0.0242		88.1276	88.1276	2.2600e-003		88.1840
Total	0.0407	0.0241	0.3226	8.8000e-004	0.0894	5.4000e-004	0.0900	0.0237	5.0000e-004	0.0242		88.1276	88.1276	2.2600e-003		88.1840

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.6204	0.0000	0.6204	0.0670	0.0000	0.0670			0.0000			0.0000
Off-Road	1.6521	19.9196	11.2678	0.0245		0.7771	0.7771		0.7149	0.7149	0.0000	2,372.9062	2,372.9062	0.7675		2,392.0924
Total	1.6521	19.9196	11.2678	0.0245	0.6204	0.7771	1.3975	0.0670	0.7149	0.7819	0.0000	2,372.9062	2,372.9062	0.7675		2,392.0924

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Summer

3.3 Site Preparation - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0407	0.0241	0.3226	8.8000e-004	0.0894	5.4000e-004	0.0900	0.0237	5.0000e-004	0.0242		88.1276	88.1276	2.2600e-003		88.1840
Total	0.0407	0.0241	0.3226	8.8000e-004	0.0894	5.4000e-004	0.0900	0.0237	5.0000e-004	0.0242		88.1276	88.1276	2.2600e-003		88.1840

3.4 Grading - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.5523	0.0000	6.5523	3.3675	0.0000	3.3675			0.0000			0.0000
Off-Road	1.9219	21.3418	9.9355	0.0206		0.9902	0.9902		0.9110	0.9110		1,996.4061	1,996.4061	0.6457		2,012.5480
Total	1.9219	21.3418	9.9355	0.0206	6.5523	0.9902	7.5425	3.3675	0.9110	4.2784		1,996.4061	1,996.4061	0.6457		2,012.5480

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Summer

3.4 Grading - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0509	0.0301	0.4032	1.1100e-003	0.1118	6.8000e-004	0.1125	0.0296	6.2000e-004	0.0303		110.1595	110.1595	2.8200e-003		110.2301
Total	0.0509	0.0301	0.4032	1.1100e-003	0.1118	6.8000e-004	0.1125	0.0296	6.2000e-004	0.0303		110.1595	110.1595	2.8200e-003		110.2301

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.5554	0.0000	2.5554	1.3133	0.0000	1.3133			0.0000			0.0000
Off-Road	1.9219	21.3418	9.9355	0.0206		0.9902	0.9902		0.9110	0.9110	0.0000	1,996.406 1	1,996.406 1	0.6457		2,012.548 0
Total	1.9219	21.3418	9.9355	0.0206	2.5554	0.9902	3.5456	1.3133	0.9110	2.2243	0.0000	1,996.406 1	1,996.406 1	0.6457		2,012.548 0

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Summer

3.4 Grading - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0509	0.0301	0.4032	1.1100e-003	0.1118	6.8000e-004	0.1125	0.0296	6.2000e-004	0.0303		110.1595	110.1595	2.8200e-003		110.2301
Total	0.0509	0.0301	0.4032	1.1100e-003	0.1118	6.8000e-004	0.1125	0.0296	6.2000e-004	0.0303		110.1595	110.1595	2.8200e-003		110.2301

3.5 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.2879	17.4336	14.8972	0.0250		0.9482	0.9482		0.9089	0.9089		2,288.8877	2,288.8877	0.4646		2,300.5014
Total	2.2879	17.4336	14.8972	0.0250		0.9482	0.9482		0.9089	0.9089		2,288.8877	2,288.8877	0.4646		2,300.5014

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Summer

3.5 Building Construction - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0418	1.5434	0.2824	3.9200e-003	0.0961	8.7800e-003	0.1048	0.0277	8.4000e-003	0.0361		413.0864	413.0864	0.0310		413.8610
Worker	0.1883	0.1114	1.4919	4.0900e-003	0.4136	2.5000e-003	0.4161	0.1097	2.3100e-003	0.1120		407.5900	407.5900	0.0105		407.8512
Total	0.2301	1.6547	1.7743	8.0100e-003	0.5096	0.0113	0.5209	0.1373	0.0107	0.1480		820.6764	820.6764	0.0414		821.7121

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.2879	17.4336	14.8972	0.0250		0.9482	0.9482		0.9089	0.9089	0.0000	2,288.8877	2,288.8877	0.4646		2,300.5014
Total	2.2879	17.4336	14.8972	0.0250		0.9482	0.9482		0.9089	0.9089	0.0000	2,288.8877	2,288.8877	0.4646		2,300.5014

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Summer

3.5 Building Construction - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0418	1.5434	0.2824	3.9200e-003	0.0961	8.7800e-003	0.1048	0.0277	8.4000e-003	0.0361		413.0864	413.0864	0.0310		413.8610
Worker	0.1883	0.1114	1.4919	4.0900e-003	0.4136	2.5000e-003	0.4161	0.1097	2.3100e-003	0.1120		407.5900	407.5900	0.0105		407.8512
Total	0.2301	1.6547	1.7743	8.0100e-003	0.5096	0.0113	0.5209	0.1373	0.0107	0.1480		820.6764	820.6764	0.0414		821.7121

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.0451	16.0275	14.5629	0.0250		0.8173	0.8173		0.7831	0.7831		2,288.9355	2,288.9355	0.4503		2,300.1935
Total	2.0451	16.0275	14.5629	0.0250		0.8173	0.8173		0.7831	0.7831		2,288.9355	2,288.9355	0.4503		2,300.1935

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Summer

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0350	1.3881	0.2477	3.8900e-003	0.0961	2.6400e-003	0.0987	0.0277	2.5300e-003	0.0302		409.8765	409.8765	0.0293		410.6096
Worker	0.1754	0.0999	1.3679	3.9500e-003	0.4136	2.4400e-003	0.4160	0.1097	2.2400e-003	0.1119		393.9578	393.9578	9.3900e-003		394.1927
Total	0.2104	1.4880	1.6156	7.8400e-003	0.5096	5.0800e-003	0.5147	0.1373	4.7700e-003	0.1421		803.8344	803.8344	0.0387		804.8023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.0451	16.0275	14.5629	0.0250		0.8173	0.8173		0.7831	0.7831	0.0000	2,288.9355	2,288.9355	0.4503		2,300.1935
Total	2.0451	16.0275	14.5629	0.0250		0.8173	0.8173		0.7831	0.7831	0.0000	2,288.9355	2,288.9355	0.4503		2,300.1935

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Summer

3.5 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0350	1.3881	0.2477	3.8900e-003	0.0961	2.6400e-003	0.0987	0.0277	2.5300e-003	0.0302		409.8765	409.8765	0.0293		410.6096
Worker	0.1754	0.0999	1.3679	3.9500e-003	0.4136	2.4400e-003	0.4160	0.1097	2.2400e-003	0.1119		393.9578	393.9578	9.3900e-003		394.1927
Total	0.2104	1.4880	1.6156	7.8400e-003	0.5096	5.0800e-003	0.5147	0.1373	4.7700e-003	0.1421		803.8344	803.8344	0.0387		804.8023

3.6 Paving - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0633	10.6478	11.7756	0.0178		0.5826	0.5826		0.5371	0.5371		1,709.1107	1,709.1107	0.5417		1,722.6524
Paving	0.3642					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	1.4275	10.6478	11.7756	0.0178		0.5826	0.5826		0.5371	0.5371		1,709.1107	1,709.1107	0.5417		1,722.6524

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Summer

3.6 Paving - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0711	0.0405	0.5546	1.6000e-003	0.1677	9.9000e-004	0.1687	0.0445	9.1000e-004	0.0454		159.7126	159.7126	3.8100e-003		159.8078
Total	0.0711	0.0405	0.5546	1.6000e-003	0.1677	9.9000e-004	0.1687	0.0445	9.1000e-004	0.0454		159.7126	159.7126	3.8100e-003		159.8078

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0633	10.6478	11.7756	0.0178		0.5826	0.5826		0.5371	0.5371	0.0000	1,709.1107	1,709.1107	0.5417		1,722.6524
Paving	0.3642					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	1.4275	10.6478	11.7756	0.0178		0.5826	0.5826		0.5371	0.5371	0.0000	1,709.1107	1,709.1107	0.5417		1,722.6524

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Summer

3.6 Paving - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0711	0.0405	0.5546	1.6000e-003	0.1677	9.9000e-004	0.1687	0.0445	9.1000e-004	0.0454		159.7126	159.7126	3.8100e-003		159.8078
Total	0.0711	0.0405	0.5546	1.6000e-003	0.1677	9.9000e-004	0.1687	0.0445	9.1000e-004	0.0454		159.7126	159.7126	3.8100e-003		159.8078

3.7 Architectural Coating - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	6.2883					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2189	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941		281.4481	281.4481	0.0193		281.9309
Total	6.5072	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941		281.4481	281.4481	0.0193		281.9309

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Summer

3.7 Architectural Coating - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0332	0.0189	0.2588	7.5000e-004	0.0782	4.6000e-004	0.0787	0.0208	4.2000e-004	0.0212		74.5326	74.5326	1.7800e-003		74.5770
Total	0.0332	0.0189	0.2588	7.5000e-004	0.0782	4.6000e-004	0.0787	0.0208	4.2000e-004	0.0212		74.5326	74.5326	1.7800e-003		74.5770

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	6.2883					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2189	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941	0.0000	281.4481	281.4481	0.0193		281.9309
Total	6.5072	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941	0.0000	281.4481	281.4481	0.0193		281.9309

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Summer

3.7 Architectural Coating - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0332	0.0189	0.2588	7.5000e-004	0.0782	4.6000e-004	0.0787	0.0208	4.2000e-004	0.0212		74.5326	74.5326	1.7800e-003		74.5770
Total	0.0332	0.0189	0.2588	7.5000e-004	0.0782	4.6000e-004	0.0787	0.0208	4.2000e-004	0.0212		74.5326	74.5326	1.7800e-003		74.5770

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Summer

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	6.3934	41.3078	31.8721	0.1237	5.9491	0.0758	6.0250	1.5917	0.0709	1.6625		12,738.3300	12,738.3300	1.2571		12,769.7561
Unmitigated	6.3934	41.3078	31.8721	0.1237	5.9491	0.0758	6.0250	1.5917	0.0709	1.6625		12,738.3300	12,738.3300	1.2571		12,769.7561

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Automobile Care Center	0.00	0.00	0.00		
Convenience Market With Gas Pumps	2,403.99	4,673.76	3814.57	1,748,695	1,748,695
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Total	2,403.99	4,673.76	3,814.57	1,748,695	1,748,695

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Automobile Care Center	16.60	8.40	6.90	33.00	48.00	19.00	21	51	28
Convenience Market With Gas	16.60	8.40	6.90	0.80	80.20	19.00	14	21	65
Other Non-Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Summer

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Automobile Care Center	0.545527	0.036856	0.186032	0.115338	0.015222	0.004970	0.017525	0.069528	0.001397	0.001160	0.004547	0.000932	0.000965
Convenience Market With Gas Pumps	0.545527	0.036856	0.186032	0.115338	0.015222	0.004970	0.017525	0.069528	0.001397	0.001160	0.004547	0.000932	0.000965
Other Non-Asphalt Surfaces	0.545527	0.036856	0.186032	0.115338	0.015222	0.004970	0.017525	0.069528	0.001397	0.001160	0.004547	0.000932	0.000965
Parking Lot	0.545527	0.036856	0.186032	0.115338	0.015222	0.004970	0.017525	0.069528	0.001397	0.001160	0.004547	0.000932	0.000965

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	1.1600e-003	0.0106	8.8800e-003	6.0000e-005		8.0000e-004	8.0000e-004		8.0000e-004	8.0000e-004		12.6870	12.6870	2.4000e-004	2.3000e-004	12.7624
NaturalGas Unmitigated	1.1600e-003	0.0106	8.8800e-003	6.0000e-005		8.0000e-004	8.0000e-004		8.0000e-004	8.0000e-004		12.6870	12.6870	2.4000e-004	2.3000e-004	12.7624

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Summer

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Automobile Care Center	88.2126	9.5000e-004	8.6500e-003	7.2600e-003	5.0000e-005		6.6000e-004	6.6000e-004		6.6000e-004	6.6000e-004		10.3780	10.3780	2.0000e-004	1.9000e-004	10.4396
Convenience Market With Gas Pumps	19.6272	2.1000e-004	1.9200e-003	1.6200e-003	1.0000e-005		1.5000e-004	1.5000e-004		1.5000e-004	1.5000e-004		2.3091	2.3091	4.0000e-005	4.0000e-005	2.3228
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		1.1600e-003	0.0106	8.8800e-003	6.0000e-005		8.1000e-004	8.1000e-004		8.1000e-004	8.1000e-004		12.6870	12.6870	2.4000e-004	2.3000e-004	12.7624

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Summer

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Automobile Care Center	0.0882126	9.5000e-004	8.6500e-003	7.2600e-003	5.0000e-005		6.6000e-004	6.6000e-004		6.6000e-004	6.6000e-004		10.3780	10.3780	2.0000e-004	1.9000e-004	10.4396
Convenience Market With Gas Pumps	0.0196272	2.1000e-004	1.9200e-003	1.6200e-003	1.0000e-005		1.5000e-004	1.5000e-004		1.5000e-004	1.5000e-004		2.3091	2.3091	4.0000e-005	4.0000e-005	2.3228
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		1.1600e-003	0.0106	8.8800e-003	6.0000e-005		8.1000e-004	8.1000e-004		8.1000e-004	8.1000e-004		12.6870	12.6870	2.4000e-004	2.3000e-004	12.7624

6.0 Area Detail

6.1 Mitigation Measures Area

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Summer

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.1313	3.0000e-005	3.1500e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		6.7400e-003	6.7400e-003	2.0000e-005		7.1800e-003
Unmitigated	0.1313	3.0000e-005	3.1500e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		6.7400e-003	6.7400e-003	2.0000e-005		7.1800e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0172					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.1138					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.9000e-004	3.0000e-005	3.1500e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		6.7400e-003	6.7400e-003	2.0000e-005		7.1800e-003
Total	0.1313	3.0000e-005	3.1500e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		6.7400e-003	6.7400e-003	2.0000e-005		7.1800e-003

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Summer

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0172					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.1138					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.9000e-004	3.0000e-005	3.1500e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		6.7400e-003	6.7400e-003	2.0000e-005		7.1800e-003
Total	0.1313	3.0000e-005	3.1500e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		6.7400e-003	6.7400e-003	2.0000e-005		7.1800e-003

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

Fire Pumps and Emergency Generators

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Summer

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

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

Equipment Type	Number
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11.0 Vegetation

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Winter

7-Eleven Project: Perris Blvd and Rider St (City of Perris)
Riverside-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Convenience Market With Gas Pumps	3.23	1000sqft	0.07	3,227.00	0
Automobile Care Center	0.99	1000sqft	0.02	991.00	0
Other Non-Asphalt Surfaces	25.19	1000sqft	0.58	25,190.00	0
Parking Lot	1.39	Acre	1.39	60,330.60	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.4	Precipitation Freq (Days)	28
Climate Zone	10			Operational Year	2022
Utility Company	Southern California Edison				
CO2 Intensity (lb/MW hr)	702.44	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - MIG Modeler: Phil Gleason

Land Use - Convenience Market With Gas Pumps = 7-Eleven facility; Auto-care center = carwash; Non-asphal surface = landscaping; Parking lot = paved areas. References: CSP-3 (dated 8/24/20).

Construction Phase - Demo phase removed - Site is currently vacant.

Vehicle Trips - Weekday trip rate updated per trip gen provided in Ganddini Traffic Report (2,404 trips / 3.227 ksf = 744.96 trips / ksf).

Water And Wastewater -

Construction Off-road Equipment Mitigation - Assumes water 3X per day to comply with SCAQMD Rule 403.

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Winter

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	20.00	0.00
tblConstructionPhase	PhaseEndDate	9/28/2020	8/31/2020
tblVehicleTrips	ST_TR	23.72	0.00
tblVehicleTrips	SU_TR	11.88	0.00
tblVehicleTrips	WD_TR	23.72	0.00
tblVehicleTrips	WD_TR	845.60	744.96

2.0 Emissions Summary

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Winter

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.1313	3.0000e-005	3.1500e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		6.7400e-003	6.7400e-003	2.0000e-005		7.1800e-003
Energy	1.1600e-003	0.0106	8.8800e-003	6.0000e-005		8.0000e-004	8.0000e-004		8.0000e-004	8.0000e-004		12.6870	12.6870	2.4000e-004	2.3000e-004	12.7624
Mobile	5.2198	40.2098	32.3144	0.1125	5.9491	0.0788	6.0279	1.5917	0.0737	1.6653		11,577.8764	11,577.8764	1.3917		11,612.6676
Total	5.3523	40.2204	32.3265	0.1125	5.9491	0.0796	6.0287	1.5917	0.0745	1.6661		11,590.5702	11,590.5702	1.3919	2.3000e-004	11,625.4372

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.1313	3.0000e-005	3.1500e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		6.7400e-003	6.7400e-003	2.0000e-005		7.1800e-003
Energy	1.1600e-003	0.0106	8.8800e-003	6.0000e-005		8.0000e-004	8.0000e-004		8.0000e-004	8.0000e-004		12.6870	12.6870	2.4000e-004	2.3000e-004	12.7624
Mobile	5.2198	40.2098	32.3144	0.1125	5.9491	0.0788	6.0279	1.5917	0.0737	1.6653		11,577.8764	11,577.8764	1.3917		11,612.6676
Total	5.3523	40.2204	32.3265	0.1125	5.9491	0.0796	6.0287	1.5917	0.0745	1.6661		11,590.5702	11,590.5702	1.3919	2.3000e-004	11,625.4372

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Winter

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	9/1/2020	8/31/2020	5	0	
2	Site Preparation	Site Preparation	9/29/2020	10/1/2020	5	3	
3	Grading	Grading	10/2/2020	10/9/2020	5	6	
4	Building Construction	Building Construction	10/10/2020	8/13/2021	5	220	
5	Paving	Paving	8/14/2021	8/27/2021	5	10	
6	Architectural Coating	Architectural Coating	8/28/2021	9/10/2021	5	10	

Acres of Grading (Site Preparation Phase): 4.5

Acres of Grading (Grading Phase): 3

Acres of Paving: 1.97

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 6,327; Non-Residential Outdoor: 2,109; Striped Parking Area: 5,131 (Architectural Coating – sqft)

OffRoad Equipment

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Winter

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Cement and Mortar Mixers	1	8.00	9	0.56
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Cranes	1	8.00	231	0.29
Building Construction	Forklifts	2	7.00	89	0.20
Site Preparation	Graders	1	8.00	187	0.41
Paving	Pavers	1	8.00	130	0.42
Paving	Rollers	2	8.00	80	0.38
Demolition	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Demolition	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Grading	Tractors/Loaders/Backhoes	2	7.00	97	0.37
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Grading	Graders	1	8.00	187	0.41
Paving	Paving Equipment	1	8.00	132	0.36
Site Preparation	Scrapers	1	8.00	367	0.48
Building Construction	Welders	3	8.00	46	0.45

Trips and VMT

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Winter

3.2 Demolition - 2020

Mitigated Construction Off-Site

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

3.3 Site Preparation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.5908	0.0000	1.5908	0.1718	0.0000	0.1718			0.0000			0.0000
Off-Road	1.6521	19.9196	11.2678	0.0245		0.7771	0.7771		0.7149	0.7149		2,372.9062	2,372.9062	0.7675		2,392.0924
Total	1.6521	19.9196	11.2678	0.0245	1.5908	0.7771	2.3678	0.1718	0.7149	0.8867		2,372.9062	2,372.9062	0.7675		2,392.0924

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Winter

3.3 Site Preparation - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0399	0.0249	0.2609	7.9000e-004	0.0894	5.4000e-004	0.0900	0.0237	5.0000e-004	0.0242		79.0589	79.0589	1.9600e-003		79.1080
Total	0.0399	0.0249	0.2609	7.9000e-004	0.0894	5.4000e-004	0.0900	0.0237	5.0000e-004	0.0242		79.0589	79.0589	1.9600e-003		79.1080

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.6204	0.0000	0.6204	0.0670	0.0000	0.0670			0.0000			0.0000
Off-Road	1.6521	19.9196	11.2678	0.0245		0.7771	0.7771		0.7149	0.7149	0.0000	2,372.9062	2,372.9062	0.7675		2,392.0924
Total	1.6521	19.9196	11.2678	0.0245	0.6204	0.7771	1.3975	0.0670	0.7149	0.7819	0.0000	2,372.9062	2,372.9062	0.7675		2,392.0924

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Winter

3.3 Site Preparation - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0399	0.0249	0.2609	7.9000e-004	0.0894	5.4000e-004	0.0900	0.0237	5.0000e-004	0.0242		79.0589	79.0589	1.9600e-003		79.1080
Total	0.0399	0.0249	0.2609	7.9000e-004	0.0894	5.4000e-004	0.0900	0.0237	5.0000e-004	0.0242		79.0589	79.0589	1.9600e-003		79.1080

3.4 Grading - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.5523	0.0000	6.5523	3.3675	0.0000	3.3675			0.0000			0.0000
Off-Road	1.9219	21.3418	9.9355	0.0206		0.9902	0.9902		0.9110	0.9110		1,996.4061	1,996.4061	0.6457		2,012.5480
Total	1.9219	21.3418	9.9355	0.0206	6.5523	0.9902	7.5425	3.3675	0.9110	4.2784		1,996.4061	1,996.4061	0.6457		2,012.5480

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Winter

3.4 Grading - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0498	0.0311	0.3262	9.9000e-004	0.1118	6.8000e-004	0.1125	0.0296	6.2000e-004	0.0303		98.8236	98.8236	2.4500e-003		98.8849
Total	0.0498	0.0311	0.3262	9.9000e-004	0.1118	6.8000e-004	0.1125	0.0296	6.2000e-004	0.0303		98.8236	98.8236	2.4500e-003		98.8849

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.5554	0.0000	2.5554	1.3133	0.0000	1.3133			0.0000			0.0000
Off-Road	1.9219	21.3418	9.9355	0.0206		0.9902	0.9902		0.9110	0.9110	0.0000	1,996.4061	1,996.4061	0.6457		2,012.5480
Total	1.9219	21.3418	9.9355	0.0206	2.5554	0.9902	3.5456	1.3133	0.9110	2.2243	0.0000	1,996.4061	1,996.4061	0.6457		2,012.5480

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Winter

3.4 Grading - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0498	0.0311	0.3262	9.9000e-004	0.1118	6.8000e-004	0.1125	0.0296	6.2000e-004	0.0303		98.8236	98.8236	2.4500e-003		98.8849
Total	0.0498	0.0311	0.3262	9.9000e-004	0.1118	6.8000e-004	0.1125	0.0296	6.2000e-004	0.0303		98.8236	98.8236	2.4500e-003		98.8849

3.5 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.2879	17.4336	14.8972	0.0250		0.9482	0.9482		0.9089	0.9089		2,288.8877	2,288.8877	0.4646		2,300.5014
Total	2.2879	17.4336	14.8972	0.0250		0.9482	0.9482		0.9089	0.9089		2,288.8877	2,288.8877	0.4646		2,300.5014

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Winter

3.5 Building Construction - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0441	1.5353	0.3306	3.7700e-003	0.0961	8.8800e-003	0.1049	0.0277	8.5000e-003	0.0362		397.5641	397.5641	0.0345		398.4261
Worker	0.1844	0.1152	1.2068	3.6700e-003	0.4136	2.5000e-003	0.4161	0.1097	2.3100e-003	0.1120		365.6472	365.6472	9.0800e-003		365.8743
Total	0.2285	1.6505	1.5374	7.4400e-003	0.5096	0.0114	0.5210	0.1373	0.0108	0.1481		763.2114	763.2114	0.0436		764.3004

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.2879	17.4336	14.8972	0.0250		0.9482	0.9482		0.9089	0.9089	0.0000	2,288.8877	2,288.8877	0.4646		2,300.5014
Total	2.2879	17.4336	14.8972	0.0250		0.9482	0.9482		0.9089	0.9089	0.0000	2,288.8877	2,288.8877	0.4646		2,300.5014

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Winter

3.5 Building Construction - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0441	1.5353	0.3306	3.7700e-003	0.0961	8.8800e-003	0.1049	0.0277	8.5000e-003	0.0362		397.5641	397.5641	0.0345		398.4261
Worker	0.1844	0.1152	1.2068	3.6700e-003	0.4136	2.5000e-003	0.4161	0.1097	2.3100e-003	0.1120		365.6472	365.6472	9.0800e-003		365.8743
Total	0.2285	1.6505	1.5374	7.4400e-003	0.5096	0.0114	0.5210	0.1373	0.0108	0.1481		763.2114	763.2114	0.0436		764.3004

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.0451	16.0275	14.5629	0.0250		0.8173	0.8173		0.7831	0.7831		2,288.9355	2,288.9355	0.4503		2,300.1935
Total	2.0451	16.0275	14.5629	0.0250		0.8173	0.8173		0.7831	0.7831		2,288.9355	2,288.9355	0.4503		2,300.1935

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Winter

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0372	1.3761	0.2930	3.7400e-003	0.0961	2.7200e-003	0.0988	0.0277	2.6000e-003	0.0303		394.4598	394.4598	0.0327		395.2767
Worker	0.1721	0.1034	1.1042	3.5500e-003	0.4136	2.4400e-003	0.4160	0.1097	2.2400e-003	0.1119		353.4216	353.4216	8.1700e-003		353.6258
Total	0.2093	1.4795	1.3972	7.2900e-003	0.5096	5.1600e-003	0.5148	0.1373	4.8400e-003	0.1422		747.8814	747.8814	0.0408		748.9024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.0451	16.0275	14.5629	0.0250		0.8173	0.8173		0.7831	0.7831	0.0000	2,288.9355	2,288.9355	0.4503		2,300.1935
Total	2.0451	16.0275	14.5629	0.0250		0.8173	0.8173		0.7831	0.7831	0.0000	2,288.9355	2,288.9355	0.4503		2,300.1935

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Winter

3.5 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0372	1.3761	0.2930	3.7400e-003	0.0961	2.7200e-003	0.0988	0.0277	2.6000e-003	0.0303		394.4598	394.4598	0.0327		395.2767
Worker	0.1721	0.1034	1.1042	3.5500e-003	0.4136	2.4400e-003	0.4160	0.1097	2.2400e-003	0.1119		353.4216	353.4216	8.1700e-003		353.6258
Total	0.2093	1.4795	1.3972	7.2900e-003	0.5096	5.1600e-003	0.5148	0.1373	4.8400e-003	0.1422		747.8814	747.8814	0.0408		748.9024

3.6 Paving - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0633	10.6478	11.7756	0.0178		0.5826	0.5826		0.5371	0.5371		1,709.1107	1,709.1107	0.5417		1,722.6524
Paving	0.3642					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	1.4275	10.6478	11.7756	0.0178		0.5826	0.5826		0.5371	0.5371		1,709.1107	1,709.1107	0.5417		1,722.6524

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Winter

3.6 Paving - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0698	0.0419	0.4476	1.4400e-003	0.1677	9.9000e-004	0.1687	0.0445	9.1000e-004	0.0454		143.2790	143.2790	3.3100e-003		143.3618
Total	0.0698	0.0419	0.4476	1.4400e-003	0.1677	9.9000e-004	0.1687	0.0445	9.1000e-004	0.0454		143.2790	143.2790	3.3100e-003		143.3618

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0633	10.6478	11.7756	0.0178		0.5826	0.5826		0.5371	0.5371	0.0000	1,709.1107	1,709.1107	0.5417		1,722.6524
Paving	0.3642					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	1.4275	10.6478	11.7756	0.0178		0.5826	0.5826		0.5371	0.5371	0.0000	1,709.1107	1,709.1107	0.5417		1,722.6524

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Winter

3.6 Paving - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0698	0.0419	0.4476	1.4400e-003	0.1677	9.9000e-004	0.1687	0.0445	9.1000e-004	0.0454		143.2790	143.2790	3.3100e-003		143.3618
Total	0.0698	0.0419	0.4476	1.4400e-003	0.1677	9.9000e-004	0.1687	0.0445	9.1000e-004	0.0454		143.2790	143.2790	3.3100e-003		143.3618

3.7 Architectural Coating - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	6.2883					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2189	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941		281.4481	281.4481	0.0193		281.9309
Total	6.5072	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941		281.4481	281.4481	0.0193		281.9309

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Winter

3.7 Architectural Coating - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0326	0.0196	0.2089	6.7000e-004	0.0782	4.6000e-004	0.0787	0.0208	4.2000e-004	0.0212		66.8636	66.8636	1.5500e-003		66.9022
Total	0.0326	0.0196	0.2089	6.7000e-004	0.0782	4.6000e-004	0.0787	0.0208	4.2000e-004	0.0212		66.8636	66.8636	1.5500e-003		66.9022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	6.2883					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2189	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941	0.0000	281.4481	281.4481	0.0193		281.9309
Total	6.5072	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941	0.0000	281.4481	281.4481	0.0193		281.9309

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Winter

3.7 Architectural Coating - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0326	0.0196	0.2089	6.7000e-004	0.0782	4.6000e-004	0.0787	0.0208	4.2000e-004	0.0212		66.8636	66.8636	1.5500e-003		66.9022
Total	0.0326	0.0196	0.2089	6.7000e-004	0.0782	4.6000e-004	0.0787	0.0208	4.2000e-004	0.0212		66.8636	66.8636	1.5500e-003		66.9022

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Winter

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	5.2198	40.2098	32.3144	0.1125	5.9491	0.0788	6.0279	1.5917	0.0737	1.6653		11,577.8764	11,577.8764	1.3917		11,612.6676
Unmitigated	5.2198	40.2098	32.3144	0.1125	5.9491	0.0788	6.0279	1.5917	0.0737	1.6653		11,577.8764	11,577.8764	1.3917		11,612.6676

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Automobile Care Center	0.00	0.00	0.00		
Convenience Market With Gas Pumps	2,403.99	4,673.76	3814.57	1,748,695	1,748,695
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Total	2,403.99	4,673.76	3,814.57	1,748,695	1,748,695

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Automobile Care Center	16.60	8.40	6.90	33.00	48.00	19.00	21	51	28
Convenience Market With Gas	16.60	8.40	6.90	0.80	80.20	19.00	14	21	65
Other Non-Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Winter

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Automobile Care Center	0.545527	0.036856	0.186032	0.115338	0.015222	0.004970	0.017525	0.069528	0.001397	0.001160	0.004547	0.000932	0.000965
Convenience Market With Gas Pumps	0.545527	0.036856	0.186032	0.115338	0.015222	0.004970	0.017525	0.069528	0.001397	0.001160	0.004547	0.000932	0.000965
Other Non-Asphalt Surfaces	0.545527	0.036856	0.186032	0.115338	0.015222	0.004970	0.017525	0.069528	0.001397	0.001160	0.004547	0.000932	0.000965
Parking Lot	0.545527	0.036856	0.186032	0.115338	0.015222	0.004970	0.017525	0.069528	0.001397	0.001160	0.004547	0.000932	0.000965

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	1.1600e-003	0.0106	8.8800e-003	6.0000e-005		8.0000e-004	8.0000e-004		8.0000e-004	8.0000e-004		12.6870	12.6870	2.4000e-004	2.3000e-004	12.7624
NaturalGas Unmitigated	1.1600e-003	0.0106	8.8800e-003	6.0000e-005		8.0000e-004	8.0000e-004		8.0000e-004	8.0000e-004		12.6870	12.6870	2.4000e-004	2.3000e-004	12.7624

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Winter

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Automobile Care Center	88.2126	9.5000e-004	8.6500e-003	7.2600e-003	5.0000e-005		6.6000e-004	6.6000e-004		6.6000e-004	6.6000e-004		10.3780	10.3780	2.0000e-004	1.9000e-004	10.4396
Convenience Market With Gas Pumps	19.6272	2.1000e-004	1.9200e-003	1.6200e-003	1.0000e-005		1.5000e-004	1.5000e-004		1.5000e-004	1.5000e-004		2.3091	2.3091	4.0000e-005	4.0000e-005	2.3228
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		1.1600e-003	0.0106	8.8800e-003	6.0000e-005		8.1000e-004	8.1000e-004		8.1000e-004	8.1000e-004		12.6870	12.6870	2.4000e-004	2.3000e-004	12.7624

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Winter

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Automobile Care Center	0.0882126	9.5000e-004	8.6500e-003	7.2600e-003	5.0000e-005		6.6000e-004	6.6000e-004		6.6000e-004	6.6000e-004		10.3780	10.3780	2.0000e-004	1.9000e-004	10.4396
Convenience Market With Gas Pumps	0.0196272	2.1000e-004	1.9200e-003	1.6200e-003	1.0000e-005		1.5000e-004	1.5000e-004		1.5000e-004	1.5000e-004		2.3091	2.3091	4.0000e-005	4.0000e-005	2.3228
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		1.1600e-003	0.0106	8.8800e-003	6.0000e-005		8.1000e-004	8.1000e-004		8.1000e-004	8.1000e-004		12.6870	12.6870	2.4000e-004	2.3000e-004	12.7624

6.0 Area Detail

6.1 Mitigation Measures Area

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Winter

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.1313	3.0000e-005	3.1500e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		6.7400e-003	6.7400e-003	2.0000e-005		7.1800e-003
Unmitigated	0.1313	3.0000e-005	3.1500e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		6.7400e-003	6.7400e-003	2.0000e-005		7.1800e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0172					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.1138					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.9000e-004	3.0000e-005	3.1500e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		6.7400e-003	6.7400e-003	2.0000e-005		7.1800e-003
Total	0.1313	3.0000e-005	3.1500e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		6.7400e-003	6.7400e-003	2.0000e-005		7.1800e-003

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Winter

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0172					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.1138					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.9000e-004	3.0000e-005	3.1500e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		6.7400e-003	6.7400e-003	2.0000e-005		7.1800e-003
Total	0.1313	3.0000e-005	3.1500e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		6.7400e-003	6.7400e-003	2.0000e-005		7.1800e-003

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

Fire Pumps and Emergency Generators

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Winter

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

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

Equipment Type	Number
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11.0 Vegetation

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Annual

7-Eleven Project: Perris Blvd and Rider St (City of Perris)
Riverside-South Coast County, Annual

1.0 Project Characteristics**1.1 Land Usage**

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Convenience Market With Gas Pumps	3.23	1000sqft	0.07	3,227.00	0
Automobile Care Center	0.99	1000sqft	0.02	991.00	0
Other Non-Asphalt Surfaces	25.19	1000sqft	0.58	25,190.00	0
Parking Lot	1.39	Acre	1.39	60,330.60	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.4	Precipitation Freq (Days)	28
Climate Zone	10			Operational Year	2022
Utility Company	Southern California Edison				
CO2 Intensity (lb/MW hr)	702.44	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - MIG Modeler: Phil Gleason

Land Use - Convenience Market With Gas Pumps = 7-Eleven facility; Auto-care center = carwash; Non-asphalt surface = landscaping; Parking lot = paved areas. References: CSP-3 (dated 8/24/20).

Construction Phase - Demo phase removed - Site is currently vacant.

Vehicle Trips - Weekday trip rate updated per trip gen provided in Ganddini Traffic Report (2,404 trips / 3.227 ksf = 744.96 trips / ksf).

Water And Wastewater -

Construction Off-road Equipment Mitigation - Assumes water 3X per day to comply with SCAQMD Rule 403.

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Annual

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	20.00	0.00
tblConstructionPhase	PhaseEndDate	9/28/2020	8/31/2020
tblVehicleTrips	ST_TR	23.72	0.00
tblVehicleTrips	SU_TR	11.88	0.00
tblVehicleTrips	WD_TR	23.72	0.00
tblVehicleTrips	WD_TR	845.60	744.96

2.0 Emissions Summary

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Annual

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	9-1-2020	11-30-2020	0.4910	0.4910
2	12-1-2020	2-28-2021	0.6555	0.6555
3	3-1-2021	5-31-2021	0.6495	0.6495
4	6-1-2021	8-31-2021	0.5950	0.5950
5	9-1-2021	9-30-2021	0.0289	0.0289
		Highest	0.6555	0.6555

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0240	0.0000	3.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	7.6000e-004	7.6000e-004	0.0000	0.0000	8.1000e-004
Energy	2.1000e-004	1.9300e-003	1.6200e-003	1.0000e-005		1.5000e-004	1.5000e-004		1.5000e-004	1.5000e-004	0.0000	25.0194	25.0194	9.9000e-004	2.3000e-004	25.1138
Mobile	0.5927	4.6807	3.6290	0.0134	0.6676	8.7800e-003	0.6764	0.1789	8.2100e-003	0.1871	0.0000	1,247.8465	1,247.8465	0.1359	0.0000	1,251.2445
Waste						0.0000	0.0000		0.0000	0.0000	2.7384	0.0000	2.7384	0.1618	0.0000	6.7841
Water						0.0000	0.0000		0.0000	0.0000	0.1055	2.1002	2.2057	0.0109	2.7000e-004	2.5602
Total	0.6169	4.6826	3.6310	0.0134	0.6676	8.9300e-003	0.6766	0.1789	8.3600e-003	0.1872	2.8438	1,274.9668	1,277.8106	0.3097	5.0000e-004	1,285.7035

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Annual

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0240	0.0000	3.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	7.6000e-004	7.6000e-004	0.0000	0.0000	8.1000e-004
Energy	2.1000e-004	1.9300e-003	1.6200e-003	1.0000e-005		1.5000e-004	1.5000e-004		1.5000e-004	1.5000e-004	0.0000	25.0194	25.0194	9.9000e-004	2.3000e-004	25.1138
Mobile	0.5927	4.6807	3.6290	0.0134	0.6676	8.7800e-003	0.6764	0.1789	8.2100e-003	0.1871	0.0000	1,247.8465	1,247.8465	0.1359	0.0000	1,251.2445
Waste						0.0000	0.0000		0.0000	0.0000	2.7384	0.0000	2.7384	0.1618	0.0000	6.7841
Water						0.0000	0.0000		0.0000	0.0000	0.1055	2.1002	2.2057	0.0109	2.7000e-004	2.5602
Total	0.6169	4.6826	3.6310	0.0134	0.6676	8.9300e-003	0.6766	0.1789	8.3600e-003	0.1872	2.8438	1,274.9668	1,277.8106	0.3097	5.0000e-004	1,285.7035

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	9/1/2020	8/31/2020	5	0	
2	Site Preparation	Site Preparation	9/29/2020	10/1/2020	5	3	
3	Grading	Grading	10/2/2020	10/9/2020	5	6	
4	Building Construction	Building Construction	10/10/2020	8/13/2021	5	220	
5	Paving	Paving	8/14/2021	8/27/2021	5	10	
6	Architectural Coating	Architectural Coating	8/28/2021	9/10/2021	5	10	

Acres of Grading (Site Preparation Phase): 4.5

Acres of Grading (Grading Phase): 3

Acres of Paving: 1.97

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 6,327; Non-Residential Outdoor: 2,109; Striped Parking Area: 5,131 (Architectural Coating – sqft)

OffRoad Equipment

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Annual

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Cement and Mortar Mixers	1	8.00	9	0.56
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Cranes	1	8.00	231	0.29
Building Construction	Forklifts	2	7.00	89	0.20
Site Preparation	Graders	1	8.00	187	0.41
Paving	Pavers	1	8.00	130	0.42
Paving	Rollers	2	8.00	80	0.38
Demolition	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Demolition	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Grading	Tractors/Loaders/Backhoes	2	7.00	97	0.37
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Grading	Graders	1	8.00	187	0.41
Paving	Paving Equipment	1	8.00	132	0.36
Site Preparation	Scrapers	1	8.00	367	0.48
Building Construction	Welders	3	8.00	46	0.45

Trips and VMT

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Annual

3.2 Demolition - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000							

3.3 Site Preparation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.3900e-003	0.0000	2.3900e-003	2.6000e-004	0.0000	2.6000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.4800e-003	0.0299	0.0169	4.0000e-005		1.1700e-003	1.1700e-003		1.0700e-003	1.0700e-003	0.0000	3.2290	3.2290	1.0400e-003	0.0000	3.2551
Total	2.4800e-003	0.0299	0.0169	4.0000e-005	2.3900e-003	1.1700e-003	3.5600e-003	2.6000e-004	1.0700e-003	1.3300e-003	0.0000	3.2290	3.2290	1.0400e-003	0.0000	3.2551

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Annual

3.3 Site Preparation - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.0000e-005	4.0000e-005	4.1000e-004	0.0000	1.3000e-004	0.0000	1.3000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.1104	0.1104	0.0000	0.0000	0.1104
Total	6.0000e-005	4.0000e-005	4.1000e-004	0.0000	1.3000e-004	0.0000	1.3000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.1104	0.1104	0.0000	0.0000	0.1104

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					9.3000e-004	0.0000	9.3000e-004	1.0000e-004	0.0000	1.0000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.4800e-003	0.0299	0.0169	4.0000e-005		1.1700e-003	1.1700e-003		1.0700e-003	1.0700e-003	0.0000	3.2290	3.2290	1.0400e-003	0.0000	3.2551
Total	2.4800e-003	0.0299	0.0169	4.0000e-005	9.3000e-004	1.1700e-003	2.1000e-003	1.0000e-004	1.0700e-003	1.1700e-003	0.0000	3.2290	3.2290	1.0400e-003	0.0000	3.2551

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Annual

3.3 Site Preparation - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.0000e-005	4.0000e-005	4.1000e-004	0.0000	1.3000e-004	0.0000	1.3000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.1104	0.1104	0.0000	0.0000	0.1104
Total	6.0000e-005	4.0000e-005	4.1000e-004	0.0000	1.3000e-004	0.0000	1.3000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.1104	0.1104	0.0000	0.0000	0.1104

3.4 Grading - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0197	0.0000	0.0197	0.0101	0.0000	0.0101	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.7700e-003	0.0640	0.0298	6.0000e-005		2.9700e-003	2.9700e-003		2.7300e-003	2.7300e-003	0.0000	5.4333	5.4333	1.7600e-003	0.0000	5.4773
Total	5.7700e-003	0.0640	0.0298	6.0000e-005	0.0197	2.9700e-003	0.0226	0.0101	2.7300e-003	0.0128	0.0000	5.4333	5.4333	1.7600e-003	0.0000	5.4773

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Annual

3.4 Grading - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4000e-004	1.0000e-004	1.0300e-003	0.0000	3.3000e-004	0.0000	3.3000e-004	9.0000e-005	0.0000	9.0000e-005	0.0000	0.2759	0.2759	1.0000e-005	0.0000	0.2761
Total	1.4000e-004	1.0000e-004	1.0300e-003	0.0000	3.3000e-004	0.0000	3.3000e-004	9.0000e-005	0.0000	9.0000e-005	0.0000	0.2759	0.2759	1.0000e-005	0.0000	0.2761

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					7.6700e-003	0.0000	7.6700e-003	3.9400e-003	0.0000	3.9400e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.7700e-003	0.0640	0.0298	6.0000e-005		2.9700e-003	2.9700e-003		2.7300e-003	2.7300e-003	0.0000	5.4333	5.4333	1.7600e-003	0.0000	5.4773
Total	5.7700e-003	0.0640	0.0298	6.0000e-005	7.6700e-003	2.9700e-003	0.0106	3.9400e-003	2.7300e-003	6.6700e-003	0.0000	5.4333	5.4333	1.7600e-003	0.0000	5.4773

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Annual

3.4 Grading - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4000e-004	1.0000e-004	1.0300e-003	0.0000	3.3000e-004	0.0000	3.3000e-004	9.0000e-005	0.0000	9.0000e-005	0.0000	0.2759	0.2759	1.0000e-005	0.0000	0.2761
Total	1.4000e-004	1.0000e-004	1.0300e-003	0.0000	3.3000e-004	0.0000	3.3000e-004	9.0000e-005	0.0000	9.0000e-005	0.0000	0.2759	0.2759	1.0000e-005	0.0000	0.2761

3.5 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0675	0.5143	0.4395	7.4000e-004		0.0280	0.0280		0.0268	0.0268	0.0000	61.2551	61.2551	0.0124	0.0000	61.5659
Total	0.0675	0.5143	0.4395	7.4000e-004		0.0280	0.0280		0.0268	0.0268	0.0000	61.2551	61.2551	0.0124	0.0000	61.5659

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Annual

3.5 Building Construction - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.2600e-003	0.0460	9.0000e-003	1.1000e-004	2.7900e-003	2.6000e-004	3.0600e-003	8.1000e-004	2.5000e-004	1.0600e-003	0.0000	10.8805	10.8805	8.7000e-004	0.0000	10.9023
Worker	5.0200e-003	3.5100e-003	0.0375	1.1000e-004	0.0120	7.0000e-005	0.0121	3.1900e-003	7.0000e-005	3.2500e-003	0.0000	10.0374	10.0374	2.5000e-004	0.0000	10.0436
Total	6.2800e-003	0.0495	0.0465	2.2000e-004	0.0148	3.3000e-004	0.0151	4.0000e-003	3.2000e-004	4.3100e-003	0.0000	20.9179	20.9179	1.1200e-003	0.0000	20.9459

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0675	0.5143	0.4395	7.4000e-004		0.0280	0.0280		0.0268	0.0268	0.0000	61.2550	61.2550	0.0124	0.0000	61.5658
Total	0.0675	0.5143	0.4395	7.4000e-004		0.0280	0.0280		0.0268	0.0268	0.0000	61.2550	61.2550	0.0124	0.0000	61.5658

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Annual

3.5 Building Construction - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.2600e-003	0.0460	9.0000e-003	1.1000e-004	2.7900e-003	2.6000e-004	3.0600e-003	8.1000e-004	2.5000e-004	1.0600e-003	0.0000	10.8805	10.8805	8.7000e-004	0.0000	10.9023
Worker	5.0200e-003	3.5100e-003	0.0375	1.1000e-004	0.0120	7.0000e-005	0.0121	3.1900e-003	7.0000e-005	3.2500e-003	0.0000	10.0374	10.0374	2.5000e-004	0.0000	10.0436
Total	6.2800e-003	0.0495	0.0465	2.2000e-004	0.0148	3.3000e-004	0.0151	4.0000e-003	3.2000e-004	4.3100e-003	0.0000	20.9179	20.9179	1.1200e-003	0.0000	20.9459

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1646	1.2902	1.1723	2.0100e-003		0.0658	0.0658		0.0630	0.0630	0.0000	167.1572	167.1572	0.0329	0.0000	167.9794
Total	0.1646	1.2902	1.1723	2.0100e-003		0.0658	0.0658		0.0630	0.0630	0.0000	167.1572	167.1572	0.0329	0.0000	167.9794

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Annual

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.8800e-003	0.1126	0.0217	3.1000e-004	7.6300e-003	2.2000e-004	7.8400e-003	2.2000e-003	2.1000e-004	2.4100e-003	0.0000	29.4598	29.4598	2.2500e-003	0.0000	29.5160
Worker	0.0128	8.6100e-003	0.0938	2.9000e-004	0.0327	2.0000e-004	0.0329	8.6900e-003	1.8000e-004	8.8700e-003	0.0000	26.4743	26.4743	6.2000e-004	0.0000	26.4897
Total	0.0157	0.1212	0.1154	6.0000e-004	0.0404	4.2000e-004	0.0408	0.0109	3.9000e-004	0.0113	0.0000	55.9341	55.9341	2.8700e-003	0.0000	56.0057

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1646	1.2902	1.1723	2.0100e-003		0.0658	0.0658		0.0630	0.0630	0.0000	167.1570	167.1570	0.0329	0.0000	167.9792
Total	0.1646	1.2902	1.1723	2.0100e-003		0.0658	0.0658		0.0630	0.0630	0.0000	167.1570	167.1570	0.0329	0.0000	167.9792

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Annual

3.5 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.8800e-003	0.1126	0.0217	3.1000e-004	7.6300e-003	2.2000e-004	7.8400e-003	2.2000e-003	2.1000e-004	2.4100e-003	0.0000	29.4598	29.4598	2.2500e-003	0.0000	29.5160
Worker	0.0128	8.6100e-003	0.0938	2.9000e-004	0.0327	2.0000e-004	0.0329	8.6900e-003	1.8000e-004	8.8700e-003	0.0000	26.4743	26.4743	6.2000e-004	0.0000	26.4897
Total	0.0157	0.1212	0.1154	6.0000e-004	0.0404	4.2000e-004	0.0408	0.0109	3.9000e-004	0.0113	0.0000	55.9341	55.9341	2.8700e-003	0.0000	56.0057

3.6 Paving - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	5.3200e-003	0.0532	0.0589	9.0000e-005		2.9100e-003	2.9100e-003		2.6900e-003	2.6900e-003	0.0000	7.7524	7.7524	2.4600e-003	0.0000	7.8138
Paving	1.8200e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	7.1400e-003	0.0532	0.0589	9.0000e-005		2.9100e-003	2.9100e-003		2.6900e-003	2.6900e-003	0.0000	7.7524	7.7524	2.4600e-003	0.0000	7.8138

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Annual

3.6 Paving - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.2000e-004	2.2000e-004	2.3600e-003	1.0000e-005	8.2000e-004	0.0000	8.3000e-004	2.2000e-004	0.0000	2.2000e-004	0.0000	0.6666	0.6666	2.0000e-005	0.0000	0.6670
Total	3.2000e-004	2.2000e-004	2.3600e-003	1.0000e-005	8.2000e-004	0.0000	8.3000e-004	2.2000e-004	0.0000	2.2000e-004	0.0000	0.6666	0.6666	2.0000e-005	0.0000	0.6670

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	5.3200e-003	0.0532	0.0589	9.0000e-005		2.9100e-003	2.9100e-003		2.6900e-003	2.6900e-003	0.0000	7.7524	7.7524	2.4600e-003	0.0000	7.8138
Paving	1.8200e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	7.1400e-003	0.0532	0.0589	9.0000e-005		2.9100e-003	2.9100e-003		2.6900e-003	2.6900e-003	0.0000	7.7524	7.7524	2.4600e-003	0.0000	7.8138

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Annual

3.6 Paving - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.2000e-004	2.2000e-004	2.3600e-003	1.0000e-005	8.2000e-004	0.0000	8.3000e-004	2.2000e-004	0.0000	2.2000e-004	0.0000	0.6666	0.6666	2.0000e-005	0.0000	0.6670
Total	3.2000e-004	2.2000e-004	2.3600e-003	1.0000e-005	8.2000e-004	0.0000	8.3000e-004	2.2000e-004	0.0000	2.2000e-004	0.0000	0.6666	0.6666	2.0000e-005	0.0000	0.6670

3.7 Architectural Coating - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0314					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.0900e-003	7.6300e-003	9.0900e-003	1.0000e-005		4.7000e-004	4.7000e-004		4.7000e-004	4.7000e-004	0.0000	1.2766	1.2766	9.0000e-005	0.0000	1.2788
Total	0.0325	7.6300e-003	9.0900e-003	1.0000e-005		4.7000e-004	4.7000e-004		4.7000e-004	4.7000e-004	0.0000	1.2766	1.2766	9.0000e-005	0.0000	1.2788

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Annual

3.7 Architectural Coating - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5000e-004	1.0000e-004	1.1000e-003	0.0000	3.8000e-004	0.0000	3.9000e-004	1.0000e-004	0.0000	1.0000e-004	0.0000	0.3111	0.3111	1.0000e-005	0.0000	0.3113
Total	1.5000e-004	1.0000e-004	1.1000e-003	0.0000	3.8000e-004	0.0000	3.9000e-004	1.0000e-004	0.0000	1.0000e-004	0.0000	0.3111	0.3111	1.0000e-005	0.0000	0.3113

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0314					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.0900e-003	7.6300e-003	9.0900e-003	1.0000e-005		4.7000e-004	4.7000e-004		4.7000e-004	4.7000e-004	0.0000	1.2766	1.2766	9.0000e-005	0.0000	1.2788
Total	0.0325	7.6300e-003	9.0900e-003	1.0000e-005		4.7000e-004	4.7000e-004		4.7000e-004	4.7000e-004	0.0000	1.2766	1.2766	9.0000e-005	0.0000	1.2788

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Annual

3.7 Architectural Coating - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5000e-004	1.0000e-004	1.1000e-003	0.0000	3.8000e-004	0.0000	3.9000e-004	1.0000e-004	0.0000	1.0000e-004	0.0000	0.3111	0.3111	1.0000e-005	0.0000	0.3113
Total	1.5000e-004	1.0000e-004	1.1000e-003	0.0000	3.8000e-004	0.0000	3.9000e-004	1.0000e-004	0.0000	1.0000e-004	0.0000	0.3111	0.3111	1.0000e-005	0.0000	0.3113

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Annual

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.5927	4.6807	3.6290	0.0134	0.6676	8.7800e-003	0.6764	0.1789	8.2100e-003	0.1871	0.0000	1,247.8465	1,247.8465	0.1359	0.0000	1,251.2445
Unmitigated	0.5927	4.6807	3.6290	0.0134	0.6676	8.7800e-003	0.6764	0.1789	8.2100e-003	0.1871	0.0000	1,247.8465	1,247.8465	0.1359	0.0000	1,251.2445

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Automobile Care Center	0.00	0.00	0.00		
Convenience Market With Gas Pumps	2,403.99	4,673.76	3814.57	1,748,695	1,748,695
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Total	2,403.99	4,673.76	3,814.57	1,748,695	1,748,695

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Automobile Care Center	16.60	8.40	6.90	33.00	48.00	19.00	21	51	28
Convenience Market With Gas	16.60	8.40	6.90	0.80	80.20	19.00	14	21	65
Other Non-Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Annual

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Automobile Care Center	0.545527	0.036856	0.186032	0.115338	0.015222	0.004970	0.017525	0.069528	0.001397	0.001160	0.004547	0.000932	0.000965
Convenience Market With Gas Pumps	0.545527	0.036856	0.186032	0.115338	0.015222	0.004970	0.017525	0.069528	0.001397	0.001160	0.004547	0.000932	0.000965
Other Non-Asphalt Surfaces	0.545527	0.036856	0.186032	0.115338	0.015222	0.004970	0.017525	0.069528	0.001397	0.001160	0.004547	0.000932	0.000965
Parking Lot	0.545527	0.036856	0.186032	0.115338	0.015222	0.004970	0.017525	0.069528	0.001397	0.001160	0.004547	0.000932	0.000965

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	22.9189	22.9189	9.5000e-004	2.0000e-004	23.0009
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	22.9189	22.9189	9.5000e-004	2.0000e-004	23.0009
NaturalGas Mitigated	2.1000e-004	1.9300e-003	1.6200e-003	1.0000e-005		1.5000e-004	1.5000e-004		1.5000e-004	1.5000e-004	0.0000	2.1005	2.1005	4.0000e-005	4.0000e-005	2.1130
NaturalGas Unmitigated	2.1000e-004	1.9300e-003	1.6200e-003	1.0000e-005		1.5000e-004	1.5000e-004		1.5000e-004	1.5000e-004	0.0000	2.1005	2.1005	4.0000e-005	4.0000e-005	2.1130

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Annual

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Automobile Care Center	32197.6	1.7000e-004	1.5800e-003	1.3300e-003	1.0000e-005		1.2000e-004	1.2000e-004		1.2000e-004	1.2000e-004	0.0000	1.7182	1.7182	3.0000e-005	3.0000e-005	1.7284
Convenience Market With Gas Pumps	7163.94	4.0000e-005	3.5000e-004	2.9000e-004	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.3823	0.3823	1.0000e-005	1.0000e-005	0.3846
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		2.1000e-004	1.9300e-003	1.6200e-003	1.0000e-005		1.5000e-004	1.5000e-004		1.5000e-004	1.5000e-004	0.0000	2.1005	2.1005	4.0000e-005	4.0000e-005	2.1130

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Annual

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Automobile Care Center	32197.6	1.7000e-004	1.5800e-003	1.3300e-003	1.0000e-005		1.2000e-004	1.2000e-004		1.2000e-004	1.2000e-004	0.0000	1.7182	1.7182	3.0000e-005	3.0000e-005	1.7284
Convenience Market With Gas Pumps	7163.94	4.0000e-005	3.5000e-004	2.9000e-004	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.3823	0.3823	1.0000e-005	1.0000e-005	0.3846
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		2.1000e-004	1.9300e-003	1.6200e-003	1.0000e-005		1.5000e-004	1.5000e-004		1.5000e-004	1.5000e-004	0.0000	2.1005	2.1005	4.0000e-005	4.0000e-005	2.1130

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Annual

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Automobile Care Center	10058.7	3.2049	1.3000e-004	3.0000e-005	3.2164
Convenience Market With Gas Pumps	40757	12.9861	5.4000e-004	1.1000e-004	13.0325
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	21115.7	6.7279	2.8000e-004	6.0000e-005	6.7520
Total		22.9189	9.5000e-004	2.0000e-004	23.0009

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Annual

5.3 Energy by Land Use - Electricity**Mitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Automobile Care Center	10058.7	3.2049	1.3000e-004	3.0000e-005	3.2164
Convenience Market With Gas Pumps	40757	12.9861	5.4000e-004	1.1000e-004	13.0325
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	21115.7	6.7279	2.8000e-004	6.0000e-005	6.7520
Total		22.9189	9.5000e-004	2.0000e-004	23.0009

6.0 Area Detail**6.1 Mitigation Measures Area**

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Annual

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0240	0.0000	3.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	7.6000e-004	7.6000e-004	0.0000	0.0000	8.1000e-004
Unmitigated	0.0240	0.0000	3.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	7.6000e-004	7.6000e-004	0.0000	0.0000	8.1000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	3.1400e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0208					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	4.0000e-005	0.0000	3.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	7.6000e-004	7.6000e-004	0.0000	0.0000	8.1000e-004
Total	0.0240	0.0000	3.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	7.6000e-004	7.6000e-004	0.0000	0.0000	8.1000e-004

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Annual

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	3.1400e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0208					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	4.0000e-005	0.0000	3.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	7.6000e-004	7.6000e-004	0.0000	0.0000	8.1000e-004
Total	0.0240	0.0000	3.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	7.6000e-004	7.6000e-004	0.0000	0.0000	8.1000e-004

7.0 Water Detail

7.1 Mitigation Measures Water

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Annual

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	2.2057	0.0109	2.7000e-004	2.5602
Unmitigated	2.2057	0.0109	2.7000e-004	2.5602

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Automobile Care Center	0.0931403 / 0.057086	0.6180	3.0600e-003	8.0000e-005	0.7174
Convenience Market With Gas Pumps	0.239254 / 0.14664	1.5876	7.8600e-003	2.0000e-004	1.8428
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		2.2056	0.0109	2.8000e-004	2.5602

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Annual

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Automobile Care Center	0.0931403 / 0.057086	0.6180	3.0600e-003	8.0000e-005	0.7174
Convenience Market With Gas Pumps	0.239254 / 0.14664	1.5876	7.8600e-003	2.0000e-004	1.8428
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		2.2056	0.0109	2.8000e-004	2.5602

8.0 Waste Detail

8.1 Mitigation Measures Waste

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Annual

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	2.7384	0.1618	0.0000	6.7841
Unmitigated	2.7384	0.1618	0.0000	6.7841

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Automobile Care Center	3.78	0.7673	0.0454	0.0000	1.9010
Convenience Market With Gas Pumps	9.71	1.9710	0.1165	0.0000	4.8832
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		2.7384	0.1618	0.0000	6.7841

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Annual

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Automobile Care Center	3.78	0.7673	0.0454	0.0000	1.9010
Convenience Market With Gas Pumps	9.71	1.9710	0.1165	0.0000	4.8832
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		2.7384	0.1618	0.0000	6.7841

9.0 Operational Offroad

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

Fire Pumps and Emergency Generators

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

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

7-Eleven Project: Perris Blvd and Rider St (City of Perris) - Riverside-South Coast County, Annual

Equipment Type	Number
----------------	--------

11.0 Vegetation

Attachment 3
Gasoline Dispensing Facility VOC Emissions Estimates

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7-Eleven Project at Perris Boulevard and Rider Street Intersection, Perris, CA
Gasoline Throughput and Fugitive VOC Emission Calculations
Prepared by MIG, Inc. September 2020

Table 1: Calculated Throughput

Daily Throughput (Gallons)	Annual Throughput (Gallons)
4,384	1,600,000

Table 3: Gasoline VOC Emission Factors for Retail Service Processes
(Controlled Gasoline Emission Factors (pounds per 1,000 gallons of gasoline))

Process	Rate
Loading	0.15
Breathing	0.024
Refueling	0.32
Hose Permeation	0.009
Spillage	0.24

Source: SCAQMD, 2017. Risk Assessment Procedures for Rules 1401, 1401.1, and 212, Version 8.1. Diamond Bar, CA. September 2017. Appendix X, Table X-1, Page X-2. Available online at: <<http://www.aqmd.gov/home/permits/risk-assessment>>

Daily VOC Emissions (lbs)	3.3
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Attachment 4
Gasoline Dispensing Facility Risk Tool – Preliminary Project Cancer Risk Estimate

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GASOLINE DISPENSING SERVICE STATION

(Procedure Version 8.1 & Package N, September 1, 2017) - Risk Tool V1.103

AN:	Mr. Jack Lee
Facility Name:	Perris Blvd / Rider St 7-11
Deem Complete Date:	Perris, CA

Storage Tank Type	Underground	MET Station	Perris
Annual Throughput	1.6 million gallons /year	Distance to Resident	30 meter
T-BACT	YES	Distance to Commercial	50 meter

MICR Calculation: MICR = MICR per 1 Million gallons/yr x Annual Throughput (Million gallons/yr)

HIA & HIC Calculation: Negligible compared to Cancer risk and is not calculated.

MICR Result

	Resident	Commercial
MICR	4.892	0.173
MICR ≤ 10	PASS	PASS

Interpolation for MICR from Nearest Distances

	Residential			Commercial		
	near	actual	far	near	actual	far
Distance (meter)	25	30	50	50	50	75
MICR (per 1 million gasoline gallon throughput per year)	3.494	3.0572	1.310	0.108	0.108	0.057

Look up from Table 12 - MICR for Underground Storage Tank

Station	Receptor	Downwind Distance (m)							
		25	50	75	100	200	300	500	1000
Perris	Resident	3.494	1.310	0.695	0.436	0.127	0.063	0.026	0.008
	Commercial	0.288	0.108	0.057	0.036	0.010	0.005	0.002	0.001

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INFORMATION SUMMARY



- A. Report Date: August 7th, 2020
- B. Report Title: Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) Biological Resources Compliance Analysis for the 2.1-Acre Rider Street/Perris Boulevard Project Site, City of Perris, Western Riverside County, California.
- C. Case #: N/A
- D. APNs#: 300-300-026
- E. Project Location: USGS 7.5' Series Perris Quadrangle Township 4 South, Range 3 West, Section 17, Riverside County, Extending Southeast of Rider Street/Perris Boulevard Intersection as shown in Attachment A, *Regional Location Map* and Attachment B, *Biological Resources Map*.
- F. Applicant: 6761 Solterra Vista Parkway
San Diego, CA 92130
Contact: Jack Lee (310) 403-5627
- G. MOU Principal: Cadre Environmental
701 Palomar Airport Road, Suite 300
Carlsbad, CA. 92011
Contact: Ruben S. Ramirez, Jr. (949) 300-0212
USFWS permit #TE780566-14, CDFW permit #02243
- H. Date of Survey: August 7th, 2020.
- I. Summary: The 2.1-acre project site is located within the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) Mead Valley Area Plan. The project site is not located within an MSHCP Criteria Area, Cell Group, or Linkage Area. Therefore, no MSHCP Habitat Evaluation and Acquisition Negotiation Strategy (HANS) or Joint Project Review (JPR) are required.

The MSHCP has determined that all of the sensitive species potentially occurring onsite have been adequately covered (MSHCP Table 2-2 Species Considered for Conservation Under the MSHCP Since 1999, 2004). However, additional surveys may be required for

narrow endemic plants, criteria area species, and specific wildlife species, if suitable habitat is documented onsite and/or if the property is located within a predetermined “Survey Area” as shown in Attachment C, *MSHCP Relationship Map* (MSHCP 2004).

The project site does not occur within a predetermined Survey Area for criteria area species (RCA GIS Data Downloads 2020). No additional surveys are required.

The project site does not occur within a predetermined Survey Area for narrow endemic plant species (RCA GIS Data Downloads 2020). No additional surveys are required.

The project site does not occur within a predetermined Survey Area for amphibians (RCA GIS Data Downloads 2020). No additional surveys are required.

The project site does not occur within a predetermined Survey Area for mammals (RCA GIS Data Downloads 2020). No additional surveys are required.

The project site does not occur within a predetermined Survey Area for the burrowing owl (*Athene cunicularia*) (RCA GIS Data Downloads 2020). No additional surveys are required.

No MSHCP Section 6.1.2 riparian, riverine or vernal pool resources were documented within or adjacent to the project site. An MSHCP Determination of Biological Equivalent or Superior Preservation (DBESP) is not required.

No features located within and immediately adjacent to the project site represent jurisdictional resources which may be regulated by the Santa Ana Regional Water Quality Control Board, California Department of Fish and Wildlife and United States Army Corps of Engineers. A formal jurisdictional delineation will be not be required.

SUBJECT

General MSHCP Habitat Assessment Compliance Analysis for the 2.1-Acre Rider Street/Perris Boulevard Project Site, Western Riverside County, California.

This report presents the findings of a biological resources Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) compliance analysis for the 2.1-acre Rider Street/Perris Boulevard project site (“Project Site”) located within the western region of Riverside County, California. Specifically, the Project Site is located within APN 300-300-026. The purpose of this study, conducted by Cadre Environmental, is to document the existing biological resources, identify general vegetation types, and assess the potential biological and regulatory constraints associated with the proposed development and ensure compliance with the Western Riverside County MSHCP.

The Project Site is located within United States Geological Survey (USGS) 7.5’ Series Perris Quadrangle, Riverside County, Township 4 South, Range 3 West, Section 17. Specifically, the Project Site extends southeast of the Rider Street/Perris Boulevard intersection, City of Perris, California, as shown in Attachment A, *Regional Location Map* and Attachment B, *Biological Resources Map*.

The Project Site is located within the Western Riverside County MSHCP Mead Valley Area Plan. The Project Site is not located within an MSHCP Criteria Area, Cell Group, or Linkage Area as shown in Attachment C, *MSHCP Relationship Map*.

This report incorporates the findings of an extensive literature review, compilation of existing documentation, field reconnaissance conducted on August 7th, 2020. This documentation is consistent with accepted scientific and technical standards, the requirements of the United States Fish and Wildlife Service (USFWS), and the California Department of Fish and Wildlife (CDFW). When appropriate, general biological resources are described in summary form in an effort to provide the reader with adequate background information. However, the report focuses on documenting those resources considered to be significant and/or sensitive as outlined by the California Environmental Quality Act (CEQA) and the Western Riverside County MSHCP.

The following report provides a summary of topographic features, soils and habitats observed onsite. Onsite resources were also analyzed to determine which if any are subject to the United States Army Corps of Engineers (USACE) jurisdiction pursuant to Section 404 of the Clean Water Act, CDFW jurisdiction pursuant to Division 2, Chapter 6, Section 1600 of the Fish and Wildlife Code, the Santa Ana Regional Water Quality Control Board (RWQCB) 401 certification/Waste Discharge Requirements (WDR’s), and MSHCP jurisdiction pursuant to section 6.1.2 (MSHCP 2004).

Accordingly, this report provides an overview of potential USACE, RWQCB, CDFW, MSHCP riparian/riverine/vernal pool jurisdictional resources and a habitat assessment for species that may require additional focused surveys as outlined by the MSHCP.

METHODS OF STUDY

APPROACH

Prior to visiting the Project Site, a review of all available and relevant data on the biological characteristics, sensitive habitats, and species potentially present on or adjacent to the Project Site was conducted. Additionally, aerial photography, and USGS topographic map were examined. After reviewing the available information, Cadre Environmental conducted a physical site assessment.

As required by the MSHCP, and during the initial property assessment process, all Project Site APN's were searched using the Regional Conservation Authority (RCA) Geographic Information System (GIS) database to determine if the property falls within a "Criteria Area" and if additional surveys for narrow endemic/criteria area plant species or wildlife not adequately covered by the MSHCP may be required as shown in Attachment C, *MSHCP Relationship Map*.

Data, which contain digital images derived from aerial photography with orthographic projection properties, were used in conjunction with Cadre Environmental's in-house GIS database as an important base layer to identify vegetation communities, drainage features, and USFWS designated critical habitat boundaries. Vegetation communities were then "ground-truthed" during field observations to obtain characteristic descriptions.

LITERATURE REVIEW

The study was initiated with a review of relevant literature on the biological resources of the Project Site and vicinity. The MSHCP list of covered species potentially occurring onsite was also examined (MSHCP Table 2-2 Species Considered for Conservation Under the MSHCP Since 1999, 2004). In addition, federal register listings, protocols, and species data provided by USFWS were reviewed in conjunction with anticipated federally listed species potentially occurring at the Project Site. The California Natural Diversity Database (CNDDDB),¹ a review of the California Native Plant Society sixth inventory (Tibor 2001), and Roberts et al. (2004) were also reviewed for pertinent information regarding the location of known occurrences of sensitive species in the vicinity of the property. In addition, numerous regional floral and faunal field guides were utilized in the identification of species and suitable habitats. Documents consulted regarding potential onsite biological conditions are listed in the references section at the end of this report.

FIELD INVESTIGATION

The Project Site was surveyed on August 7th, 2020. The survey included complete coverage of the Project Site, with special attention focused toward sensitive species or those habitats potentially supporting sensitive flora or fauna that would be essential to efficiently implementing the terms and conditions of the Western Riverside County

¹ California Natural Diversity Data Base, Department of Fish and Game. August 2020. Natural Heritage Program: RareFind, Perris Quadrangle.

MSHCP including features potentially subject to MSHCP 6.1.2 jurisdiction. Aerial photography of the Project Site and vicinity was utilized to accurately locate and survey the property. General plant communities were preliminarily mapped directly on the aerial photo using visible landmarks in the field, which are depicted in Attachment B, *Biological Resources Map*. Representative photographs of the Project Site's natural resources were taken during the field survey as shown in Attachments D and E, *Current Project Site Photographs*).

Plant Community/Habitat Classification and Mapping

Plant communities were preliminarily mapped with the aid of an aerial photograph using the MSHCP uncollapsed vegetation communities classification system when appropriate. When a vegetation community could not be accurately characterized using this information, an updated community classification code was developed to more accurately represent onsite habitat types.

General Plant Inventory

All plants observed during the survey efforts were either identified in the field or collected and later identified using taxonomic keys. Plant taxonomy and nomenclatural changes follow Baldwin et al. (2012) or the Jepson Flora Project (2020). Common names used in this report generally follow Roberts et al. (2004) or Baldwin et al. (2012). Scientific names are included only at the first mention of a species; thereafter, common names alone are used.

General Wildlife Inventory

General wildlife surveys were not conducted during the general biological habitat assessment. However, animals identified during the reconnaissance survey by sight, call, tracks, nests, scat, remains, or other signs were recorded in field notes. All wildlife was identified in the field with the aid of binoculars and taxonomic keys (if applicable). Vertebrate taxonomy followed in this report is according to the Center of North American Herpetology (2020) for amphibians and reptiles, the American Ornithologists' Union (1998 and supplemental) for birds, and Bradley et al. (2014) for mammals. Scientific names are used during the first mention of a species; common names only are used in the remainder of the text (if applicable).

Regional Connectivity/Wildlife Movement Corridor Assessment

The analysis of wildlife movement corridors associated with the Project Site and its immediate vicinity is based on information compiled from literature, analysis of the aerial photograph, and direct observations made in the field during the site visit.

A literature review was conducted that included documents on island biogeography (studies of fragmented and isolated habitat "islands"), reports on wildlife home range sizes and migration patterns, and studies on wildlife dispersal. Wildlife movement studies conducted in southern California were also reviewed. Use of field-verified digital aerial

data, in conjunction with the GIS database, allowed proper identification of vegetation communities and drainage features. This information was crucial to assessing the relationship of the property to large open space areas in the immediate vicinity and was also evaluated in terms of connectivity and habitat linkages. Relative to corridor issues, the discussions in this report are intended to focus on wildlife movement associated with the property and the immediate vicinity.

EXISTING CONDITIONS

The Project Site is currently dominated by disturbed/ruderal vegetation as illustrated in Attachment, B *Biological Resources Map*, and Attachments D and E, *Current Project Site Photographs*.

PLANT COMMUNITY/HABITAT CLASSIFICATION

Disturbed/Ruderal 2.1 Acres

The entire Project Site is disturbed (disked) and no native vegetation was documented onsite. The dominant plant species include non-native grasses and ruderal species including Russian thistle (*Salsola tragus*), black mustard (*Brassica nigra*) and puncture vine (*Tribulus terrestris*). A single isolated non-native tree, eucalyptus (*Eucalyptus* sp.) was documented within the Rider Street right of way.

WILDLIFE POPULATIONS

General wildlife species documented onsite or within the vicinity during the site visit include mourning dove (*Zenaida macroura*), rock dove, American crow (*Corvus brachyrhynchos*), European starling (*Sturnus vulgaris*), Cassin's kingbird (*Tyrannus vociferans*), northern mockingbird (*Mimus polyglottos*), Brewer's blackbird (*Euphagus cyanocephalus*), house finch (*Haemorhous mexicanus*), and house sparrow (*Passer domesticus*).

REGIONAL CONNECTIVITY/WILDLIFE MOVEMENT

Overview

Wildlife corridors link together areas of suitable habitat that are otherwise separated by rugged terrain, changes in vegetation, or human disturbance. The fragmentation of open space areas by urbanization creates isolated "islands" of wildlife habitat. In the absence of habitat linkages that allow movement to adjoining open space areas, various studies have concluded that some wildlife species, especially the larger and more mobile mammals, will not likely persist over time in fragmented or isolated habitat areas because they prohibit the infusion of new individuals and genetic information (MacArthur and Wilson 1967, Soule 1987, Harris and Gallagher 1989, Bennett 1990). Corridors effectively act as links between different populations of a species. A group of smaller populations (termed "demes") linked together via a system of corridors is termed a "metapopulation." The long-term health of each deme within the metapopulation is dependent upon its size

and the frequency of interchange of individuals (immigration vs. emigration). The smaller the deme, the more important immigration becomes, because prolonged inbreeding with the same individuals can reduce genetic variability. Immigrant individuals that move into the deme from adjoining demes mate with individuals and supply that deme with new genes and gene combinations that increases overall genetic diversity. An increase in a population's genetic variability is generally associated with an increase in a population's health.

Corridors mitigate the effects of habitat fragmentation by (1) allowing animals to move between remaining habitats, which allows depleted populations to be replenished and promotes genetic diversity; (2) providing escape routes from fire, predators, and human disturbances, thus reducing the risk that catastrophic events (such as fires or disease) will result in population or local species extinction; and (3) serving as travel routes for individual animals as they move within their home ranges in search of food, water, mates, and other needs (Noss 1983, Fahrig and Merriam 1985, Simberloff and Cox 1987, Harris and Gallagher 1989). Wildlife movement activities usually fall into one of three movement categories: (1) dispersal (e.g., juvenile animals from natal areas, individuals extending range distributions); (2) seasonal migration; and (3) movements related to home range activities (foraging for food or water, defending territories, searching for mates, breeding areas, or cover). A number of terms have been used in various wildlife movement studies, such as "wildlife corridor", "travel route", "habitat linkage", and "wildlife crossing" to refer to areas in which wildlife moves from one area to another. To clarify the meaning of these terms and facilitate the discussion on wildlife movement in this study, these terms are defined as follows:

Travel Route: A landscape feature (such as a ridge line, drainage, canyon, or riparian strip) within a larger natural habitat area that is used frequently by animals to facilitate movement and provide access to necessary resources (e.g., water, food, cover, den sites). The travel route is generally preferred because it provides the least amount of topographic resistance in moving from one area to another; it contains adequate food, water, and/or cover while moving between habitat areas; and provides a relatively direct link between target habitat areas.

Wildlife Corridor: A piece of habitat, usually linear in nature, that connects two or more habitat patches that would otherwise be fragmented or isolated from one another. Wildlife corridors are usually bounded by urban land areas or other areas unsuitable for wildlife. The corridor generally contains suitable cover, food, and/or water to support species and facilitate movement while in the corridor. Larger, landscape-level corridors (often referred to as "habitat or landscape linkages") can provide both transitory and resident habitat for a variety of species.

Wildlife Crossing: A small, narrow area, relatively short in length and generally constricted in nature, that allows wildlife to pass under or through an obstacle or barrier that otherwise hinders or prevents movement. Crossings typically are manmade and include culverts, underpasses, drainage pipes, and tunnels to provide access across or under roads,

highways, pipelines, or other physical obstacles. These are often “choke points” along a movement corridor.

Wildlife Movement within the Project Site

The property is bordered by existing high traffic roadways, industrial, and residential development and does not represent a wildlife movement corridor. The Project Site is not located within an MSHCP designated core, extension of existing core, non-contiguous habitat block, constrained linkage, or linkage area.

SENSITIVE BIOLOGICAL RESOURCES

OVERVIEW OF CLASSIFICATIONS

The following discussion describes the plant and wildlife species present, or potentially present, within the property boundaries, that have been afforded special recognition by federal, state, or local resource conservation agencies and organizations, principally due to the species’ declining or limited population sizes, usually resulting from habitat loss. Also discussed are habitats that are unique, of relatively limited distribution, or of particular value to wildlife. Protected sensitive species are classified by either state or federal resource management agencies, or both, as threatened or endangered under provisions of the state and federal Endangered Species Acts. Vulnerable or “at-risk” species that are proposed for listing as threatened or endangered are categorized administratively as “candidates” by the USFWS. The CDFW uses various terminology and classifications to describe vulnerable species. There are additional sensitive species classifications applicable in California. These are described below.

Sensitive biological resources are habitats or individual species that have special recognition by federal, state, or local conservation agencies and organizations as endangered, threatened, or rare. The CDFW, the USFWS, and special groups like the California Native Plant Society (CNPS) maintain watch lists of such resources. For the purpose of this assessment, sources used to determine the sensitive status of biological resources are:

Plants: USFWS (2019), CNDDDB (2019a), CDFW (2019c, 2019d), and CNPS (Skinner and Pavlik 1994).

Wildlife: California Wildlife Habitat Relationships Database System (CWHRDS 1991), USFWS (2019), CNDDDB (2019a), CDFW (2018, 2019b),

Habitats: CNDDDB (2019a), CDFW (2018e).

Federal Protection and Classifications

The Federal Endangered Species Act of 1973 (FESA) defines an endangered species as “any species that is in danger of extinction throughout all or a significant portion of its range.” Threatened species are defined as “any species which is likely to become an

endangered species within the foreseeable future throughout all or a significant portion of its range.” Under provisions of Section 9(a)(1)(B) of the FESA, it is unlawful to “take” any listed species. “Take” is defined as follows in Section 3(18) of the FESA: “...harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.” Further, the USFWS, through regulation, has interpreted the terms “harm” and “harass” to include certain types of habitat modification as forms of a “take.” These interpretations, however, are generally considered and applied on a case-by-case basis and often vary from species to species. In a case where a property owner seeks permission from a federal agency for an action that could affect a federally listed plant and animal species, the property owner and agency are required to consult with the USFWS. Section 9(a)(2)(b) of the FESA addresses the protections afforded to listed plants. Recently, the USFWS instituted changes in the listing status of former candidate species. Former C1 (candidate) species are now simply referred to as candidate species and represent the only candidates for listing. Former C2 species (for which the USFWS had insufficient evidence to warrant listing at this time) and C3 species (either extinct, no longer a valid taxon, or more abundant than was formerly believed) are no longer considered as candidate species. Therefore, these species are no longer maintained in list form by the USFWS, nor are they formally protected. However, some USFWS field offices have issued memoranda stating that former C2 species are henceforth to be considered Federal Species of Concern. This term is employed in this document, but carries no official protections. All references to federally protected species in this report (whether listed, proposed for listing, or a candidate) include the most current published status or candidate category to which each species has been assigned by the USFWS. For purposes of this assessment, the following acronyms are used for federal status species:

FE	Federal Endangered
FT	Federal Threatened
FPE	Federal Proposed Endangered
FPT	Federal Proposed Threatened
FC	Federal Candidate for Listing

State of California Protection and Classifications

The California Endangered Species Act (CESA) defines an endangered species as “...a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant which is in serious danger of becoming extinct throughout all, or a significant portion, of its range due to one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, or disease.” The State defines a threatened species as “...a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that, although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of the special protection and management efforts required by this chapter. Any animal determined by the commission as rare on or before January 1, 1985 is a threatened species.” Candidate species are defined as “...a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that the

commission has formally noticed as being under review by the department for addition to either the list of endangered species or the list of threatened species, or a species for which the commission has published a notice of proposed regulation to add the species to either list.” Candidate species may be afforded temporary protection as though they were already listed as threatened or endangered at the discretion of the Fish and Game Commission. Unlike the federal FESA, the CESA does not include listing provisions for invertebrate species.

Article 3, sections 2080 through 2085 of the CESA addresses the taking of threatened or endangered species by stating “no person shall import into this state, export out of this state, or take, possess, purchase, or sell within this state, any species, or any part or product thereof, that the commission determines to be an endangered species or a threatened species, or attempt any of those acts, except as otherwise provided...” Under the CESA, “take” is defined as “...hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.” Exceptions authorized by the state to allow “take” require “...permits or memorandums of understanding...” and can be authorized for “...endangered species, threatened species, or candidate species for scientific, educational, or management purposes.” Sections 1901 and 1913 of the California Fish and Game Code provide that notification is required prior to disturbance.

Additionally, some sensitive mammals and birds are protected by the State as Fully Protected Mammals or Fully Protected Birds, as described in the California Fish and Game Code, sections 4700 and 3511, respectively. California Species of Special Concern (“special” animals and plants) listings include special status species, including all state and federal protected and candidate taxa, Bureau of Land Management and U.S. Forest Service sensitive species, species considered to be declining or rare by the CNPS or National Audubon Society, and a selection of species that are considered to be under population stress but are not formally proposed for listing. This list is primarily a working document for the CDFW CNDDDB project. Informally listed taxa are not protected per se, but warrant consideration in the preparation of biotic assessments. For some species, the CNDDDB is only concerned with specific portions of the life history, such as roosts, rookeries, or nest sites. For the purposes of this assessment, the following acronyms are used for state status species:

SE	State Endangered
ST	State Threatened
SCE	State Candidate Endangered
SCT	State Candidate Threatened
SFP	State Fully Protected
SP	State Protected
SR	State Rare
CSC	California Species of Special Concern
WL	California Watch List

California Native Plant Society

The CNPS is a private plant conservation organization dedicated to the monitoring and protection of sensitive species in the state. This organization has compiled an inventory comprised of the information focusing upon geographic distribution and qualitative characterization of rare, threatened, or endangered vascular plant species of California (Tibor 2001). The list serves as the candidate list for listing as threatened and endangered by the CDFW. The CNPS has developed five categories of rarity (California Rare Plant Rank [CRPR]):

CRPR 1A	Presumed extinct in California
CRPR 1B	Rare, threatened, or endangered in California and elsewhere
CRPR 2A	Plants presumed extirpated in California but common elsewhere
CRPR 2B	Plants rare, threatened, or endangered in California but more common elsewhere
CRPR 3	Plants about which we need more information – a review list
CRPR 4	Species of limited distribution in California (i.e., naturally rare in the wild), but whose existence does not appear to be susceptible to threat

As stated by the CNPS:

Threat Rank is an extension added onto the California Rare Plant Rank and designates the level of endangerment by a 1 to 3 ranking with 1 being the most endangered and 3 being the least endangered. A Threat Rank is present for all California Rare Plant Rank 1B, 2, 4, and the majority of California Rare Plant Rank 3. California Rare Plant Rank 4 plants are seldom assigned a Threat Rank of 0.1, as they generally have large enough populations to not have significant threats to their continued existence in California; however, certain conditions exist to make the plant a species of concern and hence be assigned a California Rare Plant Rank. In addition, all California Rare Plant Rank 1A (presumed extinct in California), and some California Rare Plant Rank 3 (need more information) plants, which lack threat information, do not have a Threat Rank extension (CNPS 2012).

0.1	Seriously threatened in California (over 80 percent of occurrences threatened/high degree and immediacy of threat)
0.2	Fairly threatened in California (20-80 percent occurrences threatened/moderate degree and immediacy of threat)
0.3	Not very threatened in California (<20 percent of occurrences threatened/low degree and immediacy of threat or no current threats known)

POTENTIALLY SENSITIVE SPECIES/RESOURCES

Determinations of MSHCP sensitive species that could potentially occur on the Project Site are based on one or both of the following: (1) a record reported in the CNDDDB or CNPS inventory and; (2) the Project Site is within the known distribution of a species and contains suitable habitat or species documented onsite.

Sensitive Plant Communities

As stated by CDFG:

“One purpose of the vegetation classification is to assist in determining the level of rarity and imperilment of vegetation types. Ranking of alliances according to their degree of imperilment (as measured by rarity, trends, and threats) follows NatureServe’s Heritage Methodology, in which all alliances are listed with a G (global) and S (state) rank. For alliances with State ranks of S1-S3, all associations within them are also considered to be highly imperiled” (CDFG 2012)

No sensitive plant communities were documented onsite.

Sensitive Plant Species

The Project Site does not occur within a predetermined Survey Area for criteria area species (RCA GIS Data Downloads 2020). No additional surveys are required.

The Project Site does not occur within a predetermined Survey Area for narrow endemic plant species (RCA GIS Data Downloads 2020). No additional surveys are required.

Sensitive Wildlife Species

The Project Site does not occur within a predetermined Survey Area for amphibians (RCA GIS Data Downloads 2020). No additional surveys are required.

The Project Site does not occur within a predetermined Survey Area for mammals (RCA GIS Data Downloads 2020). No additional surveys are required.

The Project Site does not occur within a predetermined Survey Area for the burrowing owl (*Athene cunicularia*) (RCA GIS Data Downloads 2020). No additional surveys are required.

No suitable riparian scrub, forest or woodland habitat for the least Bell’s vireo (*Vireo bellii pusillus*), southwestern willow flycatcher (*Empidonax traillii extimus*) or western yellow-billed cuckoo (*Coccyzus americanus*) was documented within or adjacent to the Project Site as shown in Attachment B, *Biological Resources Map*, and Attachments D and E, *Current Project Site Photographs*.

The Project Site falls within the Stephens' kangaroo rat (*Dipodomys stephensi*, SKR) Fee Area outlined in the Riverside County SKR Habitat Conservation Plan (HCP).

Nesting Bird Habitat

The single Eucalyptus tree documented within the Rider Street right-of-way represents potential nesting habitat for common raptor species. Potential direct/indirect impacts to regulated nesting birds will require compliance with California Department of Fish and Game (CDFG) Code Sections 3503, 3503.5, and 3513.

MSHCP Riparian, Riverine, Vernal Pool Resources

No MSHCP Section 6.1.2 riparian, riverine, or vernal pool resources were documented within or adjacent to the project site. An MSHCP Determination of Biological Equivalent or Superior Preservation (DBESP) is not required.

Jurisdictional Resources

No features located within and immediately adjacent to the project site represent jurisdictional resources which may be regulated by the Santa Ana Regional Water Quality Control Board, California Department of Fish and Wildlife and United States Army Corps of Engineers. A formal jurisdictional delineation will not be required.

SUMMARY OF COMPLIANCE WITH MSHCP POLICIES

The purpose of this report is to document the existing biological resources, identify general vegetation types, and assess the potential biological and regulatory constraints associated with the proposed development within the Project Site as outlined by the MSHCP. The following sections summarize the Project Site's relationship to MSHCP criteria areas and MSHCP compliance guidelines.

CRITERIA AREAS

The 2.1-acre Project Site is located within the Western Riverside County MSHCP Mead Valley Area Plan. The Project Site is not located within an MSHCP Criteria Area, Cell Group, or Linkage Area.

No MSHCP Habitat Evaluation and Acquisition Negotiation Strategy (HANS) or Joint Project Review (JPR) are required.

CRITERIA AREA SPECIES SURVEY AREA

The Project Site does not occur within a predetermined Survey Area for criteria area species; therefore, no surveys are required (RCA GIS Data Downloads 2020).

The project is compliant with MSHCP Section 6.3.2.

NARROW ENDEMIC PLANT SPECIES SURVEY AREA

The Project Site does not occur within a predetermined Survey Area for narrow endemic plant species; therefore, no surveys are required (RCA GIS Data Downloads 2020).

The project is compliant with MSHCP Section 6.3.2.

AMPHIBIAN SPECIES SURVEY AREA

The Project Site does not occur within the Amphibian Species Survey Area; therefore, no surveys are required (RCA GIS Data Downloads 2020).

The project is compliant with MSHCP Section 6.3.2.

MAMMAL SPECIES SURVEY AREA

The Project Site does not occur within the Mammal Species Survey Area; therefore, no surveys are required (RCA GIS Data Downloads 2020).

The project is compliant with MSHCP Section 6.3.2.

BURROWING OWL SURVEY AREA

The Project Site does not occur within a predetermined Survey Area for the burrowing owl; therefore, no surveys are required (RCA GIS Data Downloads 2020).

The project is compliant with MSHCP Section 6.3.2.

MSHCP RIPARIAN/RIVERINE AREAS AND VERNAL POOLS

No MSHCP Section 6.1.2 riparian, riverine, or vernal pool resources were documented within or adjacent to the project site. No suitable riparian scrub, forest or woodland habitat for the least Bell's vireo, southwestern willow flycatcher or western yellow-billed cuckoo was documented within or adjacent to the Project Site.

The project is compliant with MSHCP Section 6.1.2.

URBAN/WILDLANDS INTERFACE

The MSHCP Urban/Wildlands Interface guidelines presented in Section 6.1.4 are intended to address indirect effects associated with locating commercial, mixed uses and residential developments in proximity to a MSHCP Conservation Area. The Project Site is not located adjacent to an existing or proposed MSHCP Conservation Area.

The project is consistent with MSHCP Section 6.1.4.

FUELS MANAGEMENT

The fuels management guidelines presented in Section 6.4 of the MSHCP are intended to address brush management activities around new development within or adjacent to MSHCP Conservation Areas. The Project Site is not located adjacent to an existing or proposed MSHCP Conservation Area.

The project is consistent with MSHCP Section 6.4.

CONDITIONS OF APPROVAL & AVOIDANCE MEASURES

The following section summarizes conditions of approval and mitigation measures which will need to be implemented to ensure development of the Project Site remains in compliance with CEQA and MSHCP guidelines.

MSHCP Local Development Mitigation Fee

The project applicant shall pay MSHCP Local Development Mitigation fees as established and implemented by the City of Perris.

SKR Mitigation Fee

The Project Site falls within the SKR Fee Area outlined in the Riverside County SKR HCP. The project applicant shall pay the fees pursuant to County Ordinance 663.10 for the SKR HCP Fee Assessment Area as established and implemented by the County of Riverside.

CDFG Code Sections 3503, 3503.5, and 3513 Compliance

Avoidance measures for potential direct/indirect impacts on common and MSHCP covered nesting bird and raptor species will require compliance with the California Department of Fish and Game Code Sections 3503, 3503.5, and 3513. Construction outside the nesting season (between September 16th and January 31st do not require pre-removal nesting bird surveys). If construction is proposed between February 1st and September 15th, a qualified biologist must conduct a nesting bird survey(s) no more than three (3) days prior to initiation of grading to document the presence or absence of nesting birds within or directly adjacent (100 feet) to the Project Site.

The survey(s) would focus on identifying any bird or raptor nests that would be directly or indirectly affected by construction activities. If active nests are documented, species-specific measures shall be prepared by a qualified biologist and implemented to prevent abandonment of the active nest. At a minimum, grading in the vicinity of a nest shall be deterred until the young birds have fledged. A minimum exclusion buffer of 100 feet shall be maintained during construction, depending on the species and location. The perimeter of the nest setback zone shall be fenced or adequately demarcated with stakes and flagging at 20-foot intervals, and construction personnel and activities restricted from the area. A survey report by a qualified biologist verifying that no active nests are present, or that the young have fledged, shall be submitted to the City of Perris for review and

approval prior to initiation of grading in the nest-setback zone. The qualified biologist shall serve as a construction monitor during those periods when construction activities occur near active nest areas to ensure that no inadvertent impacts on these nests occur

Any nest permanently vacated for the season would not warrant protection pursuant to the CDFG Code Sections 3503, 3503.5, and 3513.

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ATTACHMENTS

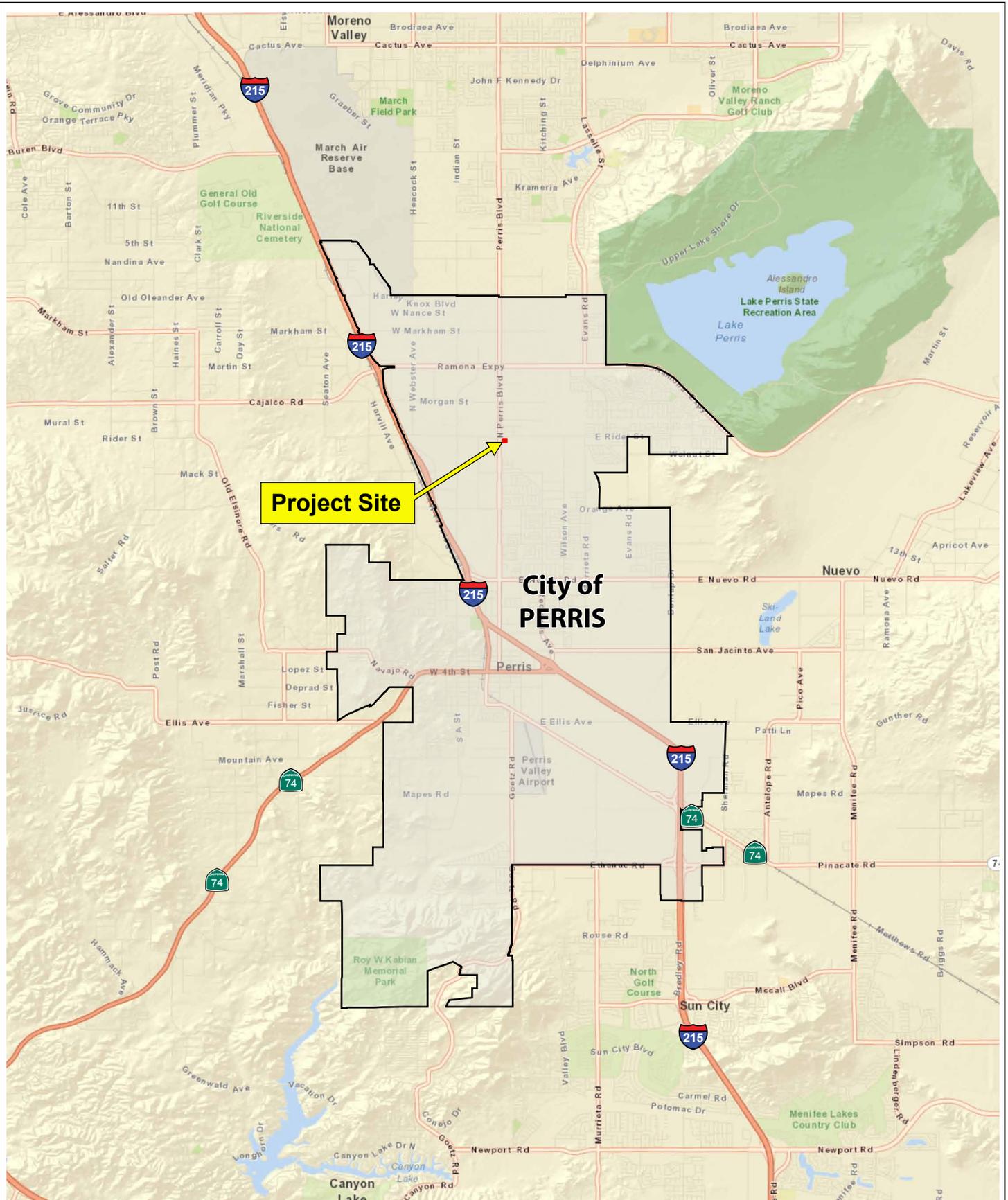
- A – Regional Location Map
- B – Biological Resources Map
- C – MSHCP Relationship Map
- D – Current Project Site Photographs
- E – Current Project Site Photographs

Certification

“I hereby certify that the statements furnished above and in the attached exhibits present the data and information required for this biological evaluation, and that the facts, statements, and information presented are true and correct to the best of my knowledge”

Author:  Date: August 7th, 2020

Fieldwork Performed by:  Date: August 7th, 2020



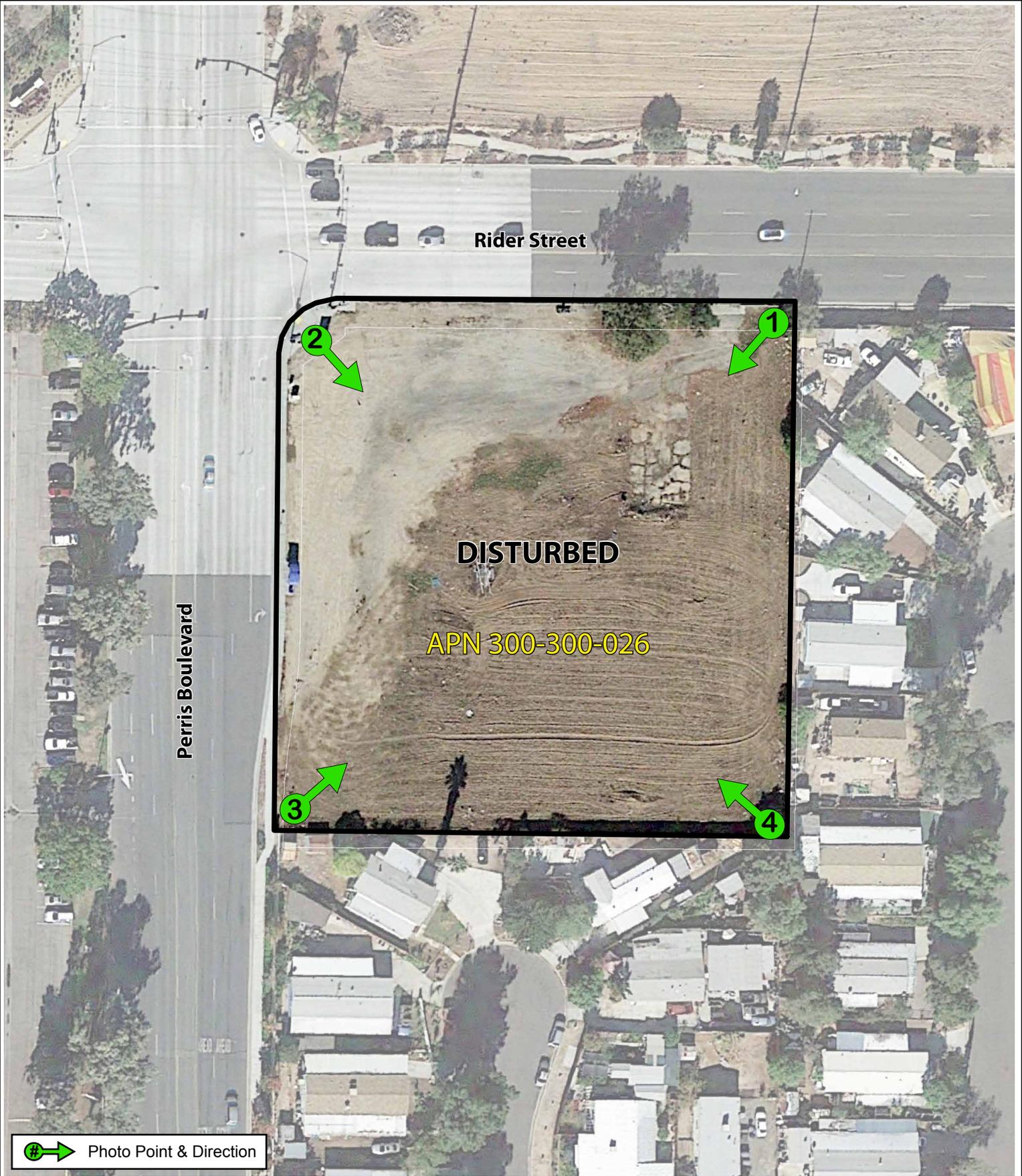
APN 300-300-026

Attachment A - Regional Location Map

*MSHCP Habitat Assessment & Compliance Analysis
Perris Boulevard/Rider Street Property*



not to scale



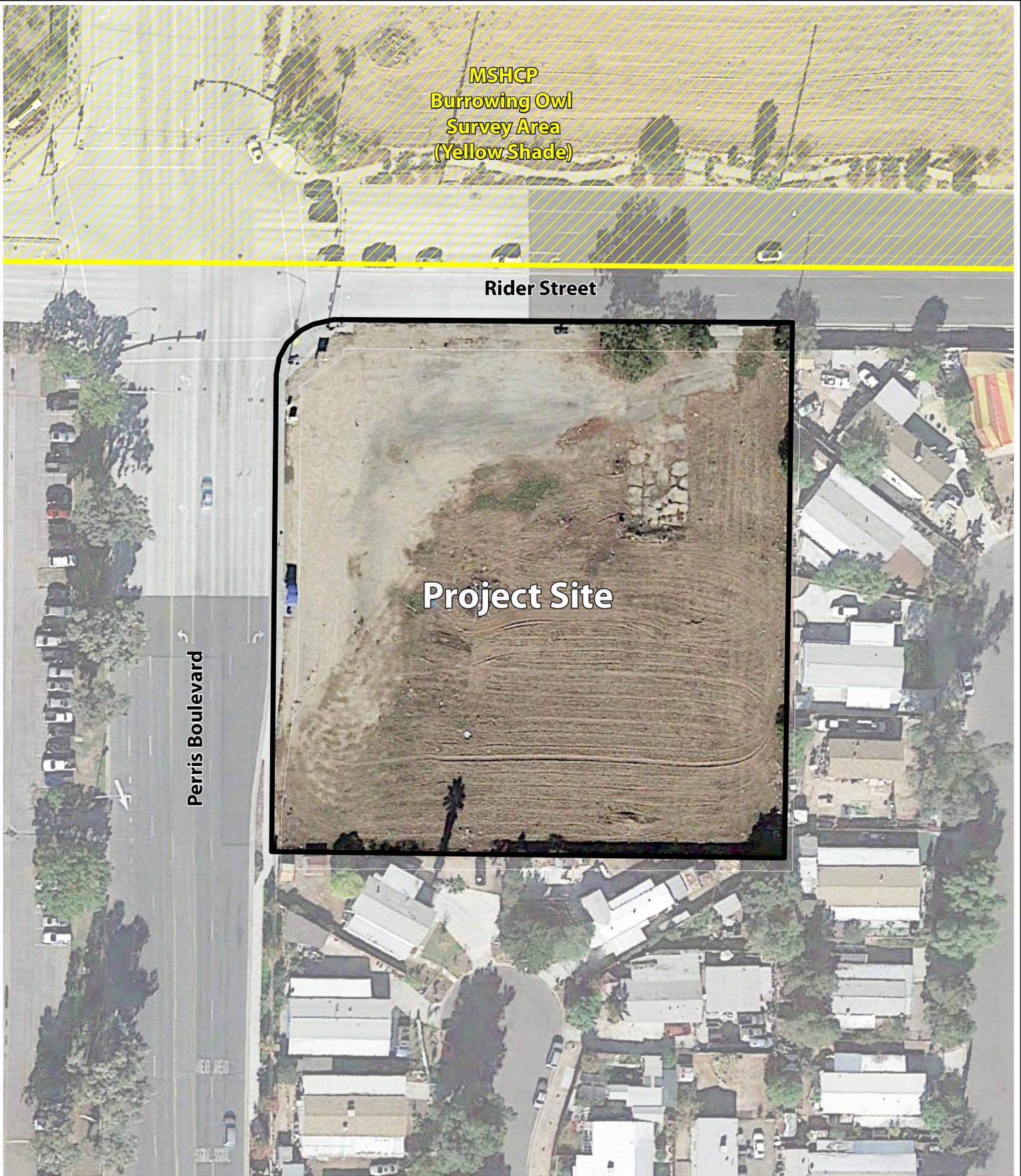
→ Photo Point & Direction

▭ Project Site

Attachment B - Biological Resources Map

*MSHCP Habitat Assessment & Compliance Analysis
Perris Boulevard/Rider Street Property*





MSHCP
Burrowing Owl
Survey Area
(Yellow Shade)

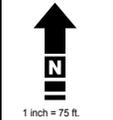
Rider Street

Project Site

Perris Boulevard

 Project Site

Attachment C - MSHCP Relationship Map
MSHCP Habitat Assessment & Compliance Analysis
Perris Boulevard/Rider Street Property





PHOTOGRAPH 1



PHOTOGRAPH 2

Refer to Attachment B for Photographic Key Map

Attachment D - Current Project Site Photographs

*MSHCP Habitat Assessment & Compliance Analysis
Perris Boulevard/Rider Street Property*





PHOTOGRAPH 3



PHOTOGRAPH 4

Refer to Attachment B for Photographic Key Map

Attachment E - Current Project Site Photographs

*MSHCP Habitat Assessment & Compliance Analysis
Perris Boulevard/Rider Street Property*



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October 30, 2020

Mr. Jack Lee
Amazon Financial Corp.
11855 Goshen Avenue, # 103
Los Angeles, California 90049

Subject: Paleontological resource and monitoring assessment, Perris/Rider Center project, City of Perris, Riverside County, California (APN 300-300-026)

Dear Mr. Lee:

A paleontological resource and monitoring assessment for the Perris/Rider Center project site (Assessor's Parcel Number [APN] 300-300-026) in the City of Perris has been completed. The site comprises approximately two acres at the southeast corner of the intersection of Perris Boulevard and Rider Street in Perris. On the U. S. Geological Survey 7.5' Perris, Calif. topographic quadrangle, the site is located in the extreme northwest corner of Section 17, Township 4 South, Range 3 West, San Bernardino Base and Meridian (Attachments 1 and 2). The assessment was based on a previous record search in the area (attached) and on environmental considerations as outlined in the Conservation Element of the City of Perris General Plan, adopted by the Perris City Council on July 12, 2005.

The most recent geologic maps of the area (Morton, 2003, Preliminary geologic map of the Perris 7.5' quadrangle, Riverside County, California: U. S. Geological Survey [USGS] Open-File Report 03-270; and Morton, 2004, Preliminary digital geologic map of the Santa Ana 30' x 60' quadrangle: USGS Open-File Report) show surface exposures of a single geologic formation at the project site, consisting of lower and middle Pleistocene (approximately 1.8 million to perhaps 200,000 to 300,000 year old) sandy alluvial fan deposits (Attachment 3, after Morton, 2003, as Qvof_a). Holocene (<10,000 year old) alluvial valley deposits (Qyv_{sa}), which may be present as a veneer over the older alluvial fan deposits, are present about half a mile to the east of the project site.

The Conservation Element of the City of Perris General Plan adopted on July 12, 2005, contains a section on Paleontological Resources (pages 26, 27 {Exhibit CN-7, "Paleontological Sensitivity"}), and on "Goals, Policies and Implementation Measures" (page 43) that need to be implemented for construction related projects that might adversely affect nonrenewable paleontological resources (*i.e.* fossils). As shown on the Exhibit CN-7 paleontological sensitivity map, the site of the Perris/Rider Center project is located within Area 1, which exhibits exposures of older Pleistocene valley deposits that are assigned a High Paleontological Sensitivity. These deposits have high potential to contain significant fossil resources. Implementation Measure IV.A.4 (under Goal IV – Cultural Resources [Protection of ... paleontological sites.], Policy IV.A [Comply with state and federal regulations and ensure

preservation of the significant ... paleontological resources.]) states: “In Area 1 and Area 2 shown on the Paleontological Sensitivity Map [*i.e.*, Exhibit CN-7 on page 27 of the Conservation Element], paleontologic monitoring of all projects requiring subsurface excavations will be required once any excavation begins.” In cultural resource management, “excavation” typically includes mass grading activities, as well as basement and/or footing excavations and utility trenching activities.

A previous paleontological literature and collections and records search conducted by the Geological Sciences Division of the San Bernardino County Museum in Redlands, California, of a nearby property to the northeast (Stratford Ranch project, attached), did not identify any known fossil localities in the formational units (*i.e.*, “alluvial valley deposits” and “alluvial fan deposits”) in the vicinity of the subject property. Although Holocene alluvium (*i.e.*, alluvial valley deposits) is generally considered to have been too recently deposited to have potential to contain fossil resources and is typically assigned a “low paleontological resource sensitivity,” older (Pleistocene) alluvial fan deposits do have a high potential to contain significant nonrenewable paleontological resources (*i.e.*, fossils), are assigned a “high paleontological resource sensitivity,” and typically require paleontological monitoring. Similarly mapped Pleistocene sediments throughout the lowland (valley) areas of Riverside County and the Inland Empire have been reported to yield significant fossil remains, particularly extinct terrestrial mammals from the last Ice Age, such as mammoths, mastodons, giant ground sloths, dire wolves, sabre-toothed cats, large and small horses, camels, and bison.

A Paleontological Sensitivity Report generated by the Riverside County Land Information System on March 24, 2008, also assigns a High Paleontological Sensitivity (High B) to the project site.

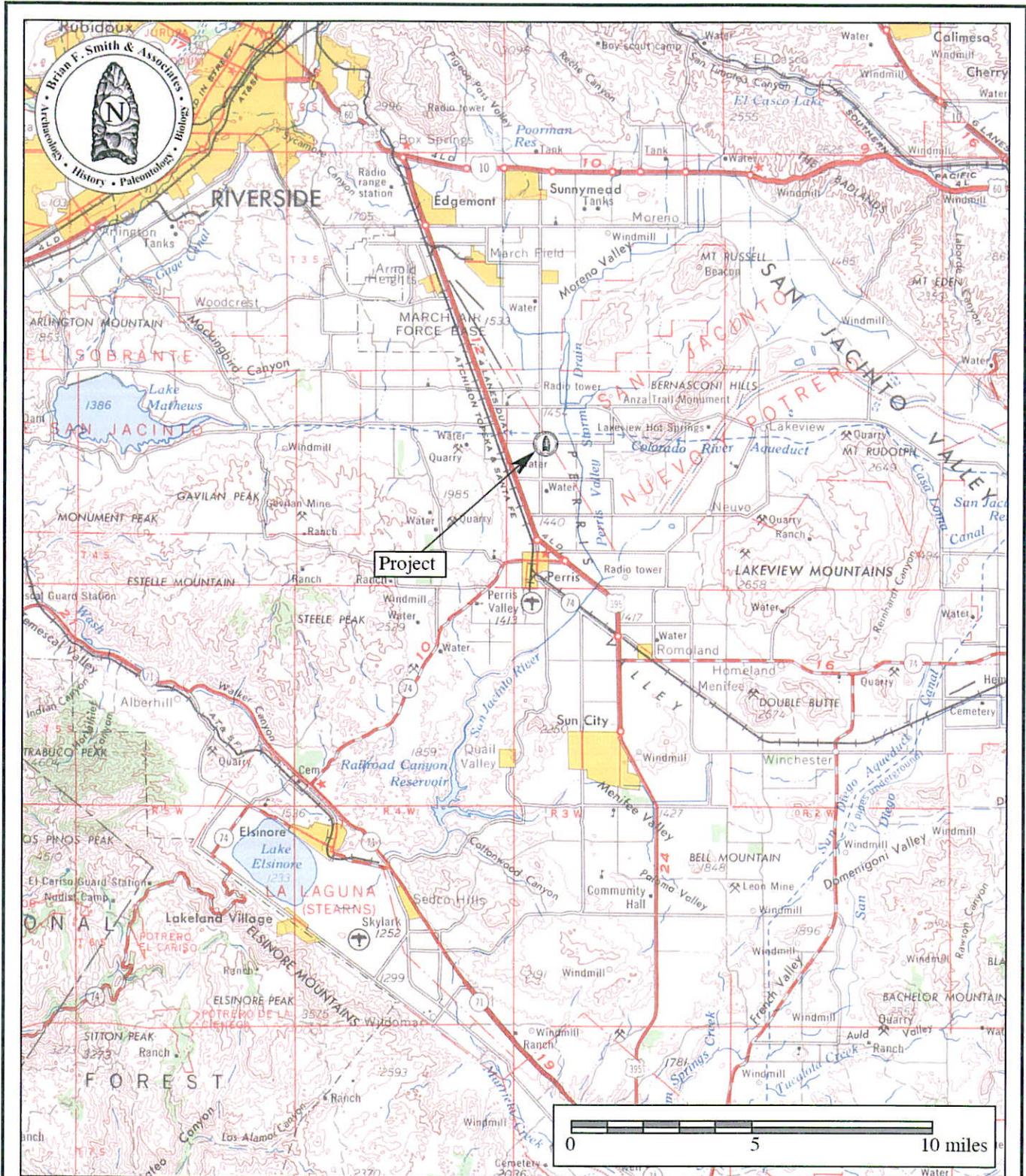
Based on the results of this evaluation, and on the environmental requirements outlined in the Conservation Element of the City of Perris General Plan, the project site is located within areas assigned a high paleontological sensitivity, and therefore will require paleontological monitoring of all excavation related activities during the early phases of construction for this project.

If you have any questions concerning this evaluation, please feel free to contact us at our Poway address. Thank you for the opportunity to provide paleontological services for this project.

Sincerely,

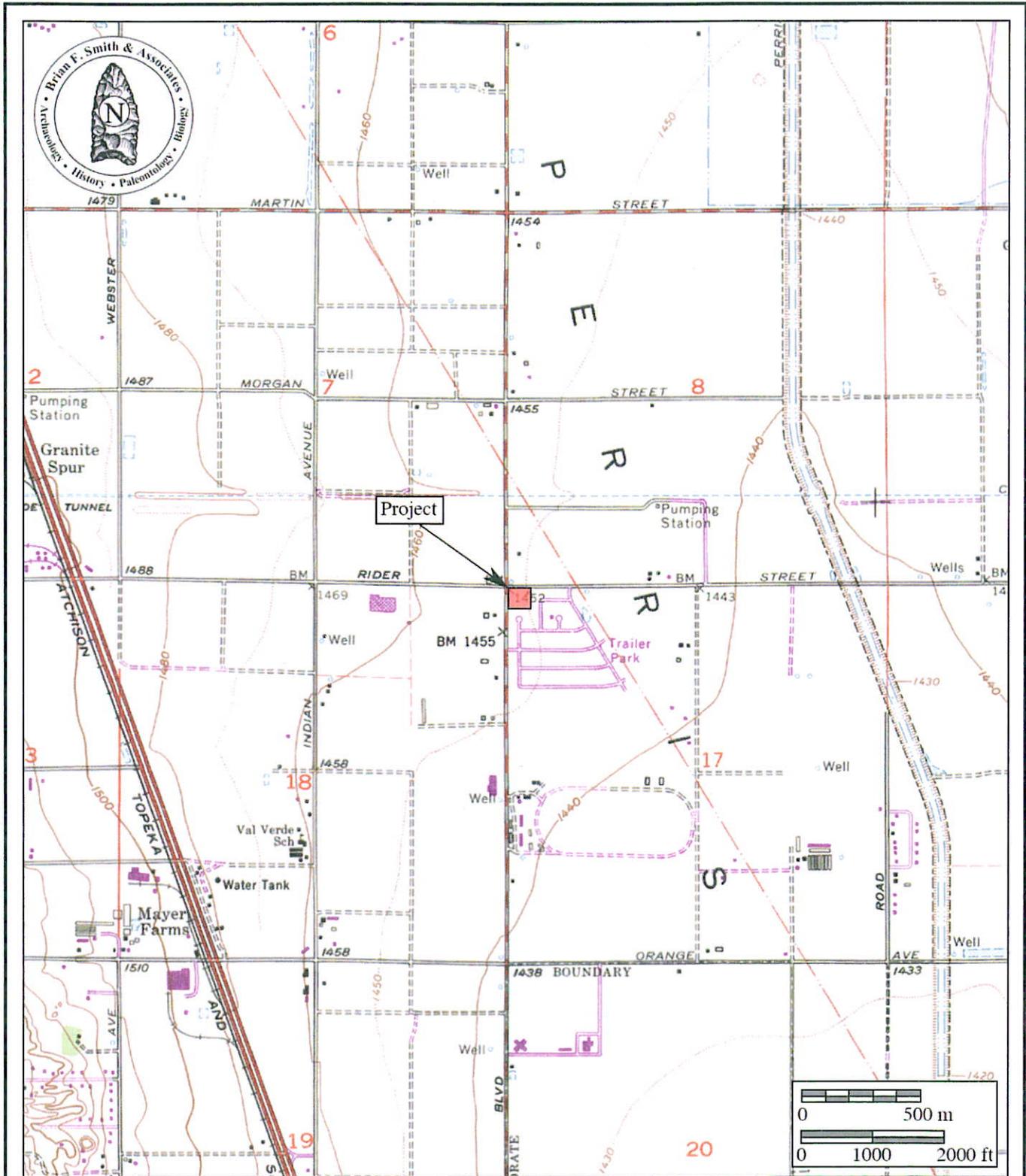


George L. Kennedy, Ph.D.
Senior Paleontologist



Attachment 1
General Location Map
 The Perris/Rider Center Project

USGS San Bernardino and Santa Ana (1:250,000 series)

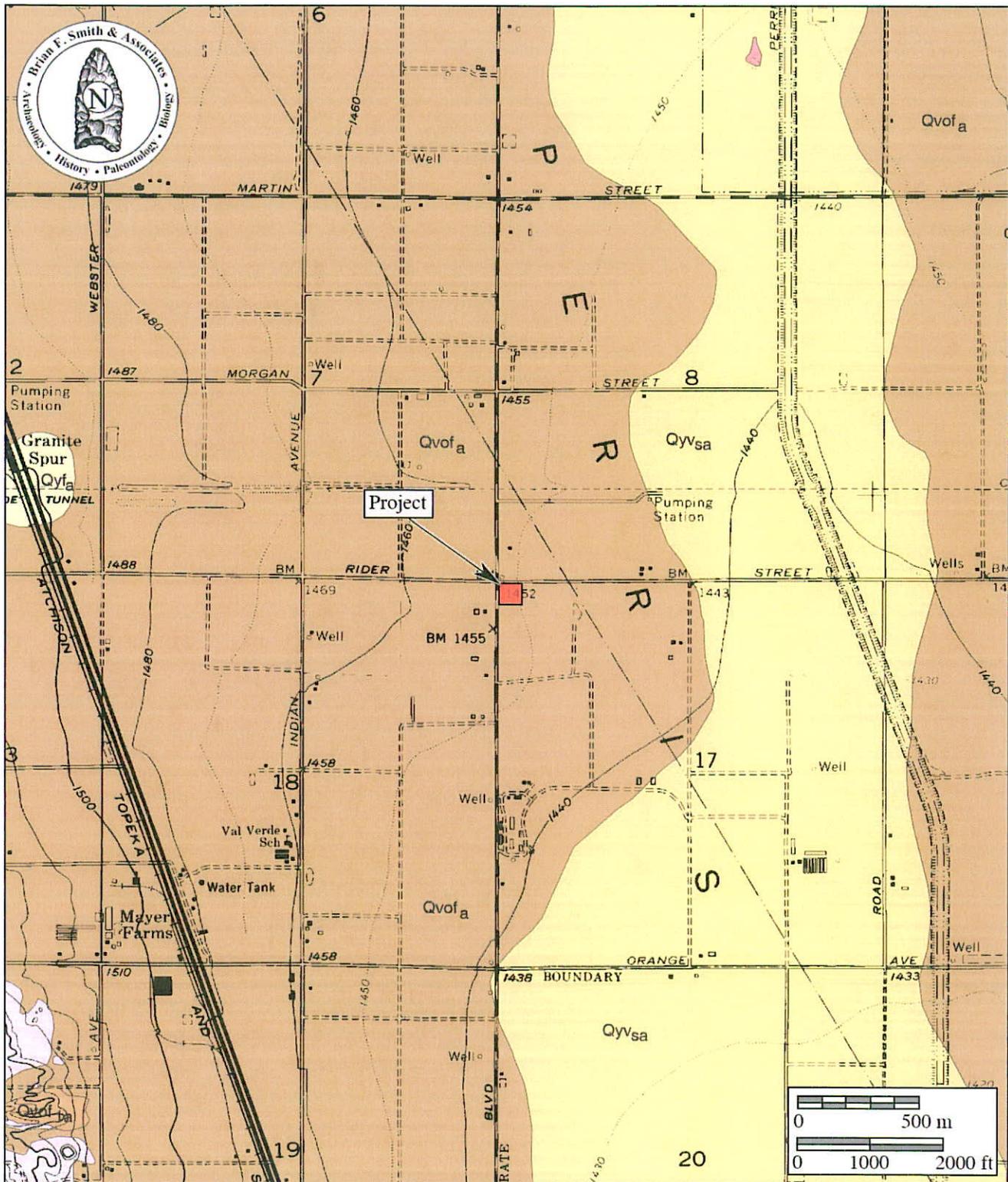


Attachment 2

Project Location Map

The Perris/Rider Center Project

USGS Perris, Calif. Quadrangle (7.5 minute series)



Attachment 3

Geologic Map

The Perris/Rider Center Project

Geology after Morton, 1996



SAN BERNARDINO COUNTY MUSEUM

2024 Orange Tree Lane • Redlands, California USA 92374-4560
(909) 307-2669 • Fax (909) 307-0539 • www.sbcountymuseum.org



COUNTY OF SAN BERNARDINO
ECONOMIC DEVELOPMENT
AND PUBLIC SERVICES GROUP

ROBERT L. McKERNAN
Director

11 January 2005

Brian F. Smith & Associates
attn: George L. Kennedy, Ph.D.
14010 Poway Road, Suite "A"
Poway, CA 92064

re: **PALEONTOLOGY LITERATURE AND RECORDS REVIEW, STRATFORD RANCH PROJECT (BFSA # 04-175), PERRIS REGION, RIVERSIDE COUNTY, CALIFORNIA**

Dear Dr. Kennedy,

The Division of Geological Sciences of the San Bernardino County Museum (SBCM) has completed a literature review and records search for the above-named property north of the City of Perris, Riverside County, California. The study area is located in the western portion of section 5, Township 4 South, Range 3 West, San Bernardino Base and Meridian, as seen on the Perris, California 7.5' United States Geological Survey topographic quadrangle map (1967 edition, photorevised 1973).

Previous geologic mapping (Rogers, 1965; Morton, 2004) indicates that the proposed study area is located primarily upon surface and subsurface early to middle Pleistocene alluvial fan deposits (= unit **Qvof_a**), overlain in the eastern portion of the property by a thin veneer of Holocene alluvial valley deposits (= **Qyv_{sa}**). The Holocene alluvium is too recently deposited to have potential to contain fossil resources, and so is assigned low paleontologic sensitivity. However, the older Pleistocene alluvial deposits have high potential to contain significant nonrenewable paleontologic resources, and so are assigned high paleontologic sensitivity. Similar older Pleistocene sediments throughout Riverside County and the Inland Empire have been reported to yield significant fossils of plants and extinct animals from the Ice Age (Jefferson, 1991; Reynolds and Reynolds, 1991; Woodburne, 1991; Springer and Scott, 1994; Scott, 1997; Springer and others, 1998, 1999; Anderson and others, 2002). Fossils recovered from these Pleistocene sediments represent extinct taxa including mammoths, mastodons, ground sloths, dire wolves, short-faced bears, sabre-toothed cats, large and small horses, large and small camels, and bison (Springer and Scott, 1994; Scott, 1997; Springer and others, 1998, 1999; Anderson and others, 2002).

For this review, I conducted a search of the Regional Paleontologic Locality Inventory (RPLI) at the SBCM. The results of this search indicate that no previously-known paleontologic resource localities are recorded by the SBCM from within the study area, nor from within at least one mile in any direction.

Recommendations

The results of the literature review and the check of the RPLI at the SBCM demonstrate that excavation in conjunction with development may have high potential to adversely impact significant nonrenewable paleontologic resources present within the boundaries of the proposed Stratford Ranch development. A qualified vertebrate paleontologist must be retained to develop a program to mitigate impacts to such resources. This mitigation program should be consistent with the provisions of the California Environmental Quality Act (Scott and Springer, 2003), as well as with regulations currently implemented by the County of Riverside and the proposed guidelines of the Society of Vertebrate Paleontology. This program should include, but not be limited to:

1. Monitoring of excavation in areas identified as likely to contain paleontologic resources by a qualified paleontologic monitor. Based upon the results of this review, areas of concern include all previously-undisturbed sediments of fossiliferous Pleistocene older alluvium present within the boundaries of the property. Paleontologic monitors should be equipped to salvage fossils as they are unearthed to avoid construction delays and to remove samples of sediments that are likely to contain the remains of small fossil invertebrates and vertebrates. Monitors must be empowered to temporarily halt or divert equipment to allow removal of abundant or large specimens. Monitoring may be reduced if the potentially-fossiliferous units described herein are not present, or if present are determined upon exposure and examination by qualified paleontologic personnel to have low potential to contain fossil resources.
2. Preparation of recovered specimens to a point of identification and permanent preservation, including washing of sediments to recover small invertebrates and vertebrates.
3. Identification and curation of specimens into an established, accredited museum repository with permanent retrievable paleontologic storage (e.g., SBCM). The paleontologist must have a written repository agreement in hand prior to the initiation of mitigation activities. Mitigation of adverse impacts to significant paleontologic resources is not complete until such curation into an established museum repository has been fully completed and documented.
4. Preparation of a report of findings with an appended itemized inventory of specimens. The report and inventory, when submitted to the appropriate Lead Agency along with confirmation of the curation of recovered specimens into an established, accredited museum repository, will signify completion of the program to mitigate impacts to paleontologic resources.

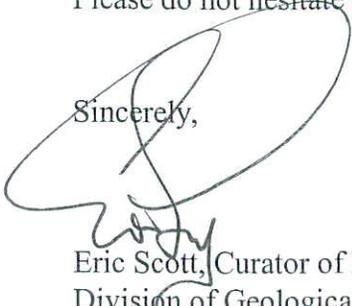
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Please do not hesitate to contact us with any further questions you may have.

Sincerely,



Eric Scott, Curator of Paleontology
Division of Geological Sciences
San Bernardino County Museum

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7-Eleven Project
23 East Rider Street, Perris, CA
CUP19-05281 and SPA19-05282
Noise Impact Analysis Report

September 11, 2020

Reviewing Agency:

City of Perris
101 N. D Street
Perris, California 92570

Project Applicant:

Tait and Associates
701 N. Parkcenter Drive
Santa Ana, California 92705

Prepared by:



1650 Spruce Street, Suite 102
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Appendix D: Resume for Chris Dugan, MIG

List of Acronyms, Abbreviations, and Symbols	
Acronym / Abbreviation	Full Phrase or Description
§	Section
ADA	Americans with Disabilities Act
ALUC	Airport Land Use Commission
ALUCP	Airport Land Use Compatibility Plan
APN	Assessor's Parcel Number
AOZ	Airport Overlay Zone
APZ	Airport Protection Zone
BPO	Business/Professional Office (PVCC Specific Plan designation)
CalEEMod	California Emission Estimator Model
Caltrans	California Department of Transportation
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CN	Commercial Neighborhood (zoning designation)
CNEL	Community Noise Equivalent Level
CUP	Conditional Use Permit
dB	Decibel (unweighted)
dBA	Decibels, A-Weighted
DNL / Ldn	Day-Night Noise Level
FHWA	Federal Highway Works Administration
HUD	U.S. Department of Housing and Urban Development
Hz	Hertz
kH	Kilohertz
L_{eq}	Average / Equivalent Noise Level
L_{max}	Maximum Noise Level
L_{min}	Minimum Noise Level
March ARB/IP	March Air Reserve Base/Inland Port
MPH	Miles Per Hour
NC	Neighborhood Commercial (General Plan designation)
OITC	Outside-Indoor Transmission Class
Pa	Pascals
PRC	Public Resources Code
PPV	Peak Particle Velocity (inches/second)
PVCC	Perris Valley Commerce Center

List of Acronyms, Abbreviations, and Symbols	
Acronym / Abbreviation	Full Phrase or Description
ROW	Right-of-Way
Report	Noise and Vibration Impact Analysis Report
SPA	Specific Plan Amendment
STC	Sound Transmission Class
UST	Underground Storage Tank
VMT	Vehicle Miles Travelled

EXECUTIVE SUMMARY

This Noise Impact Analysis Report (Report) evaluates and documents noise levels associated with the operation of a proposed convenience store, fueling station, and car wash project (proposed Project) at 23 East Rider Street in Perris, California.

This Report is intended to assist the CEQA Lead Agency (City of Perris) with its review of the proposed Project's potential noise and vibration impacts in compliance with the State CEQA Statutes and Guidelines, particularly in respect to the noise and vibration issues identified in Appendix G of the State CEQA Guidelines.

S.1 PROPOSED PROJECT DESCRIPTION

Tait & Associates, Inc. has submitted a Condition Use Permit (CUP) and Specific Plan Amendment application to the City of Perris Planning Division for a proposed convenience store with fuel pumps and an automated car wash (CUP 2019-05281 and SPA 2019-05282). The proposed facilities would include a 3,227 square-foot 7-Eleven building, 2,720 square-foot fueling canopy (with six fuel dispensing stations and 12 total fuel pumps), and a 991 square-foot automated car wash. The proposed Project would be located at 23 East Rider Street. The Project site consists of undeveloped commercial land at the southeast corner of North Perris Boulevard and East Rider Street, in the northern part of the City. The site is bordered on the north by East Rider Street, on the south by single family residences (on Santo Tomas Avenue), on the east by single-family residences (on El Rosario Drive), and on the west by North Perris Boulevard. There are low density residential lands to the east and south and commercial and light industrial lands to the north and west (i.e., across North Perris Boulevard and East Perris Street). March Air Reserve Base/Inland Port (March ARB/IP) is located approximately 2.5 miles northwest of the Project site. Construction of the Project is anticipated to start as early as the 4th quarter of 2020 and take approximately 12 months to complete.

S.2 POTENTIAL CONSTRUCTION NOISE AND VIBRATION IMPACTS

The proposed Project's construction noise and vibration levels were estimated based on the typical construction activities associated with a commercial development project. Potential construction noise and vibration levels were estimated for worst-case equipment operations (50 feet from any property line), average equipment operations based on the distance from the center of the site to adjacent residential property lines (approximately 100 to 160 feet), and the shortest distance between the Project site and the nearest non-residential sensitive noise receptor (approximately 250 feet north of the Project site).

Section 7.34.060 of the City's Municipal Code sets forth that construction noise levels are exempt from City noise standards provided the activities take place between 7 AM and 7 PM, Monday to Saturday, and do not create noise levels that exceed 80 dBA in residential zones; however, the Applicant has designed the Project to minimize potential construction noise and vibration levels. Substantial site preparation and grading would not be required since the Project site is flat. The use of tilt-up concrete and wood panels for building walls and other components partially eliminates on-site fabrication of exterior walls and reduces the amount of equipment needed to erect the building. Finally, the Applicant has incorporated the following construction noise control measures/best management practices (BMPs) into the Project to reduce construction noise levels at the Project's eastern and southern residential property lines. These BMPs require the use of construction management and equipment controls to reduce potential noise from construction activities. The BMPs restrict work hours in accordance with the Municipal Code, require staging and stationary noise sources to be located as far from neighboring land uses as possible, and

require a temporary noise barrier be erected along the southern property line capable of reducing noise levels by 10 dBA. The BMPs would render the proposed Project's construction noise levels consistent with Section 7.34.060 of the City's Municipal Code.

The proposed Project's site preparation, grading, and other construction activities that could result in ground-borne vibration would occur at least 25 feet from any adjacent structure. At this distance, potential construction-related groundborne vibration levels would likely be perceptible at residential structures adjacent to the Project site's eastern and southern property lines; however, vibration levels would not be excessive because any equipment operation near property lines would be short in duration, intermittent (lasting only a few hours or days in work areas near adjacent structures) and would not result in structural damage.

S.3 POTENTIAL OPERATIONAL NOISE IMPACTS

Once constructed, the proposed Project would generate noise from on-site vehicle trips and parking activities, fuel truck deliveries, heating, ventilation, and air conditioning (HVAC) equipment, vacuum operations, and car wash operations. The potential increase in noise resulting from these activities was estimated using the guidance and recommendations contained in the Caltrans Technical Noise Supplement (Caltrans, 2013) and available manufacturer's data for HVAC, vacuum, and car wash noise levels. The proposed Project's operational noise estimates indicate the proposed Project would not generate noise levels that exceed the City's 80 dBA L_{max} daytime standard; however, car wash operations could exceed the City's 60 dBA L_{max} nighttime standard for residential land uses if the car wash were to operate at night. In addition, with 24-hour operation, the proposed Project could cause the existing ambient noise levels at the Project's southern residential property line to increase by up to 2.5 dBA (from 66 CNEL to 68.5 CNEL) and remain at a "Normally Unacceptable" level (65 to 75 CNEL). Due to the high ambient noise level already present at and near the Project site, a 2.5 dBA increase in 24-hour noise levels is considered substantial. To ensure the proposed Project does not produce noise levels that would exceed a City standard or otherwise result in a substantial permanent increase in noise levels in the vicinity of the project, MIG recommends the Applicant prepare and submit a final acoustical analysis, report, or other documentation that verifies final equipment noise levels and limits car wash-related noise levels to no more than 60 dBA L_{max} or less during the nighttime period (10 PM to 7 AM) by: 1) prohibiting operations during this time; 2) installing acoustical treatments as part of the car wash that achieve the 60 dBA L_{max} standard, or 3) installing a physical noise barrier along the Project site's southern property line and a portion of its eastern property line capable of achieving the 60 dBA L_{max} standard. The BMPs would render the proposed Project's operational noise levels consistent with Section 7.34.040 and 7.34.050 of the City's Municipal Code and ensure the proposed Project would not generate a substantial increase in ambient noise levels from on-site operations. The proposed Project would not result in substantial off-site operational noise levels because it would not generate substantial levels of vehicle traffic on nearby roadways. The proposed Project would also not result in significant operational vibration levels because it does not involve the use of large or vibration-inducing equipment during operations.

S.4 AIRPORT NOISE-RELATED IMPACTS

The proposed Project is located approximately 2.5 miles southeast of March ARB/IP and is within March ARB/IP Airport Land Use Compatibility Plan (ALUCP) Zone B1 (Inner Approach/Departure Zone) and Airport Protection Zone II. The Project site lies within the 65 CNEL noise contour associated with March ARB/IP, meaning airport-related noise levels are between 65 CNEL and 70 CNEL. The Riverside County Airport Land Use Commission will review the proposed Project for compatibility with the March

ABR/IP ALUCP, including the basic compatibility factors and criteria established by Tables MA-1 and MA-2 of the ALUCP. Both the ALUCP and the Perris Valley Commerce Center Specific Plan (PVCC SP) require all building office areas to be constructed with appropriate noise attenuation measures that meet a 45 CNEL interior noise level. The proposed Project, therefore, may require an exterior to interior airport noise level reduction of up to 25 CNEL to meet ALUCP computability requirements even though it is not a noise-sensitive land use that is prone to typical noise sensitivity factors such as interference with speech or sleep. In addition, as a local-serving, commercial retail business, patrons are unlikely to expect or require quiet conditions at the site and would therefore likely judge the exterior and interior ambient noise levels at the site to be acceptable.

The conceptual layout for the proposed 7-Eleven building indicates approximately 40 square feet of office space would be located along the building's western exterior wall. Standard construction techniques typically provide a minimum exterior to interior noise attenuation (i.e., reduction) of 20 to 30 dBA with windows and doors closed and are likely to be sufficient to meet a 45 CNEL standard in the proposed building's office area. Nonetheless, to ensure the proposed Project is compatible with the March ARB/IP ALUCP, PVCC SP, and City code requirements and does not expose people working at the Project site to excessive airport related noise levels, MIG recommends the Applicant prepare and submit a final acoustical analysis, report, or other documentation to the City that demonstrates the proposed building's final exterior wall design and assembly will achieve an exterior to interior noise level reduction of 25 dB at all building office areas that have at least one wall that is part of the building façade/ exterior wall assembly.

S.5 RECOMMENDED NOISE CONTROL MEASURES AND BEST MANAGEMENT PRACTICES

MIG recommends the following noise control measures/BMPs be included in the proposed Project to reduce potential construction and operational noise at sensitive residential receptor locations to levels that comply with the requirements of the City's municipal code and ensure the Project meets March ARB/IP noise compatibility factors and criteria:

Construction Noise Control Best Management Practices. To reduce potential noise levels associated with construction of the proposed Project, the Applicant and/or its designated contractor, contractor's representatives, or other appropriate personnel shall:

- *Restrict work hours/equipment noise.* All work shall be subject to the requirements in City Municipal Code Section 7.34.060. Construction activities, including deliveries, shall only occur from 7 AM to 7 PM Monday through Saturday (and not on holidays). The Applicant and/or its contractor shall post a sign at all entrances to the construction site informing contractors, subcontractors, construction workers, etc. of this requirement. The sign shall also provide a name (or title) and phone number for an appropriate on-site and City representative to contact to submit a noise complaint.
- *Construction equipment care, siting, and design measures.* The following construction equipment care, siting, and design measures shall apply during construction activities:
 - Heavy equipment engines shall be covered and exhaust pipes shall include a muffler in good working condition. Pneumatic tools shall include a noise suppression device on the compressed air exhaust.
 - All stationary noise-generating equipment such as pumps, compressors, and welding machines shall be located as far from neighboring property lines as practical.

- If feasible, the Applicant and/or his contractor shall connect to existing electrical service at the site to avoid the use of stationary, diesel- or other alternatively-fueled power generators.
- **Construct/Install Temporary Noise Barrier.** The Applicant and/or his contractor shall install and maintain throughout the duration of all site preparation, grading, and other construction activities requiring large heavy-duty equipment operations within 50 feet of a residential property line a physical noise barrier capable of achieving a minimum reduction in predicted construction noise levels of 10 dB. Potential barrier options capable of achieving a 10 dB reduction in predicted construction noise levels include:
 - An 8-foot-high concrete, wood, or other barrier installed at-grade (or mounted to structures located at-grade, such as a K-Rail) along the Project's eastern and southern property line. Such a wall/barrier shall consist of solid material (i.e., free of openings or gaps other than weep holes) that have a minimum rated transmission loss value of 20 dBA.
 - Commercially available acoustic panels or other products such as acoustic barrier blankets installed along the Project southern property line that have a minimum sound transmission class (STC) or transmission loss value of 20 dBA. The rated STC or transmission loss value of the barrier would be confirmed by the manufacturer's specifications prior to installation.
 - Any combination of noise barriers and commercial products capable of achieving a 10 dBA reduction in construction noise levels at neighboring land uses.

Operational Noise Control Best Management Practices: To ensure the proposed Project complies with City Municipal Code Section 7.34.040 and 7.34.050 and does not result in a substantial permanent increase in ambient noise levels, the Applicant shall prepare and submit a final acoustical analysis, report, or other documentation to the City that:

- Provides evidence (manufacturer specifications or acceptable ambient noise monitoring data) confirming that the final selected car wash make and model does not produce noise levels that exceed 86 dBA L_{max} and 79.6 dBA L_{eq} at a distance of 10 feet from the car wash entrance or exit.
- Limits car wash noise levels to no more than 60 dBA L_{max} during the nighttime time period (10 PM to 7 AM) by:
 - Prohibiting vacuum and car wash operations during the nighttime period; or
 - Installing dampeners, acoustic panels, tunnel entrance and exit doors, or other acoustic treatments that reduce total car wash noise levels to 60 dBA L_{max} or less; or
 - Incorporating a solid concrete, wood, or other barrier of sufficient height and density to reduce noise levels to 60 dBA L_{max} or less at adjacent residential property lines.

Airport Land Use Noise Compatibility. To ensure the proposed Project is compatible with the March ARB/IP ALUCP and the PVCC SP, the Applicant shall prepare and submit to the City a final acoustical analysis, report, or other documentation that demonstrates the final exterior wall design and assembly will achieve an exterior to interior noise level reduction of 25 dB at all building office areas that have at least one wall that is part of the building façade/ exterior wall assembly

1 INTRODUCTION

Tait & Associates, Inc. has submitted a Conditional Use Permit (CUP) and Specific Plan Amendment (SPA) application to the City of Perris Planning Division for a proposed convenience store, fueling station, and car wash project (proposed Project) at 23 East Rider Street in Perris, California. The proposed Project includes a 3,227 square-foot convenience store, 2,720 square-foot fueling canopy (with six fuel dispensing stations and 12 total fuel pumps), and a 991 square-foot automated car wash.

MIG, Inc. (MIG) has prepared this Noise Impact Analysis Report (Report) to evaluate the potential construction and operations-related noise impacts of the proposed Project. MIG has prepared this Report using project-specific information contained in the CUP and SPA application, as well as additional information provided by Tait & Associates. Where necessary, MIG has supplemented available information with standardized sources of information, such as model assumptions pertaining to construction equipment activity levels. In general, this Report evaluates the potential “worst-case” conditions associated with the proposed Project’s construction and operational noise levels to ensure a conservative (i.e., likely to overestimate) assessment of potential noise impacts is presented.

This Report is intended for use by the City of Perris to assess the potential noise and vibration impacts of the proposed Project in compliance with the California Environmental Quality Act (CEQA; PRC §21000 et seq.) and the State CEQA Guidelines (14 CCR §15000 et seq.), particularly with respect to noise issues identified in Appendix G of the State CEQA Guidelines; however, this report does not make determinations of significance pursuant to CEQA because such determinations are solely the purview of the Lead Agency.

1.1 REPORT ORGANIZATION

This Report is organized as follows:

- **Chapter 1, Introduction**, explains the contents of this Report and its intended use.
- **Chapter 2, Project Description**, provides an overview of construction and operational activities associated with the proposed Project.
- **Chapter 3, Noise Fundamentals**, provides pertinent background information on the measurement, propagation, and characterization of noise levels.
- **Chapter 4, Environmental Setting and Regulatory Framework**, describes the existing noise and setting of the proposed Project and provides information on the federal, state, and local regulations that govern the project’s setting and potential noise impacts.
- **Chapter 5, Noise Impact Assessment**, identifies the potential operational noise impacts of the proposed Project and evaluates these effects in accordance with Appendix G of the State CEQA Guidelines.
- **Chapter 6, Report Preparers and References**, list the individuals involved, and the references used, in the preparation of this Report.

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2 PROJECT DESCRIPTION

Tait & Associates, Inc. has submitted a CUP and SPA application to the City of Perris Planning Division for a proposed convenience store with fuel pumps and an automated car wash. The proposed Project would consist of the construction and operation of a new 3,227 square-foot convenience store with a 2,720 square-foot fueling canopy (containing six fuel dispensing stations and 12 total fuel pumps) and a 991 square-foot automated car wash. The proposed facilities would be located on undeveloped commercial land at the southeast corner of North Perris Boulevard and East Rider Street, in the northern part of the City of Perris.

2.1 PROJECT LOCATION

The proposed Project would be located at 23 East Rider Street (Assessor's Parcel Number (APN) 300-300-026); see Figure 2-1: Proposed Project Location). The Project site is located at the northwest corner of General Plan Planning Area 5 and consists of a square, approximately 2.06-acre undeveloped parcel of land currently classified as Commercial Neighborhood (CN) by the City's Zoning Code, Neighborhood Commercial (NC) by the City's General Plan, and Business/Professional Office (BPO) by the Perris Valley Commerce Center (PVCC) Specific Plan (City of Perris 2016, 2018, and 2020a); see Figure 2-2: Proposed Project Site Aerial).

2.1.1 SURROUNDING LAND USES

The proposed Project site is bordered on the north by East Rider Street, on the south by single family residences (on Santo Tomas Avenue), on the east by single-family residences (on El Rosario Drive), and on the west by North Perris Boulevard. In general, the Project site is surrounded by low density Single Family Residential lands on 10,000 square-foot lots (R-10,000) to the east and south and PVCC Commercial and Light Industrial lands to the north and west (i.e., across North Perris Boulevard and East Perris Street).

There are no schools or parks located within 1,000 feet of the Project site; however, one institutional land use (Spirit Life Church) is located approximately 250 feet north of the Project site.¹

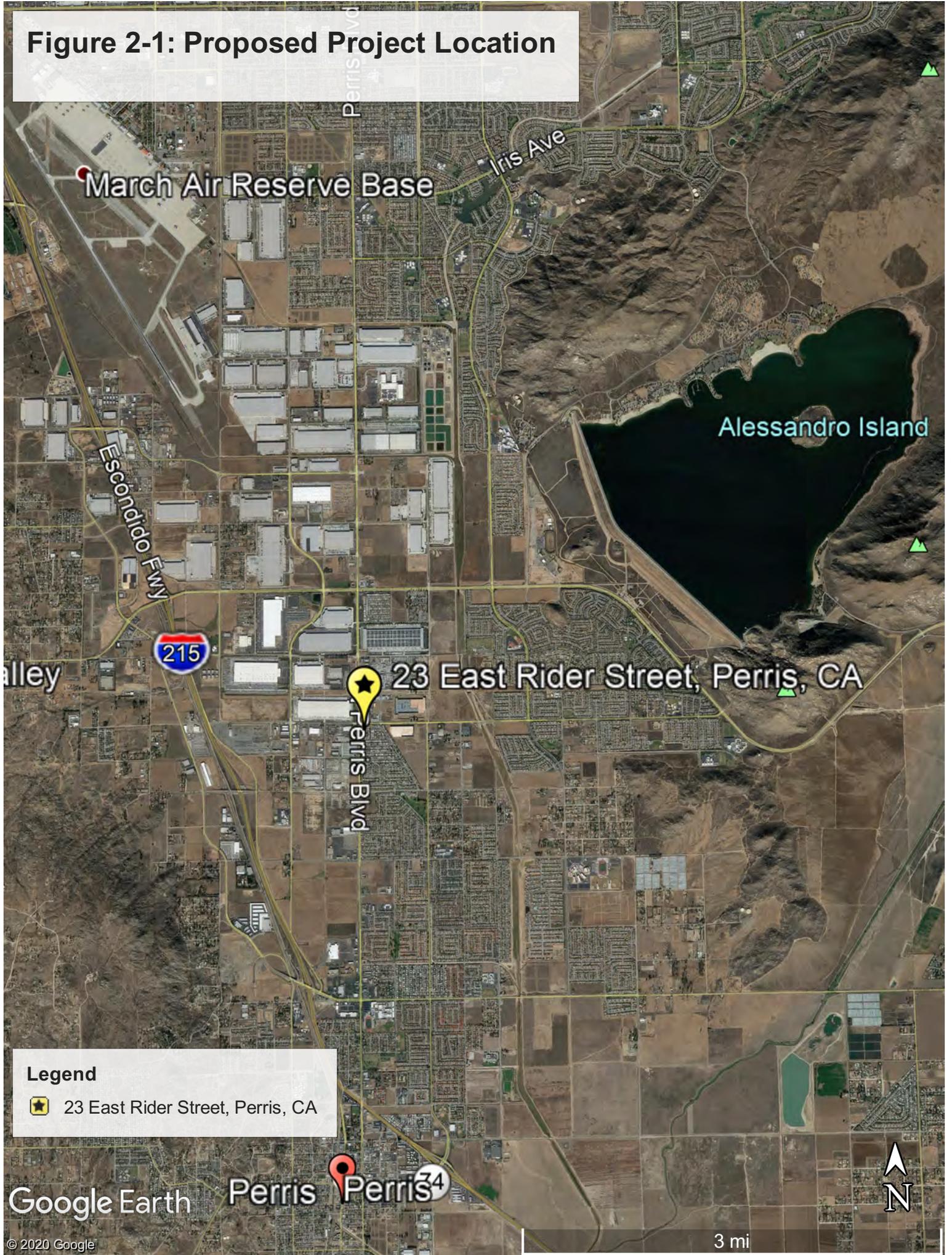
Interstate 215 (I-215) is located approximately 1.1 miles to the west and March Air Reserve Base/Inland Port (March ARB/IP) is located approximately 2.5 miles to the northwest.

2.2 EXISTING SITE DESCRIPTION

The proposed Project site at 2 East Rider Street is a flat, undeveloped parcel of land that consists primarily of ruderal vegetation (see Figure 2-2). An existing covered transit bus stop is present on North Perris Boulevard (Riverside Transit Agency Bus Route 19) and an existing uncovered transit bus stop (Riverside Transit Agency Bus Route 41) is present on East Rider Street. There are two existing curb cuts with driveways near the northeast corner of the site. An approximate six-foot-high wood slat fence runs along the eastern boundary and approximately half of the site's southern boundary, becoming a chain link fence that extends the remaining half of the southern property line.

¹ Unless otherwise specifically noted, all measurements are based on the closest point between the Project's property line and the referenced land use property line, road right-of-way (ROW), or airport runway centerline.

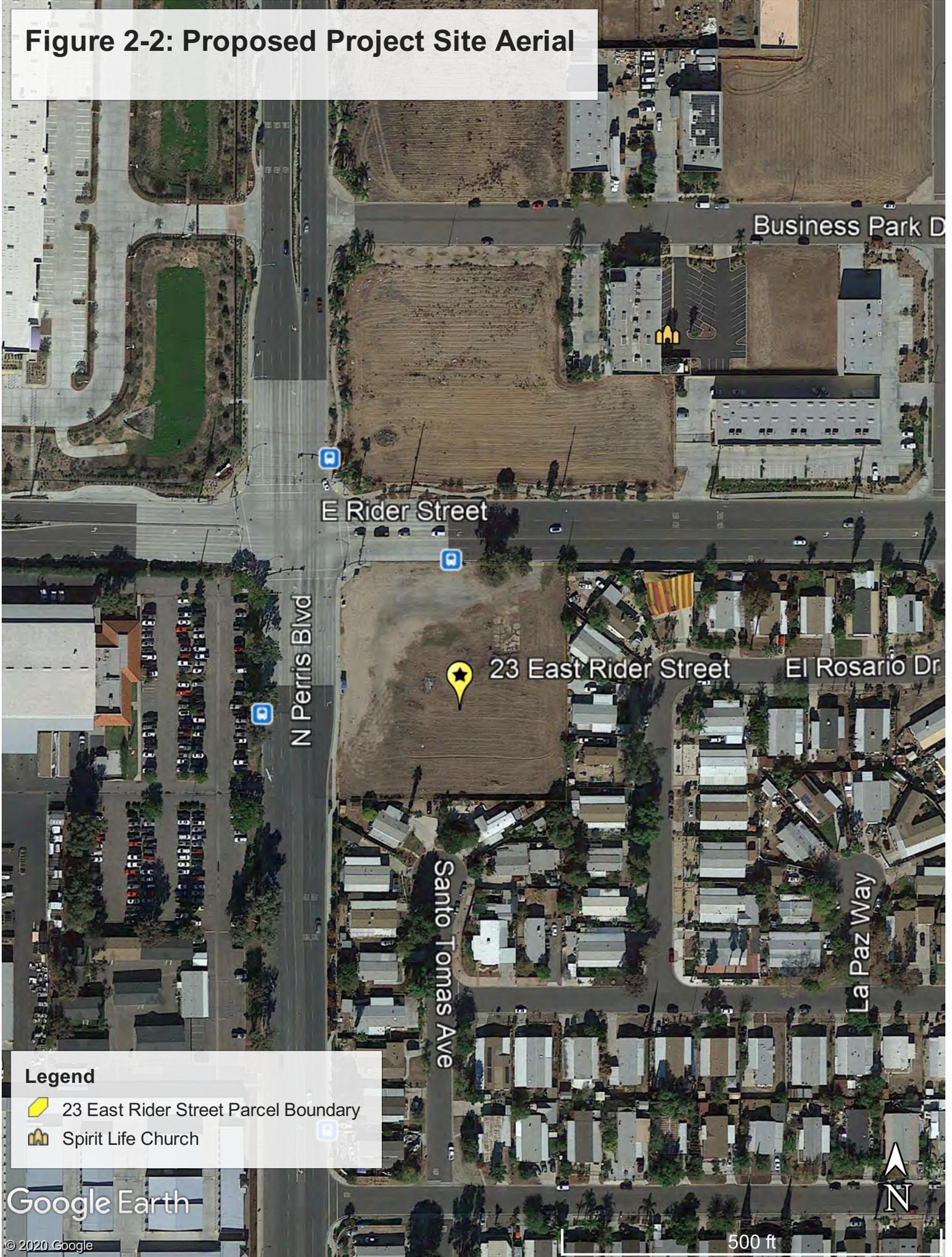
Figure 2-1: Proposed Project Location



Legend

- 📍 23 East Rider Street, Perris, CA

Figure 2-2: Proposed Project Site Aerial



Legend

-  23 East Rider Street Parcel Boundary
-  Spirit Life Church

Google Earth

© 2020 Google

500 ft



2.3 PROPOSED SITE DEVELOPMENT AND OPERATIONS

The proposed Project would involve the development of a new, small 7-Eleven building with fueling canopy and automated car wash.

2.3.1 SITE LAYOUT AND FACILITY DESCRIPTIONS

The proposed Project's conceptual site plan calls for the 3,227 square-foot 7-Eleven building to be situated near the center of the Project site (Tait & Associates, 2020; see Figure 2-3: Proposed Project Conceptual Site Plan). The north-south oriented building would front North Perris Boulevard and be set back a total of approximately 92 feet from the northern property line (adjacent to East Rider Street), 130 feet from the southern property line (R-10,000 lands on Santo Tomas Avenue), 83 feet from the eastern property line (R-10,000 lands on El Rosario Drive), and 172 feet from the western property line (adjacent to North Perris Boulevard). The single-story building would be surrounded by parking and other ancillary structures such as a bike rack, air and water hoses (for vehicle use), a trash enclosure, and electrical equipment.

The proposed fueling canopy would be located between the 7-Eleven building and North Perris Boulevard. The approximately 136-foot-long by 20-foot-wide canopy (2,720 square feet) would run parallel to North Perris Boulevard. The fueling canopy would include six multi-product dispensing stations and 12 total fuel pumps. On-site fuel storage would occur in two, new double wall fiberglass underground storage tanks (UST). One UST would have a 20,000-gallon capacity for storing unleaded gasoline. The other UST would have a 20,000-gallon split capacity with approximately 12,000 gallons storage available for diesel fuel and 8,000 gallons storage available for premium gasoline (or other fuels, if market conditions warrant). The new USTs would be located north of the fuel service canopy and installed at a depth of approximately 15 to 20 feet below ground surface. All fueling infrastructure would comply with the latest State requirements for the control of vapors from gasoline dispensing facilities.

The proposed automated car wash would be located between the 7-Eleven building and the site's southern property line. The approximately 43-foot-long by 23-foot-wide car wash (approximately 990 square feet) would run parallel to the southern property lines; vehicles would queue and enter the car wash from the east and pass through the car wash to the west. Two vacuums would be located on the north side of the car wash (i.e., the car wash would be in between the vacuums and the southern property line). At this time, the Tait & Associates has not yet selected the specific make and model for the automated car wash or vacuums.

2.3.2 SITE ACCESS, CIRCULATION, AND PARKING

The proposed Project would add one right in/out driveway on North Perris Boulevard, in the southwest corner of the site, and improve and combine the two existing site driveways on East Rider Street into a single, right in/out access point. Vehicles would travel the perimeter of the site to access parking areas, fueling stations, and the car wash. A total of 35 parking spaces would be provided on-site, including one Americans with Disabilities Act (ADA) accessible stall and one electric vehicle stall. This parking would be provided in two areas; 26 stalls would surround the 7-Eleven building and 8 stalls would be located on the north side of the automated car wash.

2.3.3 OTHER SITE IMPROVEMENTS

The proposed project would include other site improvements, including 25,190 square feet of landscaping areas and a proposed monument sign.

2.3.4 SITE OPERATIONS

The proposed Project, including fuel service and car wash operations, would generally operate 24-hours a day 365 days per year. 7-Eleven estimates the monthly and annual fuel gasoline throughput for the proposed Project would be approximately 133,330 gallons and 1,600,000 gallons, respectively. Refueling activities would occur as needed; however, due to the size of the facility, no more than two refueling trucks are anticipated to access the site on any given day.

2.3.5 PROJECT CONSTRUCTION

The proposed Project would involve the construction of the new 7-Eleven building, fueling canopy, and car wash. Project construction would include site preparation, grading, building construction, paving, and architectural coating phases. The site is currently undeveloped and flat and cut and fill would be balanced on-site. Construction of the proposed Project is anticipated to begin as soon as the fourth quarter of 2020 and take approximately twelve months to complete. Table 2-1 summarizes the proposed Project's construction phasing and the typical pieces of heavy-duty, off-road construction equipment that would be required during each phase.

Table 2-1: Construction Activity, Duration, and Typical Equipment		
Construction Activity	Duration (Days)^(A)	Typical Equipment Used^(B)
Site Preparation	3	Dozer, Backhoe
Grading	6	Excavator, Grader, Dozer, Backhoe
Building Construction	220	Crane, Forklift, Generator, Backhoe, Welder
Paving	10	Paver, Roller, Paving Equipment
Architectural Coating	10	Air Compressor
Source: MIG, Inc. 2020		
(A) Days refers to total active workdays in the construction phase, not calendar days.		
(B) The typical equipment list does not reflect all equipment that would be used during the construction phase. Not all equipment would operate eight hours per day each workday.		

3 NOISE FUNDAMENTALS

3.1 DEFINING NOISE

“Sound” is a vibratory disturbance created by a moving or vibrating source and is capable of being detected. For example, airborne sound is the rapid fluctuation of air pressure above and below atmospheric pressure. “Noise” may be defined as unwanted sound that is typically construed as loud, unpleasant, unexpected, or undesired by a specific person or for a specific area.

3.1.1 SOUND PRODUCTION

Sound has three properties: frequency (or pitch), amplitude (or intensity or loudness), and duration. Pitch is the height or depth of a tone or sound and depends on the frequency of the vibrations by which it is produced. Sound frequency is expressed in terms of cycles per second, or Hertz (Hz). Humans generally hear sounds with frequencies between 20 and 20,000 Hz and perceive higher frequency sounds, or high pitch noise, as louder than low-frequency sound or sounds low in pitch. Sound intensity or loudness is a function of the amplitude of the pressure wave generated by a noise source combined with the reception characteristics of the human ear. Atmospheric factors and obstructions between the noise source and receptor also affect the loudness perceived by the receptor.

The frequency, amplitude, and duration of a sound all contribute to the effect on a listener, or receptor, and whether or not the receptor perceives the sound as “noisy” or annoying. Despite the ability to measure sound, human perceptibility is subjective, and the physical response to sound complicates the analysis of its impact on people. People judge the relative magnitude of sound sensation in subjective terms such as “noisiness” or “loudness.”

3.1.2 MEASURING SOUND

Sound pressure levels are typically expressed on a logarithmic scale in terms of decibels (dB). A dB is a unit of measurement that indicates the relative amplitude (i.e., intensity or loudness) of a sound, with 0 dB corresponding roughly to the threshold of hearing for the healthy, unimpaired human ear. Since decibels are logarithmic units, an increase of 10 dBs represents a ten-fold increase in acoustic energy, while 20 dBs is 100 times more intense, 30 dBs is 1,000 times more intense, etc. In general, there is a relationship between the subjective noisiness or loudness of a sound and its intensity, with each 10 dB increase in sound level perceived as approximately a doubling of loudness. Due to the logarithmic basis, decibels cannot be directly added or subtracted together using common arithmetic operations:

$$50 \text{ decibels} + 50 \text{ decibels} \neq 100 \text{ decibels}$$

Instead, the combined sound level from two or more sources must be combined logarithmically. For example, if one noise source produces a sound power level of 50 dBA, two of the same sources would combine to produce 53 dB as shown below.

$$10 * 10 \log \left(10^{\left(\frac{50}{10}\right)} + 10^{\left(\frac{50}{10}\right)} \right) = 53 \text{ decibels}$$

In general, when one source is 10 dB higher than another source, the quieter source does not add to the sound levels produced by the louder source because the louder source contains ten times more sound energy than the quieter source.

3.1.3 CHARACTERIZING SOUND

Although humans generally can hear sounds with frequencies between 20 and 20,000 Hz most of the sound humans are normally exposed to do not consist of a single frequency, but rather a broad range of frequencies perceived differently by the human ear. In general, humans are most sensitive to the frequency range of 1,000–8,000 Hz and perceive sounds within that range better than sounds of the same amplitude in higher or lower frequencies. Instruments used to measure sound, therefore, include an electrical filter that enables the instrument's detectors to replicate human hearing. This filter known as the "A-weighting" or "A-weighted sound level" filters low and very high frequencies, giving greater weight to the frequencies of sound to which the human ear is typically most sensitive. Most environmental measurements are reported in dBA, meaning decibels on the A-scale. Most environmental measurements are reported in dBA, meaning decibels on the A-scale. A list of common noise sources and their associated A-weighted noise level is provided in Table 3-1. Other weightings include the B-, C-, and D-weighting, but these scales are not commonly used for environmental noise because human annoyance correlates well with the A-weighting and these weighting scales are not incorporated in typical environmental noise descriptors

Sound levels are usually not steady and vary over time. Therefore, a method for describing either the average character of the sound or the statistical behavior of the variations over a period of time is necessary. The continuous equivalent noise level (L_{eq}) descriptor is used to represent the average character of the sound over a period of time. The L_{eq} represents the level of steady-state noise that would have the same acoustical energy as the sum of the time-varying noise measured over a given time period. L_{eq} is useful for evaluating shorter time periods over the course of a day. The most common L_{eq} averaging period is hourly ($L_{eq(h)}$), but L_{eq} can describe any series of noise events over a given time period.

Variable noise levels are the values that are exceeded for a portion of the measured time period. Thus, the L_{01} , L_{05} , L_{25} , L_{50} , and L_{90} descriptors represent the sound levels exceeded 1%, 5%, 25%, 50%, and 90% of the time the measurement was performed. The L_{90} value usually corresponds to the background sound level at the measurement location.

When considering environmental noise, it is important to account for the different responses people have to daytime and nighttime noise. In general, during the nighttime, background noise levels are generally quieter than during the daytime but also more noticeable due to the fact that household noise has decreased as people begin to retire and sleep. Accordingly, a variety of methods for measuring noise have been developed. The California General Plan Guidelines for Noise Elements identifies the following common metrics for measuring noise (OPR, 2017):

- **L_{dn} (Day-Night Average Level):** The average equivalent A-weighted sound level during a 24-hour day, divided into a 15-hour daytime period (7 AM to 10 PM) and a 9-hour nighttime period (10 PM to 7 AM). A 10 dB "penalty" is added to measure nighttime noise levels when calculating the 24-hour average noise level. For example, a 45-dBA nighttime sound level (e.g., at 2 AM) would contribute as much to the overall day-night average as a 55-dBA daytime sound level (e.g., at 7 AM).
- **CNEL (Community Noise Equivalent Level):** The CNEL descriptor is similar to L_{dn} , except that it includes an additional 5 dBA penalty for noise events that occur during the evening time period (7 PM to 10 PM). For example, a 45-dBA evening sound level (e.g., at 8 PM) would contribute as much to the overall day-night average as a 50-dBA daytime sound level (e.g. at 8 AM).

Table 3-1: Typical Noise Levels		
Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	110	Rock Band
Jet flyover at 1,000 feet	105	
	100	
Gas lawn mower at 3 feet	95	
	90	
Diesel truck at 50 feet at 50 mph	85	Food blender at 3 feet
	80	Garbage disposal at 3 feet
Noise urban area, daytime	75	
Gas lawnmower, 100 feet	70	Vacuum cleaner at 10 feet
Commercial area	65	Normal speech at 3 feet
Heavy traffic at 300 feet	60	
	55	Large business office
Quiet urban daytime	50	Dishwasher next room
	45	
Quiet urban nighttime	40	Theater, large conference room
Quiet suburban nighttime	35	
	30	Library
Quite rural nighttime	25	Bedroom at night
	20	
	15	Broadcast/recording studio
	10	
	5	
Typical threshold of human hearing	0	Typical threshold of human hearing

Source: Caltrans, 2013

The artificial penalties imposed during L_{dn} and CNEL calculations are intended to account for a receptor's increased sensitivity to noise levels during quieter nighttime periods. As such, the L_{dn} and CNEL metrics are usually applied when describing longer-term ambient noise levels because they account for all noise sources over an extended period of time and account for the heightened sensitivity of people to noise during the night. In contrast, the L_{eq} metric is usually applied to shorter reference periods where sensitivity is presumed to remain generally the same.

Federal and State agencies have established noise and land use compatibility guidelines that use averaging approaches to noise measurement. The State Department of Aeronautics and the California Commission on Housing and Community Development have adopted the CNEL for evaluating community noise exposure levels.

3.1.4 SOUND PROPAGATION

The energy contained in a sound pressure wave dissipates and is absorbed by the surrounding environment as the sound wave spreads out and travels away from the noise generating source. The strength of the source is often characterized by its “sound power level.” Sound power level is independent of the distance a receiver is from the source and is a property of the source alone. Knowing the sound power level of an idealized source and its distance from a receiver, sound pressure level at the receiver point can be calculated based on geometrical spreading and attenuation (noise reduction) as a result of distance and environmental factors, such as ground cover (asphalt vs. grass or trees), atmospheric absorption, and shielding by terrain or barriers.

For an ideal “point” source of sound, such as mechanical equipment, the energy contained in a sound pressure wave dissipates and is absorbed by the surrounding environment as the sound wave spreads out in a spherical pattern and travels away from the point source. Theoretically, the sound level attenuates, or decreases, by 6 dB with each doubling of distance from the point source. In contrast, a “line” source of sound, such as roadway traffic or a rail line, spreads out in a cylindrical pattern and theoretically attenuates by 3 dB with each doubling of distance from the line source; however, the sound level at a receptor location can be modified further by additional factors. The first is the presence of a reflecting plane such as the ground. For hard ground, a reflecting plane typically increases A-weighted sound pressure levels by 3 dB. If some of the reflected sound is absorbed by the surface, this increase will be less than 3 dB. Other factors affecting the predicted sound pressure level are often lumped together into a term called “excess attenuation.” Excess attenuation is the amount of additional attenuation that occurs beyond simple spherical or cylindrical spreading. For sound propagation outdoors, there is almost always excess attenuation, producing lower levels than what would be predicted by spherical or cylindrical spreading. Some examples include attenuation by sound absorption in air; attenuation by barriers; attenuation by rain, sleet, snow, or fog; attenuation by grass, shrubbery, and trees; and attenuation from shadow zones created by wind and temperature gradients. Under certain meteorological conditions, like fog and low-level clouds, some of these excess attenuation mechanisms are reduced or eliminated due to noise reflection.

3.1.5 NOISE EFFECTS ON HUMANS

Noise effects on human beings are generally categorized as:

- Subjective effects of annoyance, nuisance, and/or dissatisfaction
- Interference with activities such as speech, sleep, learning, or relaxing
- Physiological effects such as startling and hearing loss

Most environmental noise levels produce subjective or interference effects; physiological effects are usually limited to high noise environments such as industrial manufacturing facilities or airports.

Predicting the subjective and interference effects of noise is difficult due to the wide variation in individual thresholds of annoyance and past experiences with noise; however, an accepted method to determine a person’s subjective reaction to a new noise source is to compare it to the existing environment without the noise source, or the “ambient” noise environment. In general, the more a new noise source exceeds the ambient noise level, the more likely it is to be considered annoying and to disturb normal activities.

Under controlled conditions in an acoustical laboratory, the trained, healthy human ear is able to discern 1-dB changes in sound levels when exposed to steady, single-frequency (“pure-tone”) signals in the mid-frequency (1,000–8,000 Hz) range. In typical noisy environments, changes in noise of 1 to 2 dB are

generally not perceptible. However, it is widely accepted that people are able to begin to detect sound level increases of 3 dB in typical noisy environments. Further, a 5-dB increase is generally perceived as a distinctly noticeable increase, and a 10-dB increase is generally perceived as a doubling of loudness that would almost certainly cause an adverse response from community noise receptors.

When exposed to high noise levels, humans may suffer hearing damage. Sustained exposure to high noise levels (e.g., 90 dBs for hours at a time) can cause gradual hearing loss, which is usually temporary, whereas sudden exposure to a very high noise level (e.g., 130 to 140 dBs) can cause sudden and permanent hearing loss. In addition to hearing loss, noise can cause stress in humans and may contribute to stress-related diseases, such as hypertension, anxiety, and heart disease (Caltrans, 2013).

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4 ENVIRONMENTAL SETTING AND REGULATORY FRAMEWORK

This chapter provides information on the environmental and regulatory noise setting of the proposed Project.

4.1 PROJECT LOCATION AND SITE DESCRIPTION

The proposed Project would be located on undeveloped commercial lands at 23 East Rider Street in the City of Perris. Refer to Section 2.1 for a description of the Project site and its surroundings.

4.2 EXISTING NOISE ENVIRONMENT

The proposed Project is located at the southeast corner of the intersection of North Perris Boulevard and East Rider Street, in an area of mixed residential, commercial, and light industrial land uses. The City's General Plan Circulation Element considers North Perris Boulevard and East Rider Street to be primary and secondary arterial roadways, respectively (City of Perris, 2013). According to the General Plan Noise Element, measured ambient noise levels on East Rider Street (approximately one mile east of the Project site) and Perris Boulevard (approximately 0.5 miles south of the Project site) were 62 and 68.4 dBA L_{eq} , respectively, in 2003 (City of Perris, 2016, Exhibit N-2 and Table N-2). Traffic noise modeling conducted for the General Plan Noise Element indicates that 2003 average daily traffic (ADT) volumes on the segments of North Perris Boulevard and East Rider Street close to the Project site were 17,974 and 2,100, respectively; these traffic volumes were estimated to generate noise levels of 73.1 and 61.0 CNEL at a distance of 50 feet from the center of North Perris Boulevard and East Rider Street. Under 2030 conditions, the traffic noise modeling conducted for the General Plan Noise Element showed ADT volumes on North Perris Boulevard and East Rider Street would increase to 25,500 and 4,000, respectively. These future traffic volumes would generate noise levels of 74.7 and 62.7 CNEL at a distance of 50 feet from the center of North Perris Boulevard and East Rider Street, respectively. ²

In addition to traffic noise, the Project site is located approximately 2.5 miles southeast of March ARB/IP and is within March ARB/IP Airport Land Use Compatibility Plan (ALUCP) Zone B1 (Inner Approach/Departure Zone; Riverside County ALUC, 2005 and 2014). This zone is an area of high noise impact because it is within or near the airport's 65 CNEL contour zone and single-event noise levels are sufficient to disrupt many land use activities. According to the City's General Plan Noise Element, the Project site is located within the 65 CNEL noise contour associated with March ARB/IP. Zone B1 is also an area of high airport-related risk. Specifically, the Project site lies within Accident Protection Zone (APZ) II.

4.2.1 AMBIENT NOISE LEVELS AT PROJECT SITE

Based on the traffic noise modeling contained in the City's General Plan, as well as the Project site's location within March ARB/IP ALUCP Zone B1, the existing ambient noise levels at the Project site are assumed to be 75 CNEL within 50 feet of the center of North Perris Boulevard, 70 CNEL within 86 feet

² 2003 traffic noise modeling data are reported for Perris Boulevard, from Placentia Street to Walnut Street, and Rider Street, from Indian Avenue to Perris Boulevard (City of Perris, 2016, Table N-6). 2030 traffic noise modeling data are reported for Perris Boulevard, from Rider Street to Placentia Avenue, and Rider Street, from Perris Boulevard to Wilson Street (City of Perris, 2016, Table N-8). These roadway segments are the closest modeled segments to the Project site and are considered representative of traffic levels on North Perris Boulevard and East Rider Street directly adjacent to the Project site due to similar ADT and roadway geometry conditions.

of the center of North Perris Boulevard, and at least 65 CNEL within 186 feet of the center of North Perris Boulevard (City of Perris, 2016, Table N-8). The remainder of the Project site and surrounding lands are assumed to have an ambient noise level of 65 to 70 CNEL due primarily to March ARB/IP operations.

4.2.2 NOISE SENSITIVE RECEPTORS

Noise sensitive receptors are buildings or areas where unwanted sound or increases in sound may have an adverse effect on people or land uses. The City's Municipal Code defines sensitive receptors to include residences, schools, libraries, hospitals, churches, offices, hotels, motels, and outdoor recreation areas (see Section 4.3.4.2). The noise sensitive receptors near the proposed Project site include the adjacent residences (R-10,000) to the south and east on Santo Tomas Avenue and El Rosario Drive, respectively, as well as the Sprit Life Church located approximately 250 feet north of the Project site.

4.3 FEDERAL, STATE, AND LOCAL NOISE REGULATIONS

4.3.1 FEDERAL NOISE AND VIBRATION REGULATIONS

There are no federal noise and vibration regulations that directly apply to the proposed Project.

4.3.2 STATE NOISE AND VIBRATION REGULATIONS

4.3.2.1 California Building Standards Code

The California Building Standards Code is contained in Title 24 of the California Code of Regulations and consists of 11 different parts that set various construction and building requirements. Part 2, California Building Code, Section 1207, Sound Transmission, establishes sound transmission standards for interior walls, partitions, and floor/ceiling assemblies. Specifically, Section 1207.4 establishes that interior noise levels attributable to exterior noise sources shall not exceed 45 dBA DNL or CNEL (as set by the local General Plan) in any habitable room.

The California Green Building Standards Code is Part 11 to the California Building Standards Code. Chapter 5, Nonresidential Mandatory Standards, Section, establishes additional standards for interior noise levels:

- 5.507.4.1.1 sets forth that buildings exposed to a noise level of 65 dB L_{eq} (1-hour) during any hour of operation shall have exterior wall and roof-ceiling assemblies exposed to the noise source meeting a composting sound transmission class (STC) rating of at least 45 (or an outdoor indoor transmission class (OITC) of 35, with exterior windows of a minimum STC of 40.

Section 5.507.4.2 sets forth that wall and roof assemblies for buildings exposed to a 65 dBA L_{eq} pursuant to Section 5.507.4.1.1, shall be constructed to provide an interior noise environment attributable to exterior sources that does not exceed 50 dBA L_{eq} in occupied areas during any hour of operation. This requirement shall be documented by preparing an acoustical analysis documenting interior sound levels prepared by personnel approved by the architect or engineer of record.

4.3.3 CALIFORNIA DEPARTMENT OF TRANSPORTATION

The California Department of Transportation' (Caltrans) *Transportation and Construction Vibration Guidance Manual* provides a summary of vibration human responses and structural damage criteria that have been reported by researchers, organizations, and governmental agencies (Caltrans, 2020). These thresholds are summarized in Table 4-1 and Table 4-2.

Structural Integrity	Maximum PPV (in/sec)	
	Transient	Continuous
Historic and some older buildings	0.50	0.12 to 0.2
Older residential structures	0.50	0.30
New residential structures	1.00	0.50
Modern industrial and commercial structures	2.00	0.50

Source: Caltrans, 2020

Human Response	Maximum PPV (in/sec)	
	Transient	Continuous
Slightly perceptible	0.035	0.012
Distinctly perceptible	0.24	0.035
Strongly perceptible	0.90	0.10
Severe/Disturbing	2.0	0.7 (at 2 Hz) to 0.17 (at 20 Hz)
Very disturbing	--	3.6 (at 2 Hz) to 0.4 (at 20 Hz)

Source: Caltrans, 2020

4.3.4 LOCAL NOISE REGULATIONS

4.3.4.1 Riverside County Airport Land Use Commission

The Riverside County Airport Land Use Commission (ALUC) protects public health, safety and welfare by ensuring the orderly expansion of airports and the adoption of land use measures that minimize the public's exposure to extensive noise and safety hazards within areas around airports. The Riverside County ALUC reviews land use compatibility issues for development surrounding airports in the County, including safety, noise, overflight and airspace protection. These compatibility issues are identified and analyzed in the ALUCP for each airport, and the implementation of these plans promotes compatible development around the airports.

The proposed Project is subject to Riverside County ALUC review pursuant to state law (Public Utilities Code Section 21676(b)) because, if approved, it would require the City to adopt an SPA to change the Project site's existing PVCC land use designation from BPO to Commercial (see also Section 4.3.4.5). Otherwise, the proposed Project is not considered a major land use action or other land use action subject to ALUC review pursuant to Section 1.5, Types of Actions Reviewed, of Chapter 2, Countywide Policies, of the Riverside County ALUCP Policy Document (Riverside County ALUC, 2005).

March Air Reserve Base/Inland Port Airport Land Use Compatibility Plan

The March ARB/IP ALUCP establishes the individual land use compatibility policies for March ARB/IP. Tables MA-1 and MA-2 from the March ARB/IP ALUCP establish basic compatibility factors and criteria for the March ARB/IP influence areas, including Zone B1 in which the proposed Project site is located. Section 2.3 of the March ARB/IP ALUCP establishes supplemental compatibility criteria related to noise for projects near March ARB/IP. These supplemental criteria generally lower the maximum, aircraft-related, interior noise level that shall be considered acceptable from 45 CNEL to 40 CNEL for all new residences, schools, libraries, museums, hotels and motels, hospitals and nursing homes, places of worship, and other noise-sensitive uses. For office uses, the March ARB/IP ALUCP retains the countywide interior standard of 45 CNEL.

The proposed Project includes an approximately 41 square-foot office space, or approximately 1.3% of the total proposed building space (3,227 square feet). The proposed Project is not considered a noise sensitive land use and is not considered to have any noise-sensitive exterior non-residential use areas.

4.3.4.2 City of Perris Municipal Code

Title 7 of the Perris Municipal Code, Health and Welfare, Chapter 7.34, Noise Control, sets forth that unnecessary, excessive, or annoying noise levels are a nuisance and may be detrimental to the health and safety of individuals and establishes the following standards for regulating noise:

- **Section 7.34.040, Sound Amplification**, sets forth no person shall amplify sound using sound amplifying equipment unless such equipment is used only to amplify music and/or the human voice and the volume of the amplified sound does not exceed 80 dBA during the daytime (7:01 AM to 10:00 PM) and 60 dBA during the nighttime (10:01 PM to 7:00 AM) when measured outdoors at or beyond the property line of the property from which the sound emanates.
- **Section 7.34.050, General Prohibition**, sets forth that it is unlawful for any person to willfully make, cause or suffer, or permit to be made or caused, and loud excessive or offensive noises or sounds which unreasonably disturb the peace and quiet of any residential neighborhood or which are physically annoying to persons of ordinary sensitivity, or which cause physical discomfort to the inhabitants of the city. This section also sets forth that the standards for dBA noise levels identified in Section 7.34.040, Sound Amplification, apply to this Section 7.34.050, and that to the extent that the noise created causes the noise level at the property line to exceed the ambient noise level by more than 1.0 decibel it shall be presumed to violate Section 7.34.050 of the Municipal Code, although the following characteristics and conditions should be considered in determining whether a violation exists: the level of the noise, whether the noise is usual or unusual, the level of the ambient noise, the proximity of the noise to sleeping facilities, zoning (both at the source and the receiving land uses), the time of day or night the noise occurs, the duration of the noise, and whether the noise is recurrent, intermittent, or constant.
- **Section 7.34.060, Construction Noise**, sets forth that it is unlawful for any person to erect, construct, demolish, excavate, alter, or repair any building or structure in such a manner as to create disturbing, excessive, or offensive noise between the hours of 7 PM of any day and 7 AM of the following day, or on Sundays, or on a legal holiday excepting Columbus Day and Washington's birthday. This section also sets forth that construction activity shall not exceed 80 dBA in residential zones in the City.

- **Section 7.34.070, Refuse Vehicles and Parking Lot Sweepers**, sets forth no person shall operate or permit to be operated a refuse compacting, processing, or collection vehicle or parking lot sweeper between the hours of 7 PM to 7 AM in any residential area unless a permit has been granted by the City.
- **Section 7.34.080, Disturbing, Excessive, Offensive, Noises**, declares certain activities cause loud, disturbing, excessive or offensive noises, including, but not limited to:
 - Unnecessary use or operation of horns, signaling devices, or other similar devices on automobiles, motorcycles, or any other vehicle (Section 7.34.080(1)).
 - Leaf blowers that exceed a sound level of 80 decibels as measured at a distance of 50 feet or greater from the point of noise origin (Section 7.34.080 (7)(c)).
- **Section 7.34.090, Burglar Alarms**, prohibits audible burglar alarms for structures or motor vehicles unless the alarm can be terminated within 20 minutes of being activated.

Title 16 of the Perris Municipal Code, Buildings and Construction, Chapter 16.22.010, Construction Located Near Arterials, Railroads, and Airports, sets forth standards for insulation against noise for residential development and other noise impacted areas in the vicinity of arterials, railroads, and airports where the exterior CNEL exceeds 60 dB. Relevant standards include:

- Section 16.22.020, Definitions, defines noise sensitive land uses to include, but not be limited to, residences, schools, libraries, hospitals, churches, offices, hotels, motels, and outdoor recreational areas. This definition also notes that noise-sensitivity factors include interference with speech communication, subjective judgement of noise acceptability and relative noisiness, price for freedom from noise intrusion, and sleep interference criteria.

4.3.4.3 City of Perris General Plan

The City's General Plan Noise Element describes the City's existing and future noise environment and sets forth the steps the City will take to assure that land use decisions include consideration of noise impacts and are consistent with the objectives of the Noise Element. The Noise Element contains the following goals, policies, and implementation measures that are relevant to the proposed Project (City of Perris, 2016).

- Goal 1: Land Use Siting. Future land uses compatible with project noise environments.
 - Policy 1.A: The State of California Noise/Land Use Compatibility Criteria shall be used in determining land use compatibility for new development.
 - Implementation Measure 1.A.1: All new development proposals will be evaluated with respect to the State Noise/Land Use Compatibility Criteria. Placement of noise sensitive uses will be discouraged within any area exposed to exterior noise levels that fall into the "Normally Unacceptable" range and prohibited within areas exposed to "Clearly Unacceptable" noise ranges.
- Goal IV Air Traffic Noise. Future land uses compatible with noise from air traffic.
 - Policy IV.A: Reduce or avoid the existing and potential future impacts from air traffic on new sensitive land uses in areas where air traffic noise is 60 dBA CNEL or higher.
 - Implementation Measure IV.A.1: As part of any approvals for new sensitive land uses within the 60 dBA CNEL or higher noise contours associated with March Inland Port, and for such new uses within the flight paths associated with the Perris Valley Skydiving Center, the City will require the developer to issue disclosure statements

identifying exposure to regular aircraft noise. This disclosure shall be issued at the time of initial and all subsequent sales of the affected properties.

- Implementation Measure IV.A.2: All new development proposals in the noise contour areas of 60 dBA and above will be evaluated with respect to the State Noise/Land Use Compatibility Criteria.

For single family residential land uses, the City's General Plan sets forth that 60 CNEL is the normally acceptable noise limit, 65 CNEL is the conditionally acceptable noise limit, and 75 CNEL is the normally unacceptable noise limit. Noise levels above 75 CNEL are considered clearly unacceptable for single family residential land uses. For office buildings, business, commercial, professional, and mixed-use developments, the City's General Plan sets for that 65 CNEL is the normally acceptable noise limit and 75 CNEL is the conditionally acceptable noise limit. Noise levels above 75 CNEL are considered normally unacceptable for these land uses types (City of Perris, 2016, Exhibit N-1).

4.3.4.4 Perris Valley Commerce Center Specific Plan

The PVCC, as amended, provides high quality industrial, commercial, and office land uses to serve the existing and future residents and businesses of the City. It provides land uses and development standards that promote smart growth, sustainable development, and a strong sense of place. The PVCC land use plan includes the following designations relevant to the Project:

- **Business/Professional Office (BPO):** This zone provides for uses associated with business, professional or administrative services located in areas of high visibility from major roadways with convenient access for automobiles and public transit service. Small-scale warehousing and light manufacturing are also allowed. This zone combines the General Plan Land Use designations of Business Park and Professional Office.
- **Commercial:** This zoning designation provides for retail, professional office, and service-oriented business activities which serve the entire City, as well as the surrounding neighborhoods. This zone combines the General Plan Land Use designation of Community Commercial and Commercial Neighborhood.

As described in Section 2.1, the proposed Project site is currently designated by the PVCC as BPO; however, the Applicant is proposing an SPA to change the PVCC land use designation from BPO to Commercial.

In addition to land use designations, the PVCC has the following airport overlay zones (AOZ) relevant to the Project:

- **Accident Potential Zone II (APZ-II):** This zone prohibits many uses that involve hazardous materials (such as gas stations), and those uses that have higher densities of people per acre. Non-residential development will be limited to those uses that have not more than 50 persons per acre at any time, including hotels and motels. This zone prohibits new residential development, schools or churches.

The PVCC includes specific standards and design guidelines intended to create eco-friendly, high-quality developments, unify the area's character, and develop a business community that fosters long-term economic success. The guidelines are the main tool used by the City to evaluate development projects subject to discretionary review. The following PVCC standards and guidelines are relevant to the evaluation of the proposed Project's potential noise levels:

- **4.0 On-Site Design Standards and Guidelines**
 - **4.2.2 Site Layout for Commerce Zones**
 - **Loading Area Placement:** Consideration should be given to the placement of loading areas away from sensitive receptors (schools, residences, hospitals, etc.), public gathering areas or other uses that might be impacted by noise and associated loading activities, as well as locating away from public view. Additional setback requirement has been provided for projects adjoining residential uses (see PVCC Table 4.0-1 and Figure 4.0-16). In other cases where placement of loading facilities cannot be accommodated away from these areas, additional setbacks, sound walls, screening or combination thereof may be required.
 - **4.2.7 Utilities**
 - **All Equipment Shall be Internalized:** All equipment shall be internalized into the building design to the greatest extent possible. When unfeasible, they shall be screened and not prominently visible from public rights-of-way.
 - **4.2.8 Residential Buffer Development Standards and Guidelines**
 - **50-Foot Setback:** A 50-foot setback is required for commercial, industrial and business professional office developments immediately abutting existing residential property lines. Other allowed uses and facilities within the 50-foot setback include landscape areas, water quality basins and conveyances, vehicle travel aisles, passenger car parking and any feature deemed unobtrusive to the neighboring residential use by the Development Services Department.
 - **Hours of Operation:** Depending on the type of use and activities proposed by the industrial, commercial or professional/office development, the Development Services Department may impose restrictions on hours of operation for construction, as well as business operation.
 - **Sound Walls:** Sound walls may be required to mitigate potential operational noise impacts from proposed industrial, commercial or professional/office development, as well as be constructed in the first phase of development to help shield residents from construction noise.
- **12.0 Airport Overlay Zone (AOZ)**
 - **12.1.2 Procedures**
 - **Approval:** All ministerial and discretionary actions within the AOZ shall be reviewed for consistency with PVCC Chapter 12 prior to approval.
 - **Mandatory Findings for Approval:** When a project, use or activity is subject to discretionary actions requiring a public hearing or notice, the applicable review authority shall make all of the following findings, as applicable: the project, use or activity complies with the noise compatibility policies of the AOZ; the project, use or activity complies with residential and non-residential density standards and other development conditions as per PVCC Table 12.0-1, March ARB/IP Basic Compatibility Criteria Table; the project, use or activity complies with PVCC Figure 12.0-1, March ARB/IP Compatibility Map; the project, use or activity complies with the airspace protection policies of the AOZ; and the project, use or activity complies with the overflight policies of the AOZ.
 - **Amendments:** Other than General Plan, Specific Plan, or Zoning Code changes addressed through a previous referral to the Riverside County ALUC, or any action to overrule any determination of the March ARB/IP ALUCP, proposed general plan land

use amendments, zoning amendments, and specific plan amendments that impact density or intensity of development within the AOZ shall be referred to the Riverside County ALUC for a determination of compatibility with the adopted March ARB/IP ALUCP.

- **12.1.3 Compatibility with March ARB/IP ALUCP.**
 - **Noise Standards:** All building office areas shall be constructed with appropriate sound mitigation measures as determined by an acoustical engineer or architect to ensure appropriate interior sound levels.

PVCC Table 12.0-1, March ARB/IP Basic Compatibility Criteria Table, provides the specific conditions for determining compatibility with the March ARB/IP ALUCP. The non-residential B1-APZ II area standards that are relevant to the proposed Project are reproduced in Table 4-3 below.

Zone	Non-Residential People / Acre		Required Open Land	Prohibited Uses	Other Conditions
	Average	Single Acre			
B1 Inner Approach / Departure Zone	50	100	Max 50% lot coverage	Hazardous Material manufacturing / storage ^(B)	Locate structures maximum distance from extended runway centerline
				Noise-sensitive outdoor non-residential uses ^(C)	Sound attenuation as necessary to meet interior noise level criteria ^(D)

Source: City of Perris, 2018, Table 12.0-1.

(A) This table is not exhaustive. It only lists the compatibility factors and criteria that are relevant to the proposed 7-Eleven building, fuel pumps, and car wash operations. The proposed Project is a non-residential land use and is not considered to be a noise-sensitive land use. The listed standards are consistent with Tables MA-1 and MA-2 from the March ARB/IP ALUCP and Table 12.0-1 from the PVCC (Riverside County, 2014 and City of Perris 2018).

(B) In APZ II and elsewhere within Zone B1, aboveground storage of more than 6,000 gallons of nonaviation flammable materials per tank is prohibited.

(C) Examples of noise-sensitive outdoor nonresidential uses that should be prohibited include major spectator-oriented sports stadiums, amphitheatres, concert halls and drive-in theaters.

(D) All new residences, schools, libraries, museums, hotels and motels, hospitals and nursing homes, places of worship, and other noise-sensitive uses must have sound attenuation features incorporated into the structures sufficient to reduce interior noise levels from exterior aviation-related sources to no more than CNEL 40 dB. This requirement is intended to reduce the disruptiveness of loud individual aircraft noise events upon uses in this zone and represents a higher standard than the CNEL 45 dB standard set by state and local regulations and countywide ALUC policy. Office space must have sound attenuation features sufficient to reduce the exterior aviation related noise level to no more than CNEL 45 dB. To ensure compliance with these criteria, an acoustical study shall be required to be completed for any development proposed to be situated where the aviation-related noise exposure is more than 20 dB above the interior standard (e.g., within the CNEL 60 dB contour where the interior standard is CNEL 40 dB). Standard building construction is presumed to provide adequate sound attenuation where the difference between the exterior noise exposure and the interior standard is 20 dB or less.

5 NOISE IMPACT ANALYSIS

This chapter evaluates the direct and indirect noise impacts that could result from the implementation of the proposed Project.

5.1 THRESHOLDS OF SIGNIFICANCE

In accordance with Appendix G of the State CEQA Guidelines, the proposed Project could result in potentially significant impacts related to noise and vibration if it would:

- Generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of the standards established in:
 - The City of Perris Municipal Code Section 7.34.040 (Sound Amplification), 7.34.050 (General Prohibition), 7.34.060 (Construction Noise), and/or Chapter 16.22 (Construction Located Near Arterials, Railroads, and Airports); or
 - The City of Perris Noise Element Exhibit N-1 (Land Use/Noise Compatibility Guidelines);
- Generate excessive groundborne vibration or groundborne noise levels;
- Expose people residing or working in the Project area to excessive airport-related noise levels.

5.2 NOISE IMPACT ANALYSIS METHODOLOGY

The construction and operation of the proposed Project would generate noise and vibration. This section describes the Project's noise sources and the methodologies used to estimate potential Project noise and vibration levels.

5.2.1 CONSTRUCTION NOISE

As described in Section 2.3.5 and shown in Table 2-1, the proposed Project would generate construction noise from the following sources:

- Heavy equipment operations throughout the Project area. Some heavy equipment would consist of mobile equipment such as a loader, excavator, etc. that would move around work areas; other equipment would consist of stationary equipment (e.g., generators, air compressors) that would generally operate in a fixed location until work activities are complete. Heavy equipment generates noise from engine operation, mechanical systems and components (e.g., fans, gears, propulsion of wheels or tracks), and other sources such as back-up alarms. Mobile equipment generally operates at different loads, or power outputs, and produce higher or lower noise levels depending on the operating load. Stationary equipment generally operates at a steady power output that produces a constant noise level.
- Vehicle trips, including worker, vendor, and haul truck trips. These trips would occur on the roads that provide access to the Project site, primarily North Perris Boulevard and East Rider Street.

Since Project-specific construction equipment information is not available at this time, potential construction-related noise impacts can only be evaluated based on the typical construction activities associated with an industrial development project. Table 5-1 presents the estimated, worst-case noise levels that could occur from the operation of typical construction equipment used to develop an industrial

land use project. The equipment assumptions used in this Report are based on, and consistent with, the California Emissions Estimator Model (CalEEMod) construction phasing, equipment usage, and operating schedules used to evaluate the proposed Project's potential construction air quality impacts (MIG, Inc 2020).

Table 5-1: Typical Construction Equipment Noise Levels (dBA)					
Equipment	Reference Noise Level at 50 Feet (L_{max}) ^(A)	Percent Usage Factor ^(B)	Predicted Noise Levels (L_{eq}) at Distance ^(C)		
			25 Feet	50 Feet	250 Feet
Backhoe	80	40	82	76	62
Bulldozer	85	40	87	81	67
Compact Roller	80	20	79	73	59
Concrete Mixer	85	40	87	81	67
Crane	85	16	83	77	63
Delivery Truck	85	40	87	81	67
Excavator	85	40	87	81	67
Generator	82	50	85	79	65
Paver	85	50	88	82	68
Pneumatic tools	85	50	88	82	68
Scraper	85	40	87	81	67
Tractor	84	40	86	80	66

Sources: Caltrans, 2013; FHWA, 2010; MIG (see Appendix A, Sheet 1).
 (A) L_{max} noise levels based on manufacturer's specifications.
 (B) Usage factor refers to the amount of time the equipment produces noise over the time period.
 (C) Estimate does not account for any atmospheric or ground attenuation factors. Calculated noise levels based on Caltrans, 2013: L_{eq} (hourly) = L_{max} at 50 feet - $20\log(D/50) + 10\log(UF)$, where: L_{max} = reference L_{max} from manufacturer or other source; D = distance of interest; UF = usage fraction or fraction of time period of interest equipment is in use.

5.2.2 OPERATIONAL NOISE

Once constructed, the proposed Project would generate noise from the following activities:

- Automobile travel to parking spaces and fuel pumps, automobile parking, and other miscellaneous automobile noise sources such as doors closing and engine start-up and revving. On-site automobile travel is assumed to occur at low speeds (10 mph). The amount of peak hour (128 trips) and daily automobile trips (2,404) accessing the site is based on the vehicle miles travelled (VMT) screening analysis prepared for the Project (Ganddini Group, Inc. 2020). These trips were distributed assuming an equal percentage of ingress and egress from the Project's two driveways. Once on-site 80% of the vehicle trips were assumed to travel to the fueling canopy and 20% were assumed to travel onto the car wash.

- Fuel tanker truck travel, braking, and UST loading operations. On-site truck travel is assumed to occur at low speeds (10 mph). On-site truck idling was assumed to occur for a total of 15 minutes per fuel unloading operation.
- Rooftop-mounted heating, ventilation, and air conditioning (HVAC) units are assumed to be a Carrier Model 48HC or equivalent rated at 3 tons and capable of producing a noise level of approximately 76 dBA at a distance of 3 feet. The proposed 7-Eleven building would have up to four rooftop HVAC units located near the center of the building. These units would be located behind a seven-foot-high stucco parapet wall that would shield the units from the street and serve to reduce potential HVAC unit noise levels at adjacent property lines. The level of attenuation provided by this partial shielding was assumed to be 10 dBA.³
- Car wash operations. See the description of car wash operations below.
- Vacuum operation. The conceptual site plan calls for two dome-style commercial vacuums to be located on the north side of the car wash. These vacuums are assumed to be typical commercial vacuums that are not insulated and equipped with a standard 1.6 horsepower motor (e.g., a J.E. Adams Industries Super Vac 9200 series vacuum). Each vacuum is assumed to generate a maximum noise level of 86 dBA at a distance of 3 feet from the vacuum.
- Mechanical equipment such as condensers for ice machines and coolers/freezers. This mechanical equipment would be housed in mechanical/storage closets and would not substantially contribute to project noise levels.
- Other miscellaneous noise sources, including pneumatic air hoses, water hoses, fuel pump operation, refuse collection, and human speech. These sources of noise would not be substantial and would not substantially contribute to the overall noise generated from on-site activities due to their limited and intermittent operations.

³ Common building materials such as wood framing materials, plywood, and light concrete/stucco all have transmission loss rating greater than 20 dBA to 25 dBA and are capable of reducing transmitted sound levels by 10 to 15 dBA at minimum (Caltrans, 2013). This analysis assumes a 5 dBA reduction in HVAC unit noise levels associated with parapet walls. This is considered a conservative assumption (i.e., likely to underestimate shielding and noise attenuation).

5.2.2.1 Automated Car Wash Noise Description

An automated car wash generates noise from vehicles maneuvering into and out of the car wash and from the operation of the automated system itself. An automated system generates noise during two main cycles: the water spraying/washing cycle and the drying cycle. The factors that affect the noise levels generated by these sources include: 1) the size of the automated washing (e.g., brushes, spray nozzles, etc.) and drying equipment (e.g., fans and blowers); 2) the duration of each duty cycle (i.e., how many minutes it takes to complete an individual wash or dry cycle); the total duration of the entire washing cycle (i.e., how many minutes to complete an individual car wash); the presence of any noise attenuating design features in the car wash frame/tunnel design, such as sound absorbing materials, low noise dryers, or doors at tunnel entrances and exits. Typically, the drying cycle generates the highest operational noise level (PC&D, 2005). This is because vehicles maneuver into and out of the car wash tunnel at low speeds and the washing cycle involves relatively low-pressure water spray and soft brushes. In contrast, the drying cycle involves relatively higher-pressure air flows and use of equipment such as fans and blowers that generate noise from mechanical and other noise from air intake, exhaust, and turbulence.

The applicant has not selected a specific make or model for the proposed automatic car wash; however, the small size of the car wash (less than 1,000 square feet) and the short tunnel length (approximately 40 feet) indicates the type of system to be installed will likely consist of a standard brush-based system with an on-board dryer, such as the Ryko SoftGloss MAXX system (see Appendix B). Vehicles will enter the car wash tunnel, proceed to a marked point within the tunnel, remain stationary while the car wash completes its washing and drying cycles, and then exit the car wash tunnel. Movement through the tunnel will be controlled via indicator lights. The Ryko SoftGloss MAXX on-board dryer consists of two, 10-horsepower oscillating fans. These fans are attached to the wash equipment gantry and move over the parked vehicle (instead of the vehicle moving to a fixed dryer location). Dryer cycle noise, therefore, effectively radiates from the approximate center of the tunnel and out of the tunnel's entrance and exit doors.

For the purposes of this analysis, the Ryko SoftGloss MAXX system is assumed to generate a maximum noise level of 86 dBA at a distance of 10 feet from the car wash entrance and exit. This maximum noise level assumes the car wash is equipped with standard manufacturer on-board dryers and does not include any noise attenuation design features (sound absorbing materials, entrance and exit doors that close). This assumption is based on MIG's professional experience evaluating car wash noise levels and a literature search for projects involving the Ryko SoftGloss MAXX automatic car wash system. It is also consistent with other predicted noise levels for automatic car washes approved by the City (City of Perris, 2019).

Maximum car wash noise levels will occur during the drying cycle. The typical automatic car wash requires four to five minutes for a vehicle to enter the tunnel, complete the full wash and dry cycle, and exit the tunnel. The drying cycle typically lasts for one minute. Therefore, the maximum noise levels are assumed to occur for up to 12 minutes in any one hour. At this operational rate, the effective hourly average noise level associated with car wash operations will be 79.6 dBA at a distance of 10 feet.⁴

⁴ See Equation 3 for the methodology used to estimate variable noise levels. This value does not represent the ambient noise level that would occur during one hour of car wash operation. This value is independent of ambient noise levels and assumes the car wash operates at maximum noise levels for 12 minutes in one hour and 15 dB less than maximum noise levels for 48 minutes in one hour.

5.2.2.2 Operational Noise Level Estimates

The proposed Project's operational noise levels were estimated using standard theoretical equations for predicting environmental noise levels (Caltrans, 2013). For an ideal point source of sound, the energy contained in a sound pressure wave dissipates and is absorbed by the surrounding environment as the sound wave spreads out in a spherical pattern and travels away from the point source. Theoretically, the sound level attenuates, or decreases, by 6 dB with each doubling of distance from the point source. The change in noise levels between two distances can be calculated according to Equation 1 as follows:

$$\text{Equation 1}$$

$$dBA2 = dBA1 + 20\log (D1/D2)$$

Where:

- dBA1 = Known noise level, such as a reference noise level
- D1 = Distance associated with dBA1
- dBA2 = Noise level at distance 2
- D2 = Distance associated with dBA2

For an ideal line source of sound, the energy contained in a sound pressure wave dissipates and is absorbed by the surrounding environment as the sound wave spreads out in a cylindrical pattern from the source. Theoretically, the sound level attenuates, or decreases, by 3 dB with each doubling of distance from the line source. The change in noise levels between two distances can be calculated according to Equation 2 as follows:

$$\text{Equation 2}$$

$$dBA2 = dBA1 + 10\log (D1/D2)$$

Where:

- dBA1 = Known noise level, such as a reference noise level
- D1 = Distance associated with dBA1
- dBA2 = Noise level at distance 2
- D2 = Distance associated with dBA2

For noise sources that do not operate continuously (e.g., vehicles and trucks that travel on-site, park, and then cease to generate noise), the average, hourly noise level associated with variable (i.e., non-steady) noise source can be calculated using Equation 3 as follows:

$$\text{Equation 3}$$

$$\text{Hourly } L_{eq} = 10 * \text{Log} (P_h) * 10^{(L_p/10)}$$

Where:

- P_h = Percentage or fraction of hour the noise is generated
- L_p = The noise level generated during the partial hour (P_h)

Finally, the total combined sound pressure level from multiple, identical sources of noise at a receiver location can be calculated using Equation 4 as follows:

$$\text{Equation 4}$$

$$SPL_{Total} = SPL_1 + 10 * \text{Log} (N)$$

Where:

SPL₁ = Sound pressure level of one source

N = Number of identical sources to be added

Reference and potential hourly average noise levels associated with the proposed Project's noise sources are summarized in Table 5-2. All reference noise levels are presented at a distance of three (3) feet from the source.

Table 5-2: Project Noise Source – Reference and Hourly L _{eq} Noise Levels			
Noise Source	Reference dBA ^(A)	Duration ^(B)	Hourly L _{eq} ^(C)
<u>Automobile Trips</u>			
<i>Low speed travel (15 mph)/parking</i>	55	60 seconds	37.2
<i>Door closing</i>	95	1 second	59.4
<i>Engine start and revving</i>	95	5 seconds	66.4
<i>Total Combined Noise Level</i>			67.2
<u>On-Site Truck Trip</u>			
<i>Low speed travel (15 mph)</i>	90	60 seconds	72.2
<i>UST maneuvering (w/ back-up alarm)</i>	100	60 seconds	82.2
<i>Air brake release</i>	100	3 seconds	69.2
<i>Main engine idling</i>	80	900 seconds	74.0
<i>Door closing</i>	95	1 second	59.4
<i>Engine start and revving</i>	100	10 seconds	74.4
<i>Total Combined Noise Level</i>			83.9
<u>HVAC Unit</u>			
<i>Operation (3-ton, with parapet wall)</i>	76	1,200	71.2
<u>Vacuum</u>			
<i>Operation</i>	80	600	72.2
<u>Fuel Storage and Dispensing</u>			
<i>Max Operation (with drying cycle)</i>	96.5	720	89.5
<i>Typical Operation (wash cycle)</i>	81.5	2,880 seconds	80.5
<i>Total Combined Noise Level</i>			90.0
Source: MIG (See Appendix C, Sheet 1)			
(A) Reference dBA is based on a distance of 3 feet.			
(B) Duration is used to estimate the percentage of time the noise is generated per Equation 3 (out of 3,600 seconds in an hour).			
(C) Hourly L _{eq} estimated using Equation 3.			

5.2.3 GROUNDBORNE VIBRATION

Project construction activities would involve the use of large equipment capable of generating groundborne vibrations. Since Project-specific construction equipment information is not available at this time, potential construction-related vibration impacts can only be evaluated based on the typical construction activities associated with an industrial development project. Table 5-3 presents the estimated,

worst-case vibration levels that could occur from the operation of the typical large and/or vibration-inducing construction equipment used to develop an industrial land use project. The equipment assumptions used in this Report are based on, and consistent with, the CalEEMod construction phasing, equipment usage, and operating schedules used to evaluate the proposed Project's potential construction air quality impacts (MIG, Inc. 2020).

Equipment	PPV ^(A) (Inches/Second) at Distance		
	25 Feet	50 Feet	250 Feet
Vibratory Roller	0.21	0.098	0.017
Large Bulldozer	0.089	0.042	0.007
Small Bulldozer	0.03	0.014	0.002
Loaded Truck	0.076	0.035	0.006
Jackhammer	0.035	0.016	0.003

Source: MIG (See Appendix A, Sheet 2)

(A) Estimated PPV calculated as: $PPV(D) = PPV(ref) * (25/D)^{1.3}$ where PPV(D) = Estimated PPV at distance; PPVref = Reference PPV at 25 ft; D = Distance from equipment to receiver; and n = ground attenuation rate (1.3 for competent sands, sandy clays, silty clays, and silts).

5.3 TEMPORARY CONSTRUCTION NOISE AND VIBRATION IMPACTS

During site preparation, grading, and paving activities construction equipment would operate throughout the site, moving closer to one property line and farther away from another; building construction and architectural coating activities would be concentrated in the center of the site where the proposed building and fueling canopy would be located. For these reasons, potential construction noise and vibration levels were estimated for worst-case equipment operations (50 feet from any property line), average equipment operations based on the distance from the center of the site to adjacent property lines (approximately 100 feet to the east property line and 160 feet to the south property line), and the shortest distance between the Project site and the Spirit Life Church (250 feet to the north).

5.3.1 TEMPORARY CONSTRUCTION NOISE LEVELS

A summary of predicted construction noise levels is presented in Table 5-4.

Scenario	Estimated Duration ^(A)	Single Equipment Use ^(B)		Multiple Equipment Use ^(C)	
		L _{eq} (h)	L _{max}	L _{eq} (h)	L _{max}
Worst-Case Construction (50 feet from property line) ^(D)	1 week	82	85	85	88
Typical Construction (100 feet from east property line)	10 months	76	79	79	82
Typical Construction (160 feet from south property line)	10 months	72	75	75	78
Typical Construction (250 feet away) ^(E)	10 months	68	71	71	74

Source: MIG (see Appendix A, Sheet 1).

(A) Estimated duration represents the period of time site preparation, grading, and paving activities would occur (see Table 2-1). For the worst-case construction scenario, the duration assumes equipment would not operate within 50 feet of the same property line location for more than 1 week.

(B) Values represent highest estimated noise level for one piece of construction equipment (see Table 5-1).

(C) Values represent highest estimated noise level for two pieces of construction equipment (see footnote 5).

(D) Construction activities may occur closer than 50 feet from a property line for short periods of time (hours) that are not representative of overall construction activities. The worst-case construction scenario reflects the duration that heavy equipment may operate in the same general area near a property line location.

(E) Measurement is based on the distance between the Project site boundary and the Spirit Life Church façade.

As shown in Table 5-4, the worst-case L_{eq} and L_{max} noise levels associated with the operation of a dozer, excavator, scraper, etc. are predicted to be approximately 82 and 85 dBA, respectively, at a distance of 50 feet from the equipment operating area. At an active construction site, it is not uncommon for two or more pieces of construction equipment to operate in the same area at the same time. The concurrent operation of two or more pieces of construction equipment would result in noise levels of approximately 85 dBA L_{eq} and 88 dBA L_{max} at a distance of 50 feet from equipment operating areas⁵. These maximum noise levels would occur for a short period time (less than three total weeks). As site preparation (3 days) and grading (6 days) is completed and building construction begins, work activities would occur further from property lines, require less large heavy-duty equipment (i.e., grader), and generate lower construction noise levels. Typical construction activities would generate noise levels (68 – 75 dBA L_{eq}) at residential property lines and other sensitive receptor locations that are similar to the existing ambient noise environment on North Perris Boulevard and East Rider Street (65 to 75 CNEL).

Section 7.34.060 of the City's Municipal Code sets forth that construction noise levels are exempt from City noise standards provided the activities take place between 7 AM and 7 PM, Monday to Saturday, and do not create noise levels that exceed 80 dBA in residential zones. As shown in Table 5-4, predicted construction noise levels would exceed the 80 dBA noise standard for residential zones contained in the City's Municipal Code; however, the Applicant has designed the Project to minimize potential construction

⁵ As shown in Table 5-1 a single bulldozer provides a sound level of 81 dBA L_{eq} at a distance of 50 feet; when two identical sound levels are combined, the noise level increases to 84 dBA L_{eq} and when three identical sound levels are combined, the noise level increases to 86 dBA L_{eq} (see Equation 4). These estimates assume no shielding or other noise control measures are in place at or near the work areas.

noise and vibration levels. Substantial site preparation and grading would not be required since the Project site is flat. The use of tilt-up concrete and wood panels for building walls and other components partially eliminates on-site fabrication of exterior walls and reduces the amount of equipment needed to erect the building. Finally, the Applicant has incorporated the following construction noise control measures/BMPs into the Project to reduce construction noise levels at the Project's eastern and southern property line:

Construction Noise Control Best Management Practices. To reduce potential noise levels associated with construction of the proposed Project, the Applicant and/or its designated contractor, contractor's representatives, or other appropriate personnel shall:

- *Restrict work hours/equipment noise.* All work shall be subject to the requirements in City Municipal Code Section 7.34.060. Construction activities, including deliveries, shall only occur from 7 AM to 7 PM Monday through Saturday (and not on holidays). The Applicant and/or its contractor shall post a sign at all entrances to the construction site informing contractors, subcontractors, construction workers, etc. of this requirement. The sign shall also provide a name (or title) and phone number for an appropriate on-site and City representative to contact to submit a noise complaint.
- *Construction equipment care, siting, and design measures.* The following construction equipment care, siting, and design measures shall apply during construction activities:
 - Heavy equipment engines shall be covered and exhaust pipes shall include a muffler in good working condition. Pneumatic tools shall include a noise suppression device on the compressed air exhaust.
 - All stationary noise-generating equipment such as pumps, compressors, and welding machines shall be located as far from neighboring property lines as practical.
 - If feasible, the Applicant and/or his contractor shall connect to existing electrical service at the site to avoid the use of stationary, diesel- or other alternatively-fueled power generators.
- *Construct/Install Temporary Noise Barrier.* The Applicant and/or his contractor shall install and maintain throughout the duration of all site preparation, grading, and other construction activities requiring large heavy-duty equipment operations within 50 feet of a residential property line a physical noise barrier capable of achieving a minimum reduction in predicted construction noise levels of 10 dB. Potential barrier options capable of achieving a 10 dB reduction in predicted construction noise levels include:
 - An 8-foot-high concrete, wood, or other barrier installed at-grade (or mounted to structures located at-grade, such as a K-Rail) along the Project's eastern and southern property line. Such a wall/barrier shall consist of solid material (i.e., free of openings or gaps other than weep holes) that have a minimum rated transmission loss value of 20 dBA.
 - Commercially available acoustic panels or other products such as acoustic barrier blankets installed along the Project southern property line that have a minimum sound transmission class (STC) or transmission loss value of 20 dBA. The rated STC or transmission loss value of the barrier would be confirmed by the manufacturer's specifications prior to installation.
 - Any combination of noise barriers and commercial products capable of achieving a 10 dBA reduction in construction noise levels at neighboring land uses.

The construction noise control BMP's listed above require the use of construction management and equipment controls to reduce potential noise from construction activities. These BMPs restrict work hours in accordance with the Municipal Code, require staging and stationary noise sources to be located as far from neighboring land uses as possible, and require a temporary noise barrier be erected along the southern property line capable of reducing noise levels by 10 dBA. These BMPs would render the proposed Project's construction noise levels consistent with Chapter 7.34.060.

5.3.2 TEMPORARY CONSTRUCTION VIBRATION LEVELS

The potential for groundborne vibration and noise is typically greatest when vibratory or large equipment such as rollers, impact drivers, or bulldozers are in operation. For the proposed Project, these types of equipment would primarily operate during site preparation, grading, and paving work. This equipment would, at worst-case and for very limited period of times, operate adjacent to the site's property lines and within approximately 25 feet of the residential buildings immediately east and south of the site; however, most site work would occur at least 50 feet from Project property lines and adjacent buildings. Accordingly, similar to the construction noise analysis presented in Section 5.3.1, potential construction vibration levels were estimated for worst-case equipment operations (50 feet from adjacent buildings), average equipment operations based on the distance from the center of the site to adjacent buildings (approximately 150 feet), and the shortest distance between the Project site and the nearest sensitive residential receptor building façade on Grand Terrace Road (approximately 250 feet). A summary of predicted construction vibration levels is presented in Table 5-5.

Table 5-5: Summary of Predicted Construction Vibration Levels		
Scenario	Estimated Duration ^(A)	Maximum PPV (inches/second) ^(B)
Worst-Case Construction (50 feet from adjacent buildings) ^(B)	1 week	0.098
Typical Construction (100 feet from east property line)	2 to 3 months	0.046
Typical Construction (160 feet from south property line)	2 to 3 months	0.027
Typical Construction (250 feet away) ^(D)	2 to 3 months	0.017

Source: MIG (see Appendix A, Sheet 2).

(A) Estimated duration represents the period of time site preparation, grading, and paving activities would occur (see Table 2-1). For the worst-case construction scenario, the duration assumes equipment would not operate within 50 feet of the same property line location for more than 1 week.

(B) Values represent highest estimated groundborne vibration level for typical construction equipment (see Appendix A).

(C) Construction activities may occur closer than 50 feet from a property line for short periods of time (hours) that are not representative of overall construction activities. The worst-case construction scenario reflects the duration that heavy equipment may operate in the same general area near a property line location.

(D) Measurement is based on the distance between the Project site boundary and the Spirit Life Church façade.

The City does not maintain numeric significance thresholds for groundborne vibration or groundborne noise; however, as shown in Table 5-5, construction equipment vibration levels at adjacent building locations could exceed commonly accepted vibration detection thresholds (see Table 4-1) for

"slightly perceptible" (0.035 inches/second) when operating in close proximity to the adjacent residential buildings and would, therefore, likely be perceptible at these building locations. This, however, is not considered to be excessive, because any worst-case equipment operations near adjacent buildings would be short in duration and intermittent (lasting only a few hours each day and no more than a few days or week in total near specific building locations). Additionally, potential construction vibration levels would not result in structural damage because the estimated vibration levels are substantially below commonly accepted thresholds for potential damage to modern industrial and commercial buildings (0.5 inches/second; see Table 4-2). Thus, short-term, intermittent construction equipment vibration levels would not be excessive at adjacent residential buildings. Construction vibration levels would also be substantially below human perception and structural damage thresholds at the Spirit Life Church located 250 feet northwest of the Project site. For these reasons, the proposed Project would not result in a significant groundborne vibration or groundborne noise impact from construction activities.

5.4 OPERATIONAL NOISE IMPACTS

Once constructed, the proposed Project would generate noise from on-site automobile and truck travel, HVAC operations, vacuum operation, and car wash operation. These noise sources are described in Section 5.2.2. Automobile travel and related noise was estimated based on the maximum hourly vehicle trip rates (128 trips) identified in the TIA prepared for the Project. These trips were distributed assuming an equal percentage of ingress and egress from the Project's two driveways. Once on-site 80% of the vehicle trips were assumed to travel to the fueling canopy and 20% were assumed to travel onto the car wash. Other activities (HVAC operations, vacuum operations, car wash operations, etc.) were assumed to be consistent throughout the day (i.e., no single hour would be substantially louder). The Project could operate 24-hours a day.

5.4.1 PREDICTED NOISE LEVELS AT ADJACENT PROPERTY LINES

The proposed Project's potential noise levels were estimated using the reference and calculated hourly L_{eq} noise levels identified in Table 5-2 above, adjusted for distance (between the noise source and property line) and activity levels (e.g., number of automobile trips, vacuums, etc.). In general, the estimated noise levels do not account for potential reflection or any atmospheric or ground absorption or attenuation due to the presence of predominantly paved surfaces between noise source and modeled receiver locations (i.e., property line). For multiple sources such as HVAC units, cars parking, etc., noise levels were modeled from a single location to conservatively (i.e., overestimate) aggregate noise levels from an area. Project noise levels were estimated at 8 receptor locations spread along the Project's north (R1), east (R2, R3, and R4), south (R5 and R6), and west (R7 and R8) property lines, as shown in Figure 5-1.

- *Automobile travel:* Each on-site automobile trip was assumed to travel at low speed (no more than 15 mph) and produce an average hourly noise level of approximately 37.2 dBA at a distance of 3 feet. Travel lanes would surround the proposed building. At their closest, the center of a travel lane would be approximately 36 to 96 feet from the Project's eastern and southern property line, respectively. At this distance, each automobile trip would generate an average hourly noise level of 15.6 and 7.1 dBA, respectively. The combined noise level at the property line from 20 (eastern property line) and 64 (southern property line) such trips occurring in one hour would be 28.6 and 25.2 dBA.

- *Automobile parking:* The proposed parking areas would surround the building. At their closest, the center of the parking areas would be approximately 58 and 77 feet from the Project's eastern and southern property lines, respectively. At this distance, each automobile trip would generate an average hourly noise level of 41.5 dBA (eastern property line) and 39.0 dBA (southern property line). The combined noise level at the property line from 8 such trips occurring at the same time would be 50.5 dBA (eastern property line) and 48.1 dBA (southern property line).
- *Truck trip noise:* Fuel truck deliveries would produce an hourly average noise level of 83.9 dBA. Fuel truck maneuvering and idling would occur near the northwest corner of the site, more than 200 feet from the sensitive property lines. At this distance, each fuel delivery would generate an average hourly noise level of 47.3 dBA. It is possible, although unlikely, that more than one fuel delivery could occur in a single day; however, due to space and maneuverability constraints, only one delivery would occur in any single hour.
- *HVAC noise:* HVAC equipment would produce an average hourly noise level of approximately 71.2 dBA at a distance of 3 feet (without attenuation from a parapet wall). These units would be located near the center of the proposed building, behind a parapet wall, at least 100 feet from any property line. At this distance, each HVAC unit would generate a noise level of approximately 40.4 dBA L_{eq} . The concurrent operation of up to 4 units at the same time, which is highly unlikely, would generate a combined HVAC noise level of 46.5 dBA.
- *Vacuum:* Vacuum operation would produce an average hourly noise level of approximately 78.2 dBA at a distance of 3 feet. The vacuums would be located on the north side of the car wash, more than 100 feet from the eastern property line. The car wash would also serve to partially shield vacuum noise from the southern property line. Each vacuum would generate a noise level of up to approximately 49.8 dBA L_{eq} at the eastern property line.
- *Car Wash:* At their closest, the car wash entrance and exit would be located approximately 55 feet from the southern property lines. At this distance, the car wash would generate a noise level of 64.8 dBA L_{eq} at these locations. Maximum car wash noise levels would be approximately 71.2 dBA L_{max} during drying cycle operations.

The average hourly noise level from all Project noise sources at the Project's property lines is summarized in Table 5-6 below; car wash operating noise levels are summarized in Table 5-7.

Property Line	Existing Ambient Noise Level	Project Noise Level, All Sources	Combined Noise Level	Project Increase in Ambient Noise Levels
North (R1)	66	57.3	66.5	+0.5
East (R2)	66	55.4	66.4	+0.4
East (R3)	66	57.7	66.6	+0.6
East (R4)	66	60.9	67.2	+1.2
South (R5)	66	64.9	68.5	+2.5
South (R6)	66	64.9	68.5	+2.5
West (R7)	75	56.2	75.1	+0.1
West (R8)	75	56.3	75.1	+0.1

Source: MIG, Inc. (See Appendix C, Sheet 2)

Property Line	Existing Ambient Noise Level (Hourly L_{eq} dBA)	Average Car Wash Noise Levels (Hourly L_{eq} dBA)	Maximum Car Wash Noise Levels (dBA L_{max} dBA)
East (R3)	66	55.7	62.2
East (R4)	66	60.3	66.8
South (R5)	66	64.8	71.2
South (R6)	66	64.8	71.2

Source: MIG, Inc. (See Appendix C, Sheet 2)

As shown in Table 5-6, the proposed Project would generate combined noise levels in the range of 55 to 65 dBA L_{eq} . Noise levels would be lowest at the north, east, and west property lines due to setbacks and the limited noise sources operating in these areas. Car wash Noise levels would be highest along the southern property line due to car wash operations (64.8 dBA L_{eq} and up 71.2 dBA L_{max} ; see Table 5-7).

Predicted project noise levels would be equal to or less than the assumed ambient noise level (66 or 75 dBA) at all property line locations. At the southern property line, the proposed Project could increase ambient noise levels by approximately 2.5 dBA (from 66 CNEL to 68.5 CNEL) if it were to operate 24 hours a day, which would represent a barely perceptible change in the ambient noise environment (see Section 3.1.5); however, in no case would the Project's noise levels cause a change in noise / land use compatibility exposure. As discussed in Section 4.3.4.3, the City's General Plan generally establishes that noise levels between 65 and 75 CNEL are normally unacceptable for the single family residential land uses that border the Project site on the east and south. The existing residential lands to the east and south are already exposed to existing noise levels of 66 to 70 CNEL due primarily to March ARB/IP operations (and vehicle traffic on North Perris Boulevard). Due to this high ambient noise level, which is considered normally unacceptable for single family residential land uses, a 2.5 dBA increase in ambient noise levels is considered substantial. In addition, car wash operations would specifically generate noise levels of 64.8 dBA L_{eq} and 71.2 dBA L_{max} . This noise level is less than the City's maximum daytime noise standard of 80

dBA set by Municipal Code Sections 7.34.040 and 7.34.050; however, it exceeds the City's maximum nighttime noise standard of 60 dBA.

To ensure the proposed Project's does not produce noise levels that would exceed a City standard or otherwise result in a substantial permanent increase in noise levels in the vicinity of the project, MIG recommends the following noise control measures/BMPs be incorporated into the Project to reduce construction noise levels at the Project's eastern and southern property lines:

Operational Noise Control Best Management Practices: To ensure the proposed Project complies with City Municipal Code Section 7.34.040 and 7.34.050 and does not result in a substantial permanent increase in ambient noise levels, the Applicant shall prepare and submit a final acoustical analysis, report, or other documentation to the City that:

- Provides evidence (manufacturer specifications or acceptable ambient noise monitoring data) confirming that the final selected car wash make and model does not produce noise levels that exceed 86 dBA L_{max} and 79.6 dBA L_{eq} at a distance of 10 feet from the car wash entrance or exit.
- Limits car wash noise levels to no more than 60 dBA L_{max} during the nighttime time period (10 PM to 7 AM) by:
 - Prohibiting vacuum and car wash operations during the nighttime period; or
 - Installing dampeners, acoustic panels, tunnel entrance and exit doors, or other acoustic treatments that reduce total car wash noise levels to 60 dBA L_{max} or less; or
 - Incorporate a solid concrete, wood, or other barrier of sufficient height and density to reduce noise levels to 60 dBA L_{max} or less at adjacent residential property lines.

The recommended noise control practices would ensure installed equipment produces sounds levels consistent with the assumptions in this Report and either prohibit nighttime operation of the car wash or limit car wash noise levels to 60 dBA L_{max} at adjacent residential receptor locations. If car wash operations are prohibited at night, the proposed car wash would not exceed City nighttime standards and the proposed Project would not result in a substantial change in the existing CNEL at and near the site (because the project would not increase nighttime noise levels above existing conditions). If the installation of acoustical treatments or a physical barrier is selected, the proposed Project would comply with City standards for daytime and nighttime noise levels and generate noise levels that are substantially less than the ambient noise environment (60 dBA L_{max} vs. 66 CNEL). The amount of attenuation provided by a physical noise barrier would vary depending on the barrier design. As shown in Table 5-7, up to 11.2 dBA reduction is necessary at the southern property line to comply with City's nighttime 60 dBA L_{max} standard. The material selected for the barrier would therefore need to have a transmission loss value of at least 22 dBA. For reference, a standard light concrete block measuring 8 inches high by 8 inches wide by 16 inches long has a transmission loss value of 34 dBA (Caltrans, 2013). As shown in Table 5-8, Preliminary noise barrier attenuation estimates indicate a barrier with a transmission loss value of 22 dBA would need to be six feet tall along the eastern property line and eight feet tall along the southern property line to meet a 60 dBA L_{max} standard during nighttime hours.

Property Line	6-Foot-Tall Barrier	7-Foot-Tall Barrier	8-Foot-Tall Barrier
East (R3)	6.60	9.48	12.12
East (R4)	6.74	9.67	12.32
South (R5)	6.97	9.98	12.63
South (R6)	6.97	9.98	12.63

Source: MIG, Inc. (See Appendix C, Sheet 3)

For the reasons described above, the proposed Project would not result in noise levels that exceed City standards or otherwise result in a substantial permanent increase in ambient noise levels with the incorporation of the recommended noise control practices.

5.4.2 OFF-SITE OPERATIONAL NOISE LEVELS

The proposed Project would generate vehicle trips that would be distributed onto the local roadway system and potentially increase noise levels along travel routes. Caltrans considers a doubling of total traffic volume to result in a three dBA increase in traffic-related noise levels (Caltrans, 2013). If the proposed Project would not result in a doubling of traffic volumes on the local roadway system, it would not result in a substantial permanent increase in traffic-related noise levels.

The proposed Project would result in a net increase in trip generation equal to 2,404 total daily trips, including 128 trips during the AM peak hour (Gandinni Group, Inc. 2020). These trips would end up on North Perris Boulevard or Rider Street, which have estimated ADT levels equal to at least 17,974 and 2,100, respectively (see Section 4.2). Assuming an approximately 50% distribution of trips, up to 1,202 total daily trips could end up on North Perris Boulevard and East Rider Street. This increase in trips would represent an approximately 7% and 57% increase in traffic volumes on North Perris Boulevard and East Rider Street, respectively. The proposed Project would result in substantially less than a doubling of peak hour and daily traffic volumes on roadways used to access the site and, therefore, would not result in a substantial, permanent increase in off-site noise levels on North Perris Boulevard or Rider Street.

5.4.3 NOISE AND LAND USE COMPATIBILITY

As discussed in Section 4.2.1, the measured 24-hour noise exposure level at the proposed Project site is between 65 and 70 CNEL. This value is within the City's conditionally acceptable noise limit for office buildings, business, commercial, professional, and mixed-use developments (up to 75 CNEL). For this exposure level, conventional construction is sufficient to ensure interior noise levels are compatible with the proposed activities; however,

5.5 AIRPORT-RELATED NOISE

As described in Section 4.2, the proposed Project is located approximately 2.5 miles southeast of March ARB/IP and is within March ARB/IP ALUCP Zone B1 (Inner Approach/Departure Zone; Riverside County ALUC, 2005 and 2014). The Project site is also located within the 65 CNEL noise contour associated with March ARB/IP.

The March ARB/IP ALUCP, the PVCC SP, and Chapter 16.22 of the City's Municipal Code establish specific requirements for the review and control of airport-related noise at the proposed Project

site. The Riverside County ALUC will review the proposed Project for compatibility with the March ARB/IP ALUCP, including the basic compatibility factors and criteria established by Tables MA-1 and MA-2 of the ALUCP. Both the ALUCP and the PVCC SP require all building office areas to be constructed with appropriate noise attenuation measures to meet a 45 CNEL interior noise level, which is more restrictive than the 50 dBA L_{eq} established by the State Building Code (see Section 4.3.2.1). Both the March ARB/IP ALUCP and the PVCC SP also set forth that standard building construction is presumed to provide adequate sound attenuation where the difference between the exterior noise exposure and the interior standard is 20 dB or less, which may be case for the proposed Project (65 CNEL – 20 db = 45 CNEL).

As stated above, the proposed Project site is within the 65 CNEL noise contour for March ARB/IP, meaning actual airport-related noise exposure may range between 65 CNEL and 70 CNEL. The proposed Project, therefore, may require an exterior to interior airport noise level reduction of up to 25 CNEL to meet ALUCP computability requirements.

The proposed Project is not a noise-sensitive land use. As a local-serving, commercial retail business elevated interior noise levels are not likely to interfere with speech or other communications. Patrons are unlikely to expect or require quiet conditions and would therefore likely judge the exterior and interior ambient noise levels at the site to be acceptable. In addition, the proposed building would include no habitable rooms where sleep would occur. The proposed building would include approximately 40 square feet of office space. The conceptual layout for the building indicates this office space would be located along the buildings western exterior wall. Standard construction techniques typically provide a minimum exterior to interior noise attenuation (i.e., reduction) of 30 to 32 dBA and are likely to be sufficient to meet a 45 CNEL standard in the proposed building's office area.⁶ Nonetheless, to ensure the proposed Project is compatible with the March ARB ALUCP, PVCC SP, and City code requirements and does not expose people working at the Project site to excessive airport-related noise levels, MIG recommends the Applicant include the following BMP into the project:

Airport Land Use Noise Compatibility: To ensure the proposed Project is compatible with the March ARB/IP ALUCP and the PVCC SP, the Applicant shall prepare and submit to the City a final acoustical analysis, report, or other documentation that demonstrates the final exterior wall design and assembly will achieve an exterior to interior noise level reduction of 25 dB at all building office areas that have at least one wall that is part of the building façade/ exterior wall assembly.

⁶ The U.S. Department of Housing and Urban Development (HUD) Noise Guidebook and supplement (2009a, 2009b) includes information on noise attenuation provided by building materials and different construction techniques. As a reference, a standard exterior wall consisting of 5/8-inch siding, wall sheathing, fiberglass insulation, two by four wall studs on 16-inch centers, and 1/2-inch gypsum wall board with single strength windows provides approximately 35 dBs of attenuation between exterior and interior noise levels.

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6 REPORT PREPARERS AND REFERENCES

This Report was prepared by MIG under contract to Tait & Associates. This Report reflects the independent, objective, professional opinion of MIG. The following individuals were involved in the preparation and review of this Report:

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APPENDIX A: Construction Noise and Vibration Estimates

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**7-Eleven Project (With 12 Fuel Pumps and 991 Square Foot Automated Car Wash)
23 East Rider Street, Perris, CA**

Appendix A: Construction Noise and Vibration Estimates

Prepared by: MIG, Inc.

September 2020

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7-Eleven Project (With 12 Fuel Pumps and 991 Square Foot Automated Car Wash)

23 East Rider Street, Perris, CA

Appendix A: Construction Noise and Vibration Estimates

Prepared by MIG, Inc. September 2020

Sheet 1: Construction Noise Estimates

Table 1: Construction Noise Estimates

Equipment	Distance from source										
	RNL	UF	25	50	75	100	160	250	400	500	600
Backhoe	80	0.4	82	76	72	70	66	62	58	56	54
Bulldozer	85	0.4	87	81	77	75	71	67	63	61	59
Compact roller	80	0.2	79	73	69	67	63	59	55	53	51
Concrete Mixer	85	0.4	87	81	77	75	71	67	63	61	59
Crane	85	0.16	83	77	74	71	67	63	59	57	55
Delivery Truck	85	0.4	87	81	77	75	71	67	63	61	59
Excavator	85	0.4	87	81	77	75	71	67	63	61	59
Generator	82	0.5	85	79	75	73	69	65	61	59	57
Paver	85	0.5	88	82	78	76	72	68	64	62	60
Pneumatic tools	85	0.5	88	82	78	76	72	68	64	62	60
Scraper	85	0.4	87	81	77	75	71	67	63	61	59
Tractor	84	0.4	86	80	76	74	70	66	62	60	58

Notes:

RNL - Reference Noise Level (50 ft)

UF - Usage Factor

7-Eleven Project (With 12 Fuel Pumps and 991 Square Foot Automated Car Wash)
23 East Rider Street, Perris, CA
Appendix A: Construction Noise and Vibration Estimates
Prepared by MIG, Inc. September 2020

Sheet 2: Vibration Estimates

Table 1: Receptor Distances

Receptor	Distance	From
Residential (Worst-Case)	50	Construction Equip
Residential (East)	100	Construction Equip
Residential (South)	160	Construction Equip
Institutional (Spirit Life Church)	250	Construction Equip

Table 2: Vibration Levels at 50 Feet

Equipment	Reference PPV at 50ft	Reference Lv at 50ft	Estimated PPV at 50ft	Estimated Lv at 50 ft
Roller	0.21	94	0.098	85.0
Large Bulldozer	0.089	87	0.042	78.0
Small Bulldozer	0.03	58	0.014	49.0
Loaded Truck	0.076	86	0.035	77.0
Jackhammer	0.035	79	0.016	70.0

Table 3: Vibration Levels at 100 Feet

Equipment	Reference PPV at 50ft	Reference Lv at 50ft	Estimated PPV at 100ft	Estimated Lv at 100 ft
Roller	0.21	94	0.046	75.9
Large Bulldozer	0.089	87	0.019	68.9
Small Bulldozer	0.03	58	0.007	39.9
Loaded Truck	0.076	86	0.017	67.9
Jackhammer	0.035	79	0.008	60.9

Table 4: Vibration Levels at 160 Feet

Equipment	Reference PPV at 50ft	Reference Lv at 50ft	Estimated PPV at 160ft	Estimated Lv at 160 ft
Roller	0.21	94	0.027	69.8
Large Bulldozer	0.089	87	0.012	62.8
Small Bulldozer	0.03	58	0.004	33.8
Loaded Truck	0.076	86	0.010	61.8
Jackhammer	0.035	79	0.005	54.8

Table 5: Vibration Levels at 250 Feet

Equipment	Reference PPV at 50ft	Reference Lv at 50ft	Estimated PPV at 250ft	Estimated Lv at 250 ft
Roller	0.21	94	0.017	64.0
Large Bulldozer	0.089	87	0.007	57.0
Small Bulldozer	0.03	58	0.002	28.0
Loaded Truck	0.076	86	0.006	56.0
Jackhammer	0.035	79	0.003	49.0

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APPENDIX B: Typical Car Wash Specifications

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SoftGloss MAXX

Gentle, yet powerful
five-brush clean

A proven success in the car wash industry, SoftGloss MAXX is a wash your clients will return to time and time again. You won't find its combination of features and benefits from anywhere else but Ryko. Equipped with our patented FoamBrite wash material, SoftGloss MAXX offers a safe, thorough clean that will send your customer satisfaction levels—and your sales—soaring.



FEATURES AND BENEFITS

The following features come standard on the SoftGloss MAXX:

- **FoamBrite-equipped cleaning arms** engulf the car for a top-to-bottom clean. This lightweight material is exclusive to Ryko and designed to deliver a detailed wash without worry of damage to the vehicle. The five FoamBrite-rotating brushes thoroughly clean vehicles in less time, maximizing your throughput and your profits.
- **Efficient chemical application** delivers uniform coverage of 360 CleanCut presoak, detergent and TriFoam wax.
- An **onboard computer** memorizes the profile of each vehicle as it goes through the wash for improved wash quality. Plus, a top-brush-interrupt feature prevents the top brush from dropping into the beds of pickup trucks where it could come into contact with debris and damage the truck or the machine.
- **Low-profile vehicle detection and tall side arms** ensure cars of all sizes—from minis to duallies—experience the same spotless clean.
- **A custom look** is easy to create with our standard colors of FoamBrite and body panels. Custom-colored body panels are also available.

PROFITABLE OPTIONS

Push your profits higher with any of these add-ons:

- **Wheel scrub** provides extra cleaning power where vehicles need it most.
- **ColorWave finishing curtain** delivers a customer-wowing light show that will set your wash apart from the competition. (Available in red, yellow or blue.)
- **Onboard dryers** allow your customers to relax while the machine uniformly dries their vehicles.
- **RainShield** protectant protects vehicle bodies and glass surfaces from corrosives, oxidation and UV rays while improving visibility, enhancing color and shine, and providing a water-repellant coating.
- **Water reclamation system** minimizes the amount of fresh, city water usage.
- **HP turbo wash** provides effective and appealing high-pressure cleaning of wheels and rocker panels.
- **Rotating rocker blaster and under-chassis wash** annihilate grime buildup.
- **Spot-free rinse** reduces contaminants to eliminate spots on vehicles.
- **Larger bay sizes** to accommodate duallies.

SoftGloss MAXXX

SPECIFICATIONS

Maximum Vehicle Height	84"
Maximum Vehicle Width	95"
Water (min)	40 PSI @ 40 GPM, 1"
Air (min)	100 PSI @ 3 CFM, 3/8"
Electrical (basic)	208/230V AC, 60 HZ, 3 Phase, and 120V AC, 60 HZ, 1 Phase OR 460V AC, 60 HZ, 3 Phase, and 120V AC, 60 HZ, 1 Phase



Only Ryko Can Offer All of This!

The most comprehensive line of car wash equipment solutions in the industry, with touch, touchless and tunnel options.

SoftGloss
MAXXX

SOFTGLOSS
MAXX 3

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MINI
EXPRESS

pulse

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Clean
Touch
SERVICE • CHEMICALS • PARTS

CleanTouch leads the industry in uptime with **the only coast-to-coast, direct support program with locally based technicians and a full line of wash solutions.** It all adds up to increased wash counts and higher profit margins.

- Equipment and Installation
- On-Site Service
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- CleanTouch Wash Solutions
- Remote Monitoring

- Online Tech Resources
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APPENDIX C: Operational Noise Level Estimates

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**7-Eleven Project (With 12 Fuel Pumps and 991 Square Foot Automated Car Wash)
23 East Rider Street, Perris, CA**

Appendix C: On-Site Operational Noise Level Estimates

Prepared by: MIG, Inc.

September 2020

Contents:

Sheet 1	Reference Noise Level Information
Sheet 2	On-Site Noise Level Estimates
Sheet 3	Preliminary Barrier Insertion Loss Estimates

7-Eleven Project (With 12 Fuel Pumps and 991 Square Foot Automated Car Wash)

23 East Rider Street, Perris, CA

Appendix C: On-Site Operational Noise Level Estimates

Prepared by MIG, Inc. September 2020

Sheet 1: Reference Noise Level Information

Table 1: Reference Noise Level Information

Noise Source	Reference dBA @ 3 Feet	Duration (Seconds)	Estimated Hourly Leq @ 3 Feet
<u>On-site Automobile Trip</u>			
<i>Low speed travel (15 mph)/parking</i>	55	60	37.2
<i>Door closing</i>	95	1	59.4
<i>Engine start/rev</i>	95	5	66.4
<i>Total Combined Noise Level</i>			67.2
<u>On-Site Truck Trip</u>			
<i>Low speed travel (15 mph)</i>	90	60	72.2
<i>UST maneuvering(with backup alarm)</i>	100	60	82.2
<i>Air brake release</i>	100	3	69.2
<i>Main engine idling</i>	80	900	74.0
<i>Door closing</i>	95	1	59.4
<i>Engine start/rev</i>	100	10	74.4
<i>Total Combined Noise Level</i>			83.9
<u>HVAC Unit</u>			
<i>Operation (3 Ton)</i>	76	1,200	71.2
<u>Vacuum</u>			
<i>Operation</i>	86	600	78.2
<u>Car Wash</u>			
<i>Max Operation (with Drying Cycle)</i>	96.5	720	89.5
<i>Typical Operation (Wash Cycle)</i>	81.5	2,880	80.5
<i>Total Combined Noise Level</i>			90.0

7-Eleven Project (With 12 Fuel Pumps and 991 Square Foot Automated Car Wash)

23 East Rider Street, Perris, CA

Appendix C: On-Site Operational Noise Level Estimates

Prepared by MIG, Inc. September 2020

Sheet 2: On-Site Noise Level Estimates

Table 1: Summary of Noise Levels at Property Lines

Property Line (Receptor)	Existing Ambient Noise Level	Project Noise Level (Hourly Leq dBA)	Combined Noise Level	Difference
North (R1)	66.0	57.3	66.5	0.5
East (R2)	66.0	55.4	66.4	0.4
East (R3)	66.0	57.7	66.6	0.6
East (R4)	66.0	57.0	66.5	0.5
South (R5)	66.0	64.9	68.5	2.5
South (R6)	66.0	64.9	68.5	2.5
West (R7)	75.0	56.2	75.1	0.1
West (R8)	75.0	56.3	75.1	0.1

Table 2: Summary of Noise Levels at North Property Line (R1)

On-Site Noise Source	Reference Noise Data		North Property Line (Single Source)		North Property Line (Multiple Sources)	
	Distance	Hourly Leq dBA	Distance	Hourly Leq dBA	No. Sources	Hourly Leq dBA
On-Site Vehicle Trip (A1)	3	37.2	70	9.9	64	27.9
On-Site Vehicle Trip (A2)	3	37.2	133	4.3	20	17.3
On-Site Vehicle Trip (A3)	3	37.2	<i>Source does not substantially contribute to noise levels at this location.</i>			
On-Site Vehicle Trip (A4)	3	37.2	164	2.5	54	19.8
On-Site Vehicle Trip (A5)	3	37.2	138	4.0	54	21.3
Vehicle Parking (P1)	3	67.2	88	37.9	6	45.7
Vehicle Parking (P2)	3	67.2	<i>Source does not substantially contribute to noise levels at this location.</i>			
Vehicle Parking (P3)	3	67.2	<i>Source does not substantially contribute to noise levels at this location.</i>			
Vehicle Parking (P4)	3	67.2	<i>Source does not substantially contribute to noise levels at this location.</i>			
Vehicle Parking (P5)	3	67.2	135	34.2	9	43.7
Fuel Truck Delivery (T1)	3	83.9	80	55.4	1	55.4
HVAC Unit (H1)	3	71.2	134	28.2	4	34.2
Vacuum (V1)	3	78.2	<i>Source does not substantially contribute to noise levels at this location.</i>			
Vacuum (V2)	3	78.2	245	40.0	1	40.0
Car Wash Entrance (W1)	3	90.0	<i>Source does not substantially contribute to noise levels at this location.</i>			
Car Wash Exit (W2)	3	90.0	257	51.4	1	51.4

7-Eleven Project (With 12 Fuel Pumps and 991 Square Foot Automated Car Wash)

23 East Rider Street, Perris, CA

Appendix C: On-Site Operational Noise Level Estimates

Prepared by MIG, Inc. September 2020

Sheet 2: On-Site Noise Level Estimates

Table 3: Summary of Noise Levels at East Property Line (R2)

On-Site Noise Source	Reference Noise Data		East Property Line (Single Source)		East Property Line (Multiple Sources)	
	Distance	Hourly Leq dBA	Distance	Hourly Leq dBA	No. Sources	Hourly Leq dBA
On-Site Vehicle Trip (A1)	3	37.2	94	7.3	64	25.4
On-Site Vehicle Trip (A2)	3	37.2	84	8.3	20	21.3
On-Site Vehicle Trip (A3)	3	37.2	Source does not substantially contribute to noise levels at this location.			
On-Site Vehicle Trip (A4)	3	37.2	Source does not substantially contribute to noise levels at this location.			
On-Site Vehicle Trip (A5)	3	37.2	Source does not substantially contribute to noise levels at this location.			
Vehicle Parking (P1)	3	67.2	100	36.8	6	44.5
Vehicle Parking (P2)	3	67.2	94	37.3	8	46.3
Vehicle Parking (P3)	3	67.2	204	30.6	8	39.6
Vehicle Parking (P4)	3	67.2	Source does not substantially contribute to noise levels at this location.			
Vehicle Parking (P5)	3	67.2	Source does not substantially contribute to noise levels at this location.			
Fuel Truck Delivery (T1)	3	83.9	202	47.3	1	47.3
HVAC Unit (H1)	3	71.2	125	28.8	4	34.9
Vacuum (V1)	3	78.2	218	41.0	1	41.0
Vacuum (V2)	3	78.2	223	40.8	1	40.8
Car Wash Entrance (W1)	3	90.0	221	52.7	1	52.7
Car Wash Exit (W2)	3	90.0	Source does not substantially contribute to noise levels at this location.			

Table 4: Summary of Noise Levels at East Property Line (R3)

On-Site Noise Source	Reference Noise Data		East Property Line (Single Source)		East Property Line (Multiple Sources)	
	Distance	Hourly Leq dBA	Distance	Hourly Leq dBA	No. Sources	Hourly Leq dBA
On-Site Vehicle Trip (A1)	3	37.2	128	4.6	64	22.7
On-Site Vehicle Trip (A2)	3	37.2	36	15.6	20	28.6
On-Site Vehicle Trip (A3)	3	37.2	Source does not substantially contribute to noise levels at this location.			
On-Site Vehicle Trip (A4)	3	37.2	Source does not substantially contribute to noise levels at this location.			
On-Site Vehicle Trip (A5)	3	37.2	Source does not substantially contribute to noise levels at this location.			
Vehicle Parking (P1)	3	67.2	114	35.6	6	43.4
Vehicle Parking (P2)	3	67.2	58	41.5	8	50.5
Vehicle Parking (P3)	3	67.2	144	33.6	8	42.6
Vehicle Parking (P4)	3	67.2	118	35.3	4	41.3
Vehicle Parking (P5)	3	67.2	Source does not substantially contribute to noise levels at this location.			
Fuel Truck Delivery (T1)	3	83.9	Source does not substantially contribute to noise levels at this location.			
HVAC Unit (H1)	3	71.2	104	30.4	4	36.5
Vacuum (V1)	3	78.2	159	43.7	1	43.7
Vacuum (V2)	3	78.2	165	43.4	1	43.4
Car Wash Entrance (W1)	3	90.0	156	55.7	1	55.7
Car Wash Exit (W2)	3	90.0	Source does not substantially contribute to noise levels at this location.			

7-Eleven Project (With 12 Fuel Pumps and 991 Square Foot Automated Car Wash)

23 East Rider Street, Perris, CA

Appendix C: On-Site Operational Noise Level Estimates

Prepared by MIG, Inc. September 2020

Sheet 2: On-Site Noise Level Estimates

Table 5: Summary of Noise Levels at East Property Line (R4)

On-Site Noise Source	Reference Noise Data		East Property Line (Single Source)		East Property Line (Multiple Sources)	
	Distance	Hourly Leq dBA	Distance	Hourly Leq dBA	No. Sources	Hourly Leq dBA
On-Site Vehicle Trip (A1)	3	37.2	232	-0.5	64	17.5
On-Site Vehicle Trip (A2)	3	37.2	129	4.5	20	17.6
On-Site Vehicle Trip (A3)	3	37.2	Source does not substantially contribute to noise levels at this location.			
On-Site Vehicle Trip (A4)	3	37.2	274	-2.0	54	15.3
On-Site Vehicle Trip (A5)	3	37.2	220	-0.1	54	17.2
Vehicle Parking (P1)	3	67.2	Source does not substantially contribute to noise levels at this location.			
Vehicle Parking (P2)	3	67.2	139	33.9	8	42.9
Vehicle Parking (P3)	3	67.2	101	36.7	8	45.7
Vehicle Parking (P4)	3	67.2	124	34.9	4	40.9
Vehicle Parking (P5)	3	67.2	Source does not substantially contribute to noise levels at this location.			
Fuel Truck Delivery (T1)	3	83.9	Source does not substantially contribute to noise levels at this location.			
HVAC Unit (H1)	3	71.2	166	26.4	4	32.4
Vacuum (V1)	3	78.2	112	46.8	1	46.8
Vacuum (V2)	3	78.2	122	46.0	1	46.0
Car Wash Entrance (W1)	3	90.0	92	55.3	1	55.3
Car Wash Exit (W2)	3	90.0	Source does not substantially contribute to noise levels at this location.			

Table 6: Summary of Noise Levels at South Property Line (R5)

On-Site Noise Source	Reference Noise Data		South Property Line (Single Source)		South Property Line (Multiple Sources)	
	Distance	Hourly Leq dBA	Distance	Hourly Leq dBA	No. Sources	Hourly Leq dBA
On-Site Vehicle Trip (A1)	3	37.2	Source does not substantially contribute to noise levels at this location.			
On-Site Vehicle Trip (A2)	3	37.2	168	2.3	20	15.3
On-Site Vehicle Trip (A3)	3	37.2	214	0.2	64	18.2
On-Site Vehicle Trip (A4)	3	37.2	Source does not substantially contribute to noise levels at this location.			
On-Site Vehicle Trip (A5)	3	37.2	Source does not substantially contribute to noise levels at this location.			
Vehicle Parking (P1)	3	67.2	Source does not substantially contribute to noise levels at this location.			
Vehicle Parking (P2)	3	67.2	169	32.2	8	41.2
Vehicle Parking (P3)	3	67.2	77	39.0	8	48.1
Vehicle Parking (P4)	3	67.2	121	35.1	4	41.1
Vehicle Parking (P5)	3	67.2	Source does not substantially contribute to noise levels at this location.			
Fuel Truck Delivery (T1)	3	83.9	Source does not substantially contribute to noise levels at this location.			
HVAC Unit (H1)	3	71.2	179	25.7	4	31.7
Vacuum (V1)	3	78.2	Source does not substantially contribute to noise levels at this location.			
Vacuum (V2)	3	78.2	Source does not substantially contribute to noise levels at this location.			
Car Wash Entrance (W1)	3	90.0	55	64.8	1	64.8
Car Wash Exit (W2)	3	90.0	Source does not substantially contribute to noise levels at this location.			

7-Eleven Project (With 12 Fuel Pumps and 991 Square Foot Automated Car Wash)

23 East Rider Street, Perris, CA

Appendix C: On-Site Operational Noise Level Estimates

Prepared by MIG, Inc. September 2020

Sheet 2: On-Site Noise Level Estimates

Table 7: Summary of Noise Levels at South Property Line (R6)

On-Site Noise Source	Reference Noise Data		South Property Line (Single Source)		South Property Line (Multiple Sources)	
	Distance	Hourly Leq dBA	Distance	Hourly Leq dBA	No. Sources	Hourly Leq dBA
On-Site Vehicle Trip (A1)	3	37.2	Source does not substantially contribute to noise levels at this location.			
On-Site Vehicle Trip (A2)	3	37.2	Source does not substantially contribute to noise levels at this location.			
On-Site Vehicle Trip (A3)	3	37.2	96	7.1	64	25.2
On-Site Vehicle Trip (A4)	3	37.2	179	1.7	54	19.0
On-Site Vehicle Trip (A5)	3	37.2	165	2.4	54	19.7
Vehicle Parking (P1)	3	67.2	Source does not substantially contribute to noise levels at this location.			
Vehicle Parking (P2)	3	67.2	Source does not substantially contribute to noise levels at this location.			
Vehicle Parking (P3)	3	67.2	Source does not substantially contribute to noise levels at this location.			
Vehicle Parking (P4)	3	67.2	133	34.3	4	40.3
Vehicle Parking (P5)	3	67.2	160	32.7	9	42.2
Fuel Truck Delivery (T1)	3	83.9	240	45.8	1	45.8
HVAC Unit (H1)	3	71.2	187	25.3	4	31.4
Vacuum (V1)	3	78.2	Source does not substantially contribute to noise levels at this location.			
Vacuum (V2)	3	78.2	Source does not substantially contribute to noise levels at this location.			
Car Wash Entrance (W1)	3	90.0	Source does not substantially contribute to noise levels at this location.			
Car Wash Exit (W2)	3	90.0	55	64.8	1	64.8

Table 8: Summary of Noise Levels at West Property Line (R7)

On-Site Noise Source	Reference Noise Data		West Property Line (Single Source)		West Property Line (Multiple Sources)	
	Distance	Hourly Leq dBA	Distance	Hourly Leq dBA	No. Sources	Hourly Leq dBA
On-Site Vehicle Trip (A1)	3	37.2	300	-12.8	64	5.3
On-Site Vehicle Trip (A2)	3	37.2	Source does not substantially contribute to noise levels at this location.			
On-Site Vehicle Trip (A3)	3	37.2	33	6.4	64	24.5
On-Site Vehicle Trip (A4)	3	37.2	138	-6.0	54	11.3
On-Site Vehicle Trip (A5)	3	37.2	172	-7.9	54	9.4
Vehicle Parking (P1)	3	67.2	Source does not substantially contribute to noise levels at this location.			
Vehicle Parking (P2)	3	67.2	Source does not substantially contribute to noise levels at this location.			
Vehicle Parking (P3)	3	67.2	202	20.7	8	29.7
Vehicle Parking (P4)	3	67.2	209	20.4	4	26.4
Vehicle Parking (P5)	3	67.2	194	21.0	9	30.6
Fuel Truck Delivery (T1)	3	83.9	223	36.5	1	36.5
HVAC Unit (H1)	3	71.2	237	23.3	4	29.3
Vacuum (V1)	3	78.2	188	32.3	1	32.3
Vacuum (V2)	3	78.2	179	32.7	1	32.7
Car Wash Entrance (W1)	3	90.0	120	48.0	1	48.0
Car Wash Exit (W2)	3	90.0	162	55.4	1	55.4

7-Eleven Project (With 12 Fuel Pumps and 991 Square Foot Automated Car Wash)

23 East Rider Street, Perris, CA

Appendix C: On-Site Operational Noise Level Estimates

Prepared by MIG, Inc. September 2020

Sheet 2: On-Site Noise Level Estimates

Table 9: Summary of Noise Levels at West Property Line (R8)

On-Site Noise Source	Reference Noise Data		West Property Line (Single Source)		West Property Line (Multiple Sources)	
	Distance	Hourly Leq dBA	Distance	Hourly Leq dBA	No. Sources	Hourly Leq dBA
On-Site Vehicle Trip (A1)	3	37.2	207	0.4	64	18.5
On-Site Vehicle Trip (A2)	3	37.2	<i>Source does not substantially contribute to noise levels at this location.</i>			
On-Site Vehicle Trip (A3)	3	37.2	214	0.2	64	18.2
On-Site Vehicle Trip (A4)	3	37.2	91	7.6	54	24.9
On-Site Vehicle Trip (A5)	3	37.2	188	1.3	54	18.6
Vehicle Parking (P1)	3	67.2	201	30.7	6	38.5
Vehicle Parking (P2)	3	67.2	<i>Source does not substantially contribute to noise levels at this location.</i>			
Vehicle Parking (P3)	3	67.2	266	28.3	8	37.3
Vehicle Parking (P4)	3	67.2	234	29.4	4	35.4
Vehicle Parking (P5)	3	67.2	165	32.4	9	42.0
Fuel Truck Delivery (T1)	3	83.9	97	53.7	1	53.7
HVAC Unit (H1)	3	71.2	206	24.5	4	30.5
Vacuum (V1)	3	78.2	262	39.4	1	39.4
Vacuum (V2)	3	78.2	255	39.6	1	39.6
Car Wash Entrance (W1)	3	90.0	<i>Source does not substantially contribute to noise levels at this location.</i>			
Car Wash Exit (W2)	3	90.0	255	51.4	1	51.4

Table 10: Summary of Car Wash Noise Levels at Property Lines

Property Line	Existing Ambient (CNEL)	Car Wash Noise Levels	
		Maximum (Lmax)	Average (Hourly Leq)
East (R3)	66.0	62.18	55.71
East (R4)	66.0	66.77	55.29
South (R5)	66.0	71.24	64.76
South (R6)	66.0	71.24	64.76

7-Eleven Project (With 12 Fuel Pumps and 991 Square Foot Automated Car Wash)
23 East Rider Street, Perris, CA
Appendix C: On-Site Operational Noise Level Estimates
Prepared by MIG, Inc. September 2020

Sheet 3: Preliminary Barrier Effectiveness Estimates

Table 1: Source Information		
Noise Source:	Conceptual Car Wash	
Source Noise Level:	Assumes 96 dBA Lmax and 90 dBA Leq at 3 feet from entrance/ex	
Receptor Noise Level:	See Sheet 2, Table 10	
Source Frequency:	500	Hertz
Source Elevation:	3	Feet
Receiver Elevation:	5	Feet
Barrier Height:	6-8	Feet

Table 2: Barrier Insertion Loss Summary			
Receptor	Preliminary Barrier Insertion Loss Estimate		
	6-Foot Barrier	7-Foot Barrier	8-Foot Barrier
East (R3)	6.60	9.48	12.12
East (R4)	6.74	9.67	12.32
South (R5)	6.97	9.98	12.63
South (R6)	6.97	9.98	12.63

Table 2: Barrier Attenuation (6-Foot High Wall)								
Receptor	A	B	C	D	D1	D2	H1	H2
East (R3)	156.03	5.10	161.01	161	156	5	-2	1
East (R4)	92.05	5.10	97.02	97	92	5	-2	1
South (R5)	55.08	5.10	60.03	60	55	5	-2	1
South (R6)	55.08	5.10	60.03	60	55	5	-2	1

Fresnel Number (N₀) and 6-Foot High Barrier Insertion Loss Estimate				
Receptor	δ (Feet)	λ (Feet)	N ₀	Insertion Loss (dB)
East (R3)	0.12	2.30	0.1004	6.60
East (R4)	0.13	2.30	0.1107	6.74
South (R5)	0.15	2.30	0.1282	6.97
South (R6)	0.15	2.30	0.1282	6.97

7-Eleven Project (With 12 Fuel Pumps and 991 Square Foot Automated Car Wash)
 23 East Rider Street, Perris, CA
 Appendix C: On-Site Operational Noise Level Estimates
 Prepared by MIG, Inc. September 2020

Sheet 3: Preliminary Barrier Effectiveness Estimates

Table 3: Barrier Attenuation (7-Foot High Wall)								
Receptor	A	B	C	D	D1	D2	H1	H2
East (R3)	156.05	5.39	161.01	161	156	5	-2	2
East (R4)	92.09	5.39	97.02	97	92	5	-2	2
South (R5)	55.15	5.39	60.03	60	55	5	-2	2
South (R6)	55.15	5.39	60.03	60	55	5	-2	2
Fresnel Number (N_0) and 7-Foot High Barrier Insertion Loss Estimate								
Receptor	δ (Feet)	λ (Feet)	N_0	Insertion Loss (dB)				
East (R3)	0.42	2.30	0.3687	9.48				
East (R4)	0.45	2.30	0.3926	9.67				
South (R5)	0.50	2.30	0.4323	9.98				
South (R6)	0.50	2.30	0.4323	9.98				

Table 4: Barrier Attenuation (8-Foot High Wall)								
Receptor	A	B	C	D	D1	D2	H1	H2
East (R3)	156.08	5.83	161.01	161	156	5	-2	3
East (R4)	92.14	5.83	97.02	97	92	5	-2	3
South (R5)	55.23	5.83	60.03	60	55	5	-2	3
South (R6)	55.23	5.83	60.03	60	55	5	-2	3
Fresnel Number (N_0) and 8-Foot Barrier Insertion Loss Estimate								
Receptor	δ (Feet)	λ (Feet)	N_0	Insertion Loss (dB)				
East (R3)	0.90	2.30	0.7814	12.12				
East (R4)	0.95	2.30	0.8227	12.32				
South (R5)	1.02	2.30	0.8908	12.63				
South (R6)	1.02	2.30	0.8908	12.63				

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APPENDIX D: Resume for Chris Dugan, MIG

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Christopher Dugan

Director of Air Quality, GHG, and Noise Services

AREAS OF EXPERTISE

Noise / Air Quality / Greenhouse Gas Impact Analysis

QUALIFICATIONS

Christopher Dugan has 15 years' experience planning, preparing and managing environmental compliance documents required by local, state, and federal regulations, including the California Environmental Quality Act (CEQA), the Clean Air Act, the Occupational Safety and Health Act, and local zoning / general plan requirements. Mr. Dugan has served as CEQA project manager and technical analyst for numerous industrial and municipal development projects and is particularly skilled at communicating technical concepts and impacts to community, decision-maker, and other interested stakeholders.

Mr. Dugan prepares technical environmental analyses, including noise monitoring and noise impact assessments, to support CEQA review, mitigation monitoring, and other compliance needs. He has monitored noise levels from construction equipment, traffic, public events, and stationary equipment and has assessed the compatibility of pre- and post-project noise levels with zoning standards, general plan standards, and general quality of life standards. He has presented noise impact findings to decision-making bodies and worked with community members, project architects, municipal staff, and project proponents to developed mitigation in the form of operating restrictions, sound barriers, and sound power output limits.

Mr. Dugan's technical noise assessments involve the use of the FHWA Traffic Noise Model, the FHWA Roadway Construction Noise Model, and other computer programs that incorporate standard and proprietary acoustical algorithms that aid in the prediction of mobile and stationary source noise levels.

EDUCATION

- Bachelor of Science, Natural Resource Management, Cook College, Rutgers University, New Jersey, 2002.

RELEVANT NOISE IMPACT ANALYSIS EXPERIENCE

- 7-Eleven Project Noise and Vibration Technical Memorandum. *Lakewood, California*
 - 7-Eleven Project Noise and Vibration Technical Memorandum (to support CEQA Categorical Exemption.) *Bellflower, California*
 - Southwest Fontana Logistics Center Construction Noise Reduction Compliance Plan. *Fontana, California.*
 - Acoustical Analysis for the Chino Hills Mixed Use Project. *Chino Hills, California.*
 - General Drive Industrial Park Operational Noise Analysis. *Jurupa Valley, California.*
 - Pismocean Music Festival Noise Monitoring Technical Memorandum. *Oceano Dunes State Vehicular Recreation Area, Oceano, California.*
 - Southwest Fontana Logistics Center Project Construction Noise Reduction Compliance Plan. *Fontana, California.*
 - Half Moon Bay Building and Garden Concrete Batch Plant Replacement Project EIR Noise Impact Analysis. *Half Moon Bay, California.*
 - South 115 kV Transmission Line and Substation Project EIR Noise Impact Analysis. *Merced County, California.*
 - Guadalupe Landfill Gas to Energy Facility Relocation Project EIR Peer Review and Noise Impact Analysis. *San Jose, California.*
 - Redwood Landfill and Recycling Center Use Permit Noise Monitoring. *Novato, California.*
 - City of Menifee Noise Peer Review Services (numerous projects). *Menifee, California.*
 - Carlmont High School Usher Fields Lights Project IS/MND. *Carlmont, California.*
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August 18, 2020

Mr. Bob Prasse, Director of Environmental Services
MIG, INC.
1650 Spruce Street, Suite 102
Riverside, CA 92507

RE: 7-Eleven (Rider Street and Perris Boulevard) Project VMT Screening Analysis
19287

Dear Mr. Prasse:

INTRODUCTION

Ganddini Group, Inc. is pleased to provide this vehicle miles traveled (VMT) screening analysis for the proposed 7-Eleven (Rider Street and Perris Boulevard) Project in the City of Perris. The purpose of this VMT screening analysis is to evaluate if the project screens out from needing to conduct a detailed VMT analysis based on City of Perris guidelines.

PROJECT DESCRIPTION

Figure 1 shows the project location map and Figure 2 shows the project site plan.

The 2.06-acre project site is located on the southeast corner of Perris Boulevard and Rider Street in the City of Perris, California. The project site is currently vacant. The proposed project consists of constructing a 3,227 square foot convenience market/gas station with 12 vehicle fueling positions and an automatic drive through car wash. One right turn in/out only project site access driveway is proposed at Perris Boulevard and right turn in/out only project site access driveway will be maintained at Rider Street.

PROJECT TRIP GENERATION

Table 1 shows the project trip generation based upon trip generation rates obtained from the Institute of Transportation Engineers (ITE) [Trip Generation Manual](#) (10th Edition, 2017). The project trip generation forecast is determined by multiplying the trip generation rates by the land use quantity. Based on review ITE land use descriptions, trip generation rates for ITE Land Use Code 960 - Super Convenience Market/Gas Station were determined to most closely represent the proposed project, which is described as having a gross floor area of at least 3,000 square feet for the convenience market and at least 10 vehicle fueling positions.

As shown in Table 1, the proposed project is forecast to generate approximately 2,404 daily trips, including 128 trips during the AM peak hour and 122 trips during the PM peak hour.

Land uses such as shopping centers, restaurants, gasoline stations, and convenience stores will often locate next to busy roadways to attract motorists already on the street. Since the trip generation rates contained in the ITE [Trip Generation Manual](#) represent vehicles entering and exiting at the site driveway(s), it is appropriate to reduce the initial trip generation forecast by the applicable pass-by trip rate when calculating the net new trips that will be added to the surrounding street system. This analysis applies a pass-by trip reduction for the

Mr. Bob Prasse, Director of Environmental Services
MIG, INC.
August 18, 2020

gas station with convenience market land use based upon rates from the ITE [Trip Generation Handbook](#) (3rd Edition, 2017).

VEHICLES MILES TRAVELED (VMT)

Background

California Senate Bill 743 (SB 743) directs the State Office of Planning and Research (OPR) to amend the California Environmental Quality Act (CEQA) Guidelines for evaluating transportation impacts to provide alternatives to Level of Service that “promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses.” In December 2018, the California Natural Resources Agency certified and adopted the updated CEQA Guidelines package. The amended CEQA Guidelines, specifically Section 15064.3, recommend the use of Vehicle Miles Travelled (VMT) as the primary metric for the evaluation of transportation impacts associated with land use and transportation projects. In general terms, VMT quantifies the amount and distance of automobile travel attributable to a project or region. All agencies and projects State-wide are required to utilize the updated CEQA guidelines recommending use of VMT for evaluating transportation impacts as of July 1, 2020.

The updated CEQA Guidelines allow for lead agency discretion in establishing methodologies and thresholds provided there is substantial evidence to demonstrate that the established procedures promote the intended goals of the legislation. Where quantitative models or methods are unavailable, Section 15064.3 allows agencies to assess VMT qualitatively using factors such as availability of transit and proximity to other destinations. The Office of Planning and Research (OPR) [Technical Advisory on Evaluating Transportation Impacts in CEQA](#) (State of California, December 2018) [“OPR Technical Advisory”] provides technical considerations regarding methodologies and thresholds with a focus on office, residential, and retail developments as these projects tend to have the greatest influence on VMT.

VMT Assessment and Screening

The project VMT impact has been assessed in accordance with guidance from the [City of Perris Transportation Impact Analysis Guidelines for CEQA](#) (May 12, 2020) [“City of Perris TIA Guidelines”].

The transportation guidelines provides a framework for “screening thresholds” for when a project is expected to cause a less than significant impact without conducting a detailed VMT study.

The project requirements for evaluation of transportation impacts under CEQA was assessed using the [City of Perris VMT Scoping Form for Land Use Projects](#) as appended to the City of Perris TIA Guidelines and included in Appendix A of this letter. As documented in the VMT Scoping Form, the proposed project satisfies the following VMT screening criteria:

- B. Is the project within ½ mile of qualifying transit? Yes
- C. Is the project a local serving land use? Yes
- D. Is the project in a low VMT area? Yes

Therefore, the proposed project is presumed to have a less than significant impact on VMT since it satisfies one or more of the VMT screening criteria established by the City of Perris. No additional VMT modeling or mitigation measures are required.

Mr. Bob Prasse, Director of Environmental Services
MIG, INC.
August 18, 2020

CONCLUSION

The proposed project is presumed to have a less than significant impact on VMT since it satisfies one or more of the VMT screening criteria established by the City of Perris.

It has been a pleasure to assist you with this project. Should you have any questions or if we can be of further assistance, please do not hesitate to call at (714) 795-3100.

Respectfully submitted,

GANDDINI GROUP, INC.

Bryan Crawford, Senior Transportation Analyst
Giancarlo Ganddini, PE/PTP, Principal Traffic Engineer



List of Tables

Table 1. Project Trip Generation

List of Figures

Figure 1. Project Location Map

Figure 2. Site Plan

Appendices

Appendix A City of Perris VMT Scoping Form

**Table 1
Project Trip Generation**

Trip Generation Rates									
Land Use	Source ¹	Units ²	AM Peak Hour			PM Peak Hour			Daily Rate
			% In	% Out	Rate	% In	% Out	Rate	
Super Convenience Market/Gas Station	ITE 960	VFP	50%	50%	28.08	50%	50%	22.96	230.52

Trips Generated									
Land Use	Quantity	Units ²	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Super Convenience Market/Gas Station	12	VFP	168	168	336	138	138	276	2,766
- Pass-By Trip Reduction (62% AM, 56% PM) ³			-104	-104	-208	-77	-77	-154	-362
New Project Trips Generated			64	64	128	61	61	122	2,404

Notes:

- 1) ITE = Institute of Transportation Engineers Trip Generation Manual (10th Edition, 2017); XXX= Land Use Code.
- 2) VFP = Vehicle Fueling Positions
- 3) Source: Institute of Transportation Engineers, Trip Generation Handbook 3rd Edition, 2017.



Figure 1
Project Location Map

APPENDIX A

CITY OF PERRIS VMT SCOPING FORM



CITY OF PERRIS
VMT SCOPING FORM FOR LAND USE PROJECTS

This Scoping Form acknowledges the City of Perris requirements for the evaluation of transportation impacts under CEQA. The analysis provided in this form should follow the City of Perris TIA Guidelines, dated May 12, 2020.

I. Project Description

Tract/Case No. CUP19-05281 & SPA 19-05282

Project Name: 7-Eleven (Rider at Perris)

Project Location: SE Perris Boulevard at Rider Street

Project Description: 12 Fueling Position Super Convenience Market/Gas Station
(Please attach a copy of the project Site Plan)

Current GP Land Use: Commercial Neighborhood (CN)

Proposed GP Land Use: Commercial Neighborhood (CN)

Current Zoning: Business Professional Office -BPO

Proposed Zoning: Commercial (C)

If a project requires a General Plan Amendment or Zone change, then additional information and analysis should be provided to ensure the project is consistent with RHNA and RTP/SCS Strategies.

II. VMT Screening Criteria

- A. Is the Project 100% affordable housing?

YES		NO	<input checked="" type="checkbox"/>
-----	--	----	-------------------------------------

 Attachments:
- B. Is the Project within 1/2 mile of qualifying transit?

YES	<input checked="" type="checkbox"/>	NO	
-----	-------------------------------------	----	--

 Attachments:
- C. Is the Project a local serving land use?

YES	<input checked="" type="checkbox"/>	NO	
-----	-------------------------------------	----	--

 Attachments:
- D. Is the Project in a low VMT area?

YES	<input checked="" type="checkbox"/>	NO	
-----	-------------------------------------	----	--

 Attachments:
- E. Are the Project's Net Daily Trips less than 500 ADT?

YES		NO	<input checked="" type="checkbox"/>
-----	--	----	-------------------------------------

 Attachments:

Low VMT Area Evaluation:

Citywide VMT Averages ¹		
Citywide Home-Based VMT =	15.05	VMT/Capita
Citywide Employment-Based VMT =	11.62	VMT/Employee



Project TAZ	VMT Rate for Project TAZ ¹	Type of Project	
<u>9.95</u>	VMT/Capita	Residential:	
	VMT/Employee	Non-Residential:	<input checked="" type="checkbox"/>

¹ Base year (2012) projections from RIVTAM.

Trip Generation Evaluation:

Source of Trip Generation: ITE Trip Generation Manual, 10th Edition 2017

Project Trip Generation: 2,766 Average Daily Trips (ADT)

Internal Trip Credit:	YES	<input type="checkbox"/>	NO	<input checked="" type="checkbox"/>	% Trip Credit:	<input type="text"/>
Pass-By Trip Credit:	YES	<input checked="" type="checkbox"/>	NO	<input type="checkbox"/>	% Trip Credit:	<u>62% AM 56% PM</u>
Affordable Housing Credit:	YES	<input type="checkbox"/>	NO	<input checked="" type="checkbox"/>	% Trip Credit:	<input type="text"/>
Existing Land Use Trip Credit:	YES	<input type="checkbox"/>	NO	<input checked="" type="checkbox"/>	Trip Credit:	<input type="text"/>

Net Project Daily Trips: 2,404 Average Daily Trips (ADT) Attachments:

Does project trip generation warrant an LOS evaluation outside of CEQA?

YES	<input checked="" type="checkbox"/>	NO	<input type="checkbox"/>
-----	-------------------------------------	----	--------------------------

III. VMT Screening Summary

A. Is the Project presumed to have a less than significant impact on VMT?

A Project is presumed to have a less than significant impact on VMT if the Project satisfies at least one (1) of the VMT screening criteria.

--
Yes

B. Is mitigation required?

If the Project does not satisfy at least one (1) of the VMT screening criteria, then mitigation is required to reduce the Project's impact on VMT.

--
No

C. Is additional VMT modeling required to evaluate Project impacts?

If the Project requires a zone change and/or General Plan Amendment AND generates 2,500 or more net daily trips, then additional VMT modeling using RIVTAM/RIVCOM is required. If the project generates less than 2,500 net daily trips, the Project TAZ VMT Rate can be used for mitigation purposes.

YES	--	NO	X
-----	----	----	----------

IV. MITIGATION

A. Citywide Average VMT Rate (Threshold of Significance) for Mitigation Purposes:

--	--
----	----

B. Unmitigated Project TAZ VMT Rate:

--	--
----	----

C. Percentage Reduction Required to Achieve the Citywide Average VMT:

--

D. VMT Reduction Mitigation Measures:

Source of VMT Reduction Estimates:	
------------------------------------	--

Project Location Setting	
--------------------------	--

	VMT Reduction Mitigation Measure:	Estimated VMT Reduction (%)
1.		0.00%
2.		0.00%
3.		0.00%
4.		0.00%
5.		0.00%
6.		0.00%
7.		0.00%
8.		0.00%
9.		0.00%
10.		0.00%
Total VMT Reduction (%)		0.00%

(Attach additional pages, if necessary, and a copy of all mitigation calculations.)

E. Mitigated Project TAZ VMT Rate:

--	--
----	----

F. Is the project presumed to have a less than significant impact with mitigation?

--

If the mitigated Project VMT rate is below the Citywide Average Rate, then the Project is presumed to have a less than significant impact with mitigation. If the answer is no, then additional VMT modeling may be required and a potentially significant and unavoidable impact may occur. All mitigation measures identified in Section IV.D. are subject to become Conditions of Approval of the project. Development review and processing fees should be submitted with, or prior to the submittal of this Form. The Planning Department staff will not process the Form prior to fees being paid to the City.

Prepared By		Developer/Applicant	
Company:	Ganddini Group, Inc.	Company:	MIG, Inc.
Contact:	Bryan Crawford	Contact:	Bob Pines
Address:	550 Parkcenter Dr, # 202, Santa Ana	Address:	1680 Spruce St, # 102, Riverside
Phone:	714-795-3100 x 104	Phone:	951-787-9222
Email:	bryan@ganddini.com	Email:	bpines@migcom.com
Date:	8-18-20	Date:	8-18-20

Approved by:

Perris Development Services Dept.	Perris Public Works Dept.
Date	Date

Appendix F Airport Land Use Commission Approval Letter

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AIRPORT LAND USE COMMISSION RIVERSIDE COUNTY

September 17, 2020

Mr. Nathan Perez, Project Planner
City of Perris Planning Department
101 N. D Street
Perris CA 92570

CHAIR
Russell Betts
Desert Hot Springs

VICE CHAIR
Steven Stewart
Palm Springs

COMMISSIONERS

Arthur Butler
Riverside

John Lyon
Riverside

Steve Manos
Lake Elsinore

Richard Stewart
Moreno Valley

Gary Youmans
Temecula

STAFF

Director
Simon A. Housman

Paul Rull
Barbara Santos

County Administrative Center
4080 Lemon St., 14th Floor.
Riverside, CA 92501
(951) 955-5132

www.rcaluc.org

RE: AIRPORT LAND USE COMMISSION (ALUC) DEVELOPMENT REVIEW

File No.: ZAP1428MA20
Related File Nos.: SPA19-05282 (Specific Plan Amendment), CUP19-05281 (Conditional Use Permit)
Compatibility Zone: Zone B1-APZ-II
APN: 300-300-026

Dear Mr. Perez:

On September 10, 2020, the Riverside County Airport Land Use Commission (ALUC) found City of Perris Case Nos. SPA19-05282 (Specific Plan Amendment), CUP19-05281 (Conditional Use Permit), a proposal to construct a 3,227 square foot gas station convenience store with 12 fuel pump stations and a 1,150 square foot automated car wash drive thru on 2.06 acres, and also amend the Perris Valley Commerce Center Specific Plan land use designation of the site from Business Professional Office to Commercial, located on the southeast corner of Perris Boulevard and Rider Street, **CONSISTENT** with the 2014 March Air Reserve Base/Inland Port Airport Land Use Compatibility Plan, subject to the conditions listed below.

CONDITIONS:

1. Any outdoor lighting installed shall be hooded or shielded so as to prevent either the spillage of lumens or reflection into the sky. Outdoor lighting shall be downward facing.
2. The following uses/activities are not included in the proposed project and shall be prohibited at this site:
 - (a) Any use which would direct a steady light or flashing light of red, white, green, or amber colors associated with airport operations toward an aircraft engaged in an initial straight climb following takeoff or toward an aircraft engaged in a straight final approach toward a landing at an airport, other than an FAA-approved navigational signal light or visual approach slope indicator.
 - (b) Any use which would cause sunlight to be reflected towards an aircraft engaged in an initial straight climb following takeoff or towards an aircraft engaged in a straight final approach towards a landing at an airport.
 - (c) Any use which would generate smoke or water vapor or which would attract large concentrations of birds, or which may otherwise affect safe air navigation within the area. (Such uses include landscaping utilizing water features, aquaculture, production of cereal grains, sunflower, and row crops, composting operations, trash transfer stations that are open on one or more sides, recycling centers

containing putrescible wastes, construction and demolition debris facilities, fly ash disposal, and incinerators.)

- (d) Any use which would generate electrical interference that may be detrimental to the operation of aircraft and/or aircraft instrumentation.
 - (e) Children's schools, day care centers, libraries, hospitals, skilled nursing and care facilities, congregate care facilities, hotels/motels, restaurants, places of assembly (including churches and theaters), buildings with more than 3 aboveground habitable floors, noise sensitive outdoor nonresidential uses, hazardous materials, critical community infrastructure facilities and hazards to flight.
 - (f) Any other uses not permitted in Accident Potential Zone II pursuant to DoDI 4165.57.
3. Prior to issuance of any building permits, the landowner shall convey and have recorded an avigation easement to the March Inland Port Airport Authority. Contact March Joint Powers Authority at (951) 656-7000 for additional information.
 4. The attached notice shall be given to all prospective purchasers of the property and tenants of the buildings.
 5. Any proposed detention basins or facilities shall be designed and maintained to provide for a maximum 48-hour detention period following the design storm, and remain totally dry between rainfalls. Vegetation in and around the detention basins that would provide food or cover for birds would be incompatible with airport operations and shall not be utilized in project landscaping. Trees shall be spaced so as to prevent large expanses of contiguous canopy, when mature. Landscaping in and around the detention basin(s) shall not include trees or shrubs that produce seeds, fruits, or berries.

Landscaping in the detention basin, if not rip-rap, should be in accordance with the guidance provided in ALUC "LANDSCAPING NEAR AIRPORTS" brochure, and the "AIRPORTS, WILDLIFE AND STORMWATER MANAGEMENT" brochure available at RCALUC.ORG which list acceptable plants from Riverside County Landscaping Guide or other alternative landscaping as may be recommended by a qualified wildlife hazard biologist.

A notice sign, in a form similar to that attached hereto, shall be permanently affixed to the stormwater basin with the following language: "There is an airport nearby. This stormwater basin is designed to hold stormwater for only 48 hours and not attract birds. Proper maintenance is necessary to avoid bird strikes". The sign will also include the name, telephone number or other contact information of the person or entity responsible to monitor the stormwater basin.

6. March Air Reserve Base must be notified of any land use having an electromagnetic radiation component to assess whether a potential conflict with Air Base radio communications could result. Sources of electromagnetic radiation include radio wave transmission in conjunction with remote equipment inclusive of irrigation controllers, access gates, etc.
7. Noise attenuation measures shall be incorporated into the design of the office areas of the structure, to the extent such measures are necessary to ensure that interior noise levels from aircraft operations are at or below 45 CNEL.

8. The project does not propose rooftop solar panels at this time. However, if the project were to propose solar rooftop panels in the future, the applicant/developer shall prepare a solar glare study that analyzes glare impacts, and this study shall be reviewed by the Airport Land Use Commission and March Air Reserve Base.
9. This project has been evaluated as a proposal for a 3,227 square foot gas station convenience store with 12 fuel pump stations and a 1,150 square foot automated car wash drive thru. Any increase in building area or change in use will require review by the Airport Land Use Commission. In addition, this project shall not store, process or manufacture hazardous materials without review and approval by the Airport Land Use Commission.

Supporting documentation was provided to the Airport Land Use Commission and is available online at www.rcaluc.org, click Agendas 9-10-20 Agenda, Bookmark Agenda Item No. 3.3.

If you have any questions, please contact Paul Rull, ALUC Principal Planner, at (951) 955-6893.

Sincerely,
RIVERSIDE COUNTY AIRPORT LAND USE COMMISSION



Simon A. Housman, ALUC Director

Attachments: Notice of Airport in Vicinity

cc: Tait & Associates, Larry Roberts (applicant/representative)
Hong Long Lee and Tsu Ho Lee c/o Jack Lee (property owner)
Gary Gosliga, March Inland Port Airport Authority
Doug Waters, Deputy Base Civil Engineer, March Air Reserve Base

ALUC Case File

Y:\AIRPORT CASE FILES\March\ZAP1428MA20 Gas Station APZII\ZAP1428MA20.LTR.doc

NOTICE OF AIRPORT IN VICINITY

This property is presently located in the vicinity of an airport, within what is known as an airport influent area. For that reason, the property may be subject to some of the annoyances or inconveniences associated with proximity to airport operations (for example: noise, vibration, or odors). Individual sensitivities to those annoyances [can vary from person to person. You may wish to consider what airport annoyances], if any, are associated with the property before you complete your purchase and determine whether they are acceptable to you. Business & Professions Code Section 11010 (b) (13)(A)

NOTICE

THERE IS AN AIRPORT NEARBY.

**THIS STORM WATER BASIN IS DESIGNED TO HOLD
STORM WATER FOR ONLY 48 HOURS AND
NOT TO ATTRACT BIRDS**

**PROPER MAINTENANCE IS NECESSARY TO AVOID
BIRD STRIKES**



IF THIS BASIN IS OVERGROWN, PLEASE CONTACT:

Name: _____

Phone: _____

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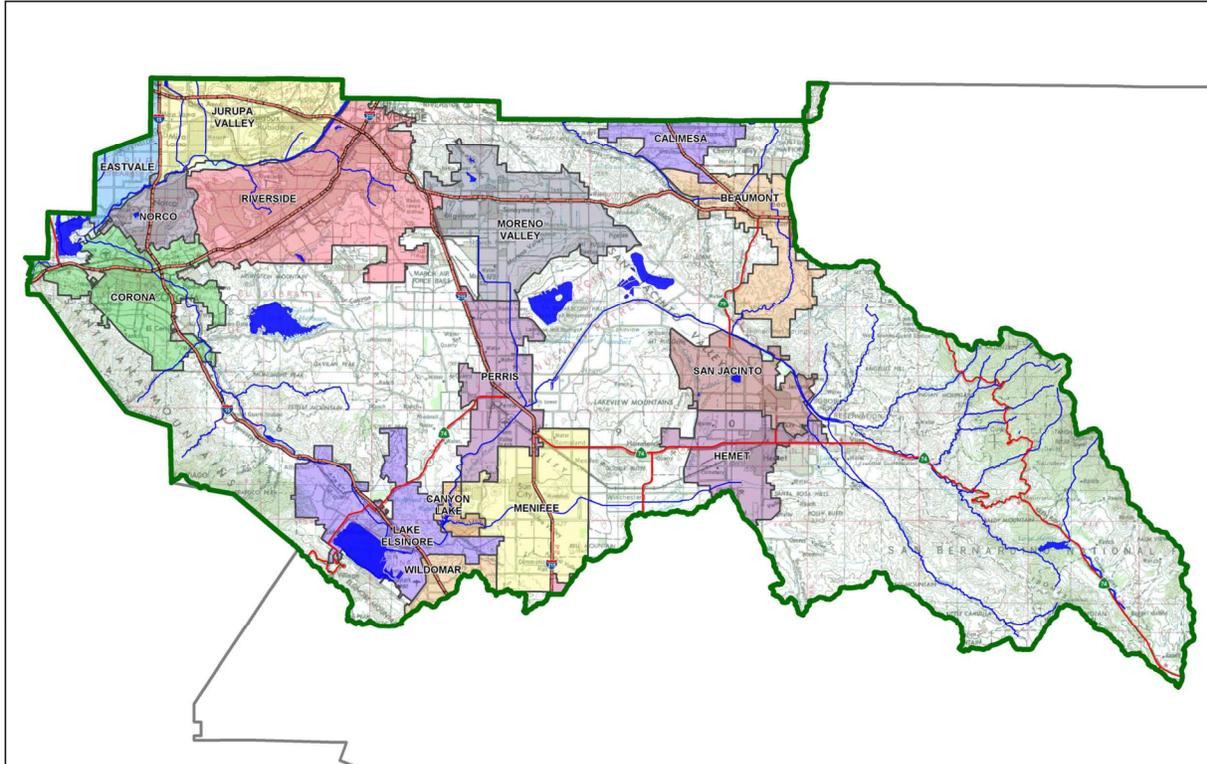
Preliminary Water Quality Management Plan

A Template for Projects located within the **Santa Ana Watershed** Region of Riverside County

Project Title: 7-Eleven #1045028

Development No: TBD

Design Review/Case No: P19-05281



- Preliminary
- Final

Original Date Prepared: September 1, 2020

Revision Date(s):

Prepared for Compliance with
Regional Board Order No. R8-2010-0033

Contact Information:

Prepared for:

7-Eleven, Inc.
3200 Hackberry Rodd
Irving, TX 75063

Prepared by:

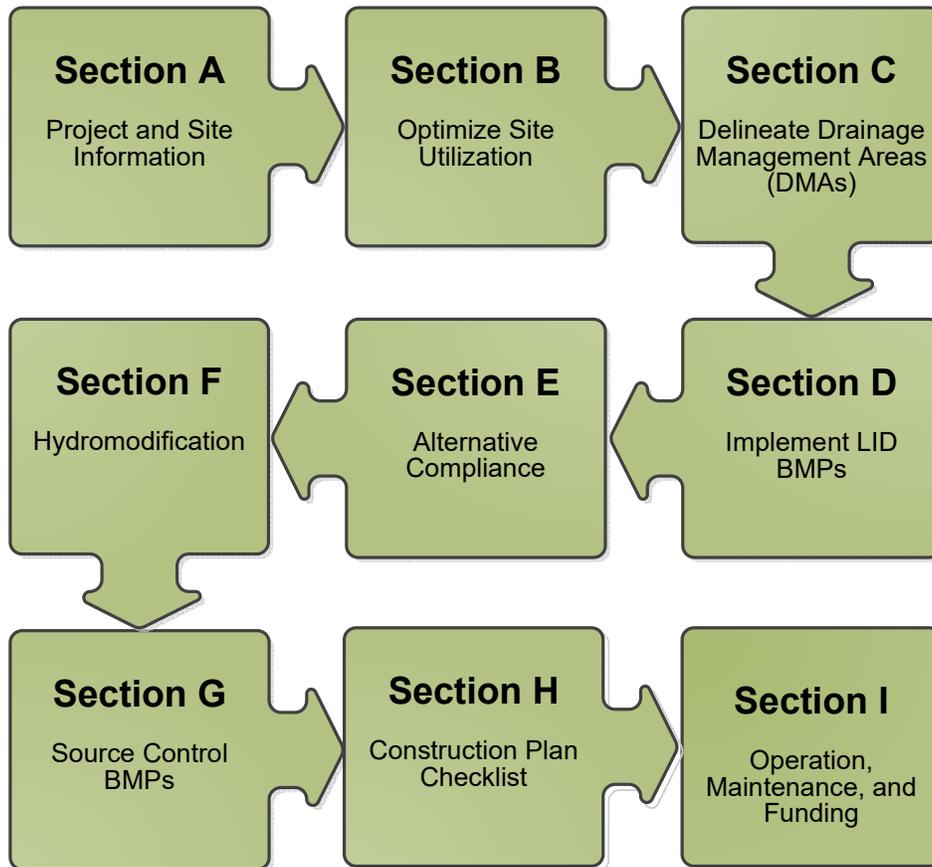
TAIT & ASSOCIATES
(714) 560-8200
701 N. PARKCENTER DRIVE
SANTA ANA, CA 92705

Engineer's Name:

Mike Silvey, PE
RCE NO. 58651

A Brief Introduction

This Project-Specific WQMP Template for the **Santa Ana Region** has been prepared to help guide you in documenting compliance for your project. Because this document has been designed to specifically document compliance, you will need to utilize the WQMP Guidance Document as your “how-to” manual to help guide you through this process. Both the Template and Guidance Document go hand-in-hand, and will help facilitate a well prepared Project-Specific WQMP. Below is a flowchart for the layout of this Template that will provide the steps required to document compliance.



OWNER'S CERTIFICATION

This Master Water Quality Management Plan (WQMP) has been prepared for 7-Eleven, Inc. by TAIT & Associates for the 7-Eleven #1045028 (P19-05281) project.

This WQMP is intended to comply with the requirements of City of Perris for Order No. R8-2002-0011 which includes the requirement for the preparation and implementation of a Project-Specific WQMP.

The undersigned, while owning the property/project described in the preceding paragraph, shall be responsible for the implementation and funding of this WQMP and will ensure that this WQMP is amended as appropriate to reflect up-to-date conditions on the site. In addition, the property owner accepts responsibility for interim operation and maintenance of Stormwater BMPs until such time as this responsibility is formally transferred to a subsequent owner. This WQMP will be reviewed with the facility operator, facility supervisors, employees, tenants, maintenance and service contractors, or any other party (or parties) having responsibility for implementing portions of this WQMP. At least one copy of this WQMP will be maintained at the project site or project office in perpetuity. The undersigned is authorized to certify and to approve implementation of this WQMP. The undersigned is aware that implementation of this WQMP is enforceable under City of Perris Ordinance (Municipal Code Section 1194).

"I, the undersigned, certify under penalty of law that the provisions of this WQMP have been reviewed and accepted and that the WQMP will be transferred to future successors in interest."

Owner's Signature

Date

Owner's Printed Name

Owner's Title/Position

PREPARER'S CERTIFICATION

"The selection, sizing and design of stormwater treatment and other stormwater quality and quantity control measures in this plan meet the requirements of Regional Water Quality Control Board Order No. **R8-2010-0033** and any subsequent amendments thereto."

Preparer's Signature

Date

Preparer's Printed Name

Preparer's Title/Position

Preparer's Licensure:

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Section A: Project and Site Information

PROJECT INFORMATION	
Type of Project:	Commercial
Planning Area:	
Community Name:	
Development Name:	7-Eleven Store No. 41691
PROJECT LOCATION	
Latitude & Longitude (DMS):	33.8298, -117.2255
Project Watershed and Sub-Watershed:	SANTA ANA
Total Acres:	2.06
APN(s):	300-300-026
Map Book and Page No.:	306-24
PROJECT CHARACTERISTICS	
Proposed or Potential Land Use(s)	Commercial
Proposed or Potential SIC Code(s)	5541, 5411
Area of Impervious Project Footprint (SF)	63,545 SF
Total Area of <u>proposed</u> Impervious Surfaces within the Project Limits (SF)/or Replacement	63,545 SF
Does the project consist of offsite road improvements?	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
Does the project propose to construct unpaved roads?	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
Is the project part of a larger common plan of development (phased project)?	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
EXISTING SITE CHARACTERISTICS	
Total area of <u>existing</u> Impervious Surfaces within the project limits (SF)	0 SF *
Is the project located within any MSHCP Criteria Cell?	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
If so, identify the Cell number:	N/A
Are there any natural hydrologic features on the project site?	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
Is a Geotechnical Report attached?	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
If no Geotech. Report, list the NRCS soils type(s) present on the site (A, B, C and/or D)	B
What is the Water Quality Design Storm Depth for the project?	0.62

Project Description

The proposed project, 7-Eleven #1045028, is located in the City of Perris, County of Riverside, California. Specifically the project is located at the southeast corner of Rider Street and Perris Boulevard, as shown on the Vicinity Map in **Appendix 1**. The site in its existing condition is an undeveloped dirt lot. The existing project site surface flows north-easterly to Rider Street.

The proposed project will construct a 3,227 square foot 7-Eleven convenience store, a gasoline service station with 6 MPD's, a fueling tank, and a car wash, with paved parking, drive aisles and landscape scattered throughout the site. In general, the proposed development will retain existing drainage patterns. This Water Quality Management Plan will comply with the City of Perris and the Riverside County requirements. This preliminary analysis uses CDS Units (Hydrodynamic Separator) for pre-treatment and ADS Stormtech MC-4500 Chambers (Underground Infiltration) as the Best Management

Practices (BMP) for water quality treatment. Detailed information on the ADS Stormtech chamber system is provided in [Appendix 6](#). These systems will be under paved drive aisles to temporarily store the low flow runoff and to treat the required Design Capture Volume (DCV). A total of 2 Drainage Management Areas (DMA) were identified and each DMA will discharge into a (1) shared CDS Unit and a (1) shared ADS Stormtech chamber system to provide pre-treatment and water quality treatment, respectively. Below is a description of each Drainage Management Area.

Drainage Management Area 1

Drainage Management Area 1 is located in the westerly half of the property. It has a total area of 1.07 acres. In the proposed condition this area will have a gas fueling station with 6 MPD's, a fueling tank, paved parking, drive aisles, and approximately 13,145 square feet of landscape. DMA 1 will surface drain northerly via a concrete valley gutter, then easterly via a curb gutter to a proposed curb opening catch basin, where water quality flows will be captured and conveyed to the CDS Unit for pre-treatment, then to the ADS Stormtech MC-4500 Chambers for infiltration.

Drainage Management Area 2

Drainage Management Area 2 is located in the easterly half of the property. It has a total area of 0.97 acres. In the proposed condition this area will have a 3,227 square foot convenience store building, a drive through car wash, paved parking, drive aisles, and approximately 11,821 square feet of landscape. DMA 2 will surface drain easterly via a concrete valley gutter, then northerly via a curb gutter to a proposed curb opening catch basin, where water quality flows will be captured and conveyed to the CDS Unit for pre-treatment, then to the ADS Stormtech MC-4500 Chambers for infiltration.

A.1 Maps and Site Plans

When completing your Project-Specific WQMP, include a map of the local vicinity and existing site. In addition, include all grading, drainage, landscape/plant palette and other pertinent construction plans in [Appendix 2](#). At a **minimum**, your WQMP Site Plan should include the following:

- Drainage Management Areas
- Proposed Structural BMPs
- Drainage Path
- Drainage Infrastructure, Inlets, Overflows
- Source Control BMPs
- Buildings, Roof Lines, Downspouts
- Impervious Surfaces
- Standard Labeling

Use your discretion on whether or not you may need to create multiple sheets or can appropriately accommodate these features on one or two sheets. Keep in mind that the Co-Permittee plan reviewer must be able to easily analyze your project utilizing this template and its associated site plans and maps.

A.2 Identify Receiving Waters

Using Table A.1 below, list in order of upstream to downstream, the receiving waters that the project site is tributary to. Continue to fill each row with the Receiving Water's 303(d) listed impairments (if any), designated beneficial uses, and proximity, if any, to a RARE beneficial use. Include a map of the receiving waters in Appendix 1.

Table A.1 Identification of Receiving Waters

Receiving Waters	EPA Approved 303(d) List Impairments	Designated Beneficial Uses	Proximity to RARE Beneficial Use
Rider Street Storm Drain	NONE	NONE	NOT A WATER BODY CLASSIFIED AS RARE
Perris Valley Storm	NONE	NONE	NOT A WATER BODY CLASSIFIED AS RARE
San Jacinto River	NONE	NONE	NOT A WATER BODY CLASSIFIED AS RARE
Canyon Lake (Railroad Canyon Reservoir)	Nutrients, Pathogens	MUN, AGR, GWR, REC1, REC2, WARM, WILD	NOT A WATER BODY CLASSIFIED AS RARE
Lake Elsinore	Mercury, Nutrients, Organic Enrichment/Low Dissolved Oxygen, PCBs (Polychlorinated biphenyls), Sediment Toxicity, Sedimentation/Siltation, Unknown Toxicity	WARM, REC1, REC2, WILD	NOT A WATER BODY CLASSIFIED AS RARE

A.3 Additional Permits/Approvals required for the Project:

Table A.2 Other Applicable Permits

Agency	Permit Required	
State Department of Fish and Game, 1602 Streambed Alteration Agreement	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
State Water Resources Control Board, Clean Water Act (CWA) Section 401 Water Quality Cert.	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
US Army Corps of Engineers, CWA Section 404 Permit	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
US Fish and Wildlife, Endangered Species Act Section 7 Biological Opinion	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
Statewide Construction General Permit Coverage	<input checked="" type="checkbox"/> Y	<input type="checkbox"/> N
Statewide Industrial General Permit Coverage (tenant dependent)	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
Western Riverside MSHCP Consistency Approval (e.g., JPR, DBESP)	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
Other (please list in the space below as required)	<input checked="" type="checkbox"/> Y	<input type="checkbox"/> N
City of Perris Grading Permit		

If yes is answered to any of the questions above, the Co-Permittee may require proof of approval/coverage from those agencies as applicable including documentation of any associated requirements that may affect this Project-Specific WQMP.

Section B: Optimize Site Utilization (LID Principles)

Review of the information collected in Section 'A' will aid in identifying the principal constraints on site design and selection of LID BMPs as well as opportunities to reduce imperviousness and incorporate LID Principles into the site and landscape design. For example, **constraints** might include impermeable soils, high groundwater, groundwater pollution or contaminated soils, steep slopes, geotechnical instability, high-intensity land use, heavy pedestrian or vehicular traffic, utility locations or safety concerns. **Opportunities** might include existing natural areas, low areas, oddly configured or otherwise unbuildable parcels, easements and landscape amenities including open space and buffers (which can double as locations for bioretention BMPs), and differences in elevation (which can provide hydraulic head). Prepare a brief narrative for each of the site optimization strategies described below. This narrative will help you as you proceed with your LID design and explain your design decisions to others.

The 2010 Santa Ana MS4 Permit further requires that LID Retention BMPs (Infiltration Only or Harvest and Use) be used unless it can be shown that those BMPs are infeasible. Therefore, it is important that your narrative identify and justify if there are any constraints that would prevent the use of those categories of LID BMPs. Similarly, you should also note opportunities that exist which will be utilized during project design. Upon completion of identifying Constraints and Opportunities, include these on your WQMP Site plan in Appendix 1.

Site Optimization

The following questions are based upon Section 3.2 of the WQMP Guidance Document. Review of the WQMP Guidance Document will help you determine how best to optimize your site and subsequently identify opportunities and/or constraints, and document compliance.

- Did you identify and preserve existing drainage patterns? If so, how? If not, why?
The existing site has mild slopes towards the northeast direction, where the lowest elevation is 1452.50'. The site is currently a vacant dirt lot with minimal vegetation. Runoffs from the site discharge via surface flow north-easterly to Rider Street, then easterly along the curb gutter to a street catch basin approximately 750 feet from the site's easterly boundary.
- Did you identify and protect existing vegetation? If so, how? If not, why?
The existing project site is a vacant dirt lot with minimal vegetation cover. The site under proposed condition will consist of approximately 25,000 square feet of landscape areas. Existing trees within Rider Street right-of-way along the site's northerly frontage will be protected in place.
- Did you identify and preserve natural infiltration capacity? If so, how? If not, why?
Infiltration tests yielded results up to 2.4 in/hr. A factor of safety of 3 reduces infiltration rate to 0.8 in/hr per Appendix 1 in the LID BMP Design Handbook. The site is located within areas of Soil Type B. Under proposed condition, low flows from the project site will infiltrate via proposed ADS Stormtech MC-4500 Chambers onsite. Infiltration capacity of the site will be preserved by not compacting under the chamber area,
- Did you identify and minimize impervious area? If so, how? If not, why?
The proposed project site consists of commercial land use. Proposed landscape areas are maximized – covering approximately 28 percent of the site – to provide perviousness within the site, which helps to reduce the impervious surface and stormwater runoff.
- Did you identify and disperse runoff to adjacent pervious areas? If so, how? If not, why?

In the proposed condition, proposed impervious areas will drain to ADS Stormtech MC-4500 Chambers for infiltration. This supports the practice of dispersing runoff to pervious areas.

Section C: Delineate Drainage Management Areas (DMAs)

Utilizing the procedure in Section 3.3 of the WQMP Guidance Document which discusses the methods of delineating and mapping your project site into individual DMAs, complete Table C.1 below to appropriately categorize the types of classification (e.g., Type A, Type B, etc.) per DMA for your project site. Upon completion of this table, this information will then be used to populate and tabulate the corresponding tables for their respective DMA classifications.

Table C.1 DMA Classifications

DMA Name or ID	Surface Type(s) ¹	Area (Sq. Ft.)	DMA Type
DMA 1/A1	Roofs	2,720	D
DMA 1/A2	Concrete or Asphalt	30,363	D
DMA 1/A3	Landscaping	13,344	A
DMA 2/B1	Roofs	4,218	D
DMA 2/B2	Concrete or Asphalt	26,271	D
DMA 2/B3	Landscaping	11,913	A

¹Reference Table 2-1 in the WQMP Guidance Document to populate this column

Table C.2 Type 'A', Self-Treating Areas

DMA Name or ID	Area (Sq. Ft.)	Stabilization Type	Irrigation Type (if any)
DMA 1/A3	13,344	Native Planting	T.B.D.
DMA 2/B3	11,913	Native Planting	T.B.D.

Table C.3 Type 'B', Self-Retaining Areas

Self-Retaining Area				Type 'C' DMAs that are draining to the Self-Retaining Area		
DMA Name/ ID	Post-project surface type	Area (square feet)	Storm Depth (inches)	DMA Name / ID	[C] from Table C.4 = [C]	Required Retention Depth (inches)
		[A]	[B]			[D]
N/A						
N/A						
N/A						

$$[D] = [B] + \frac{[B] \cdot [C]}{[A]}$$

Table C.4 Type 'C', Areas that Drain to Self-Retaining Areas

DMA					Receiving Self-Retaining DMA		
DMA Name/ ID	Area (square feet)	Post-project surface type	Runoff factor	Product	DMA name /ID	Area (square feet)	Ratio
	[A]		[B]	[C] = [A] x [B]		[D]	[C]/[D]
N/A							
N/A							
N/A							
N/A							

Table C.5 Type 'D', Areas Draining to BMPs

DMA Name or ID	BMP Name or ID
DMA 1	BMP 1 (CDS Unit and ADS Stormtech MC-4500 Chambers)
DMA 2	BMP 1 (CDS Unit and ADS Stormtech MC-4500 Chambers)

Note: More than one drainage management area can drain to a single LID BMP, however, one drainage management area may not drain to more than one BMP.

Section D: Implement LID BMPs

D.1 Infiltration Applicability

Is there an approved downstream ‘Highest and Best Use’ for stormwater runoff (see discussion in Chapter 2.4.4 of the WQMP Guidance Document for further details)? Y N

If yes has been checked, Infiltration BMPs shall not be used for the site. If no, continue working through this section to implement your LID BMPs. It is recommended that you contact your Co-Permittee to verify whether or not your project discharges to an approved downstream ‘Highest and Best Use’ feature.

Geotechnical Report

A Geotechnical Report or Phase I Environmental Site Assessment may be required by the Copermitttee to confirm present and past site characteristics that may affect the use of Infiltration BMPs. In addition, the Co-Permitttee, at their discretion, may not require a geotechnical report for small projects as described in Chapter 2 of the WQMP Guidance Document. If a geotechnical report has been prepared, include it in Appendix 3. In addition, if a Phase I Environmental Site Assessment has been prepared, include it in Appendix 4.

Is this project classified as a small project consistent with the requirements of Chapter 2 of the WQMP Guidance Document? Y N

Infiltration Feasibility

Table D.1 below is meant to provide a simple means of assessing which DMAs on your site support Infiltration BMPs and is discussed in the WQMP Guidance Document in Chapter 2.4.5. Check the appropriate box for each question and then list affected DMAs as applicable. If additional space is needed, add a row below the corresponding answer.

Table D.1 Infiltration Feasibility

Does the project site...	YES	NO
...have any DMAs with a seasonal high groundwater mark shallower than 10 feet? If Yes, list affected DMAs:		X
...have any DMAs located within 100 feet of a water supply well? If Yes, list affected DMAs:		X
...have any areas identified by the geotechnical report as posing a public safety risk where infiltration of stormwater could have a negative impact? If Yes, list affected DMAs:		X
...have measured in-situ infiltration rates of less than 1.6 inches / hour? If Yes, list affected DMAs: all DMAs		X
...have significant cut and/or fill conditions that would preclude in-situ testing of infiltration rates at the final infiltration surface? If Yes, list affected DMAs:		X
...geotechnical report identify other site-specific factors that would preclude effective and safe infiltration? Describe here:		X

If you answered “Yes” to any of the questions above for any DMA, Infiltration BMPs should not be used for those DMAs and you should proceed to the assessment for Harvest and Use below.

D.2 Harvest and Use Assessment

Please check what applies:

- Reclaimed water will be used for the non-potable water demands for the project.
- Downstream water rights may be impacted by Harvest and Use as approved by the Regional Board (verify with the Copermitttee).
- The Design Capture Volume will be addressed using Infiltration Only BMPs. In such a case, Harvest and Use BMPs are still encouraged, but it would not be required if the Design Capture Volume will be infiltrated or evapotranspired.

If any of the above boxes have been checked, Harvest and Use BMPs need not be assessed for the site. If neither of the above criteria applies, follow the steps below to assess the feasibility of irrigation use, toilet use and other non-potable uses (e.g., industrial use).

Irrigation Use Feasibility

Complete the following steps to determine the feasibility of harvesting stormwater runoff for Irrigation Use BMPs on your site:

Step 1: Identify the total area of irrigated landscape on the site, and the type of landscaping used.

Total Area of Irrigated Landscape: Insert Area (Acres)

Type of Landscaping (Conservation Design or Active Turf): List Landscaping Type

Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for irrigation use. Depending on the configuration of buildings and other impervious areas on the site, you may consider the site as a whole, or parts of the site, to evaluate reasonable scenarios for capturing and storing runoff and directing the stored runoff to the potential use(s) identified in Step 1 above.

Total Area of Impervious Surfaces: Insert Area (Acres)

Step 3: Cross reference the Design Storm depth for the project site (see Exhibit A of the WQMP Guidance Document) with the left column of Table 2-3 in Chapter 2 to determine the minimum area of Effective Irrigated Area per Tributary Impervious Area (EIATIA).

Enter your EIATIA factor: EIATIA Factor

Step 4: Multiply the unit value obtained from Step 3 by the total of impervious areas from Step 2 to develop the minimum irrigated area that would be required.

Minimum required irrigated area: Insert Area (Acres)

Step 5: Determine if harvesting stormwater runoff for irrigation use is feasible for the project by comparing the total area of irrigated landscape (Step 1) to the minimum required irrigated area (Step 4).

Minimum required irrigated area (Step 4)	Available Irrigated Landscape (Step 1)
Insert Area (Acres)	Insert Area (Acres)

Toilet Use Feasibility

Complete the following steps to determine the feasibility of harvesting stormwater runoff for toilet flushing uses on your site:

Step 1: Identify the projected total number of daily toilet users during the wet season, and account for any periodic shut downs or other lapses in occupancy:

Projected Number of Daily Toilet Users: Number of daily Toilet Users

Project Type: Enter 'Residential', 'Commercial', 'Industrial' or 'Schools'

Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for toilet use. Depending on the configuration of buildings and other impervious areas on the site, you may consider the site as a whole, or parts of the site, to evaluate reasonable scenarios for capturing and storing runoff and directing the stored runoff to the potential use(s) identified in Step 1 above.

Total Area of Impervious Surfaces: Insert Area (Acres)

Step 3: Enter the Design Storm depth for the project site (see Exhibit A) into the left column of Table 2-1 in Chapter 2 to determine the minimum number of toilet users per tributary impervious acre (TUTIA).

Enter your TUTIA factor: TUTIA Factor

Step 4: Multiply the unit value obtained from Step 3 by the total of impervious areas from Step 2 to develop the minimum number of toilet users that would be required.

Minimum number of toilet users: Required number of toilet users

Step 5: Determine if harvesting stormwater runoff for toilet flushing use is feasible for the project by comparing the Number of Daily Toilet Users (Step 1) to the minimum required number of toilet users (Step 4).

Minimum required Toilet Users (Step 4)	Projected number of toilet users (Step 1)
Insert Area (Acres)	Insert Area (Acres)

Other Non-Potable Use Feasibility

Are there other non-potable uses for stormwater runoff on the site (e.g. industrial use)? See Chapter 2 of the Guidance for further information. If yes, describe below. If no, write N/A.

Insert text here describing how each included Site Design BMP will be implemented.

Step 1: Identify the projected average daily non-potable demand, in gallons per day, during the wet season and accounting for any periodic shut downs or other lapses in occupancy or operation.

Average Daily Demand: Projected Average Daily Use (gpd)

Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for the identified non-potable use. Depending on the configuration of buildings and other impervious areas on the site, you may consider the site as a whole, or parts of the site, to evaluate reasonable scenarios for capturing and storing runoff and directing the stored runoff to the potential use(s) identified in Step 1 above.

Total Area of Impervious Surfaces: Insert Area (Acres)

Step 3: Enter the Design Storm depth for the project site (see Exhibit A) into the left column of Table 2-3 in Chapter 2 to determine the minimum demand for non-potable uses per tributary impervious acre.

Enter the factor from Table 2-3: Enter Value

Step 4: Multiply the unit value obtained from Step 4 by the total of impervious areas from Step 3 to develop the minimum number of gallons per day of non-potable use that would be required.

Minimum required use: Minimum use required (gpd)

Step 5: Determine if harvesting stormwater runoff for other non-potable use is feasible for the project by comparing the Number of Daily Toilet Users (Step 1) to the minimum required number of toilet users (Step 4).

Minimum required non-potable use (Step 4)	Projected average daily use (Step 1)
Minimum use required (gpd)	Projected Average Daily Use (gpd)

If Irrigation, Toilet and Other Use feasibility anticipated demands are less than the applicable minimum values, Harvest and Use BMPs are not required and you should proceed to utilize LID Bioretention and Biotreatment, unless a site-specific analysis has been completed that demonstrates technical infeasibility as noted in D.3 below.

D.3 Bioretention and Biotreatment Assessment

Other LID Bioretention and Biotreatment BMPs as described in Chapter 2.4.7 of the WQMP Guidance Document are feasible on nearly all development sites with sufficient advance planning.

Select one of the following:

- LID Bioretention/Biotreatment BMPs will be used for some or all DMAs of the project as noted below in Section D.4 (note the requirements of Section 3.4.2 in the WQMP Guidance Document).
- A site-specific analysis demonstrating the technical infeasibility of all LID BMPs has been performed and is included in Appendix 5. If you plan to submit an analysis demonstrating the technical infeasibility of LID BMPs, request a pre-submittal meeting with the Copermittee to discuss this option. Proceed to Section E to document your alternative compliance measures.

D.4 Feasibility Assessment Summaries

From the Infiltration, Harvest and Use, Bioretention and Biotreatment Sections above, complete Table D.2 below to summarize which LID BMPs are technically feasible, and which are not, based upon the established hierarchy.

Table D.2 LID Prioritization Summary Matrix

DMA Name/ID	LID BMP Hierarchy				No LID (Alternative Compliance)
	1. Infiltration	2. Harvest and use	3. Bioretention	4. Biotreatment	
DMA 1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DMA 2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

For those DMAs where LID BMPs are not feasible, provide a brief narrative below summarizing why they are not feasible, include your technical infeasibility criteria in Appendix 5, and proceed to Section E below to document Alternative Compliance measures for those DMAs. Recall that each proposed DMA must pass through the LID BMP hierarchy before alternative compliance measures may be considered.

D.5 LID BMP Sizing

Each LID BMP must be designed to ensure that the Design Capture Volume will be addressed by the selected BMPs. First, calculate the Design Capture Volume for each LID BMP using the V_{BMP} worksheet in Appendix F of the LID BMP Design Handbook. Second, design the LID BMP to meet the required V_{BMP} using a method approved by the Copermittee. Utilize the worksheets found in the LID BMP Design Handbook or consult with your Copermittee to assist you in correctly sizing your LID BMPs. Complete Table D.3 below to document the Design Capture Volume and the Proposed Volume for each LID BMP. Provide the completed design procedure sheets for each LID BMP in Appendix 6. You may add additional rows to the table below as needed.

Table D.3 DCV Calculations for LID BMPs

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Areas \times Runoff Factor	BMP 1 (ADS Stormtech MC-4500 Chambers)		
	[A]				[B]	[C]	[A] \times [C]	Design Storm Depth (in) [E]
DMA 1/1A	2,720	Roofs	1.00	0.892	2,426			
DMA 1/2A	30,363	Concrete or Asphalt	1.00	0.892	27,084			
DMA 1/3A	13,344	Landscape	0.10	0.110	1,474			
DMA 2/1B	4,218	Roofs	1.00	0.892	3,763			
DMA 2/2B	26,271	Concrete or Asphalt	1.00	0.892	23,434			
DMA 2/3B	11,913	Landscape	0.10	0.110	1,316			
	$A_T=88,829$				$\Sigma= 59,496$	0.62	3,074	14,451

[B], [C] is obtained as described in Section 2.3.1 of the WQMP Guidance Document

[E] is obtained from Exhibit A in the WQMP Guidance Document

[G] is obtained from a design procedure sheet, such as in LID BMP Design Handbook and placed in Appendix 6

Section E: Alternative Compliance (LID Waiver Program)

LID BMPs are expected to be feasible on virtually all projects. Where LID BMPs have been demonstrated to be infeasible as documented in Section D, other Treatment Control BMPs must be used (subject to LID waiver approval by the Copermittee). Check one of the following Boxes:

LID Principles and LID BMPs have been incorporated into the site design to fully address all Drainage Management Areas. No alternative compliance measures are required for this project and thus this Section is not required to be completed.

- Or -

The following Drainage Management Areas are unable to be addressed using LID BMPs. A site-specific analysis demonstrating technical infeasibility of LID BMPs has been approved by the Co-Permittee and included in Appendix 5. Additionally, no downstream regional and/or sub-regional LID BMPs exist or are available for use by the project. The following alternative compliance measures on the following pages are being implemented to ensure that any pollutant loads expected to be discharged by not incorporating LID BMPs, are fully mitigated.

E.1 Identify Pollutants of Concern

Utilizing Table A.1 from Section A above which noted your project's receiving waters and their associated EPA approved 303(d) listed impairments, cross reference this information with that of your selected Priority Development Project Category in Table E.1 below. If the identified General Pollutant Categories are the same as those listed for your receiving waters, then these will be your Pollutants of Concern and the appropriate box or boxes will be checked on the last row. The purpose of this is to document compliance and to help you appropriately plan for mitigating your Pollutants of Concern in lieu of implementing LID BMPs.

Table E.1 Potential Pollutants by Land Use Type

Priority Development Project Categories and/or Project Features (check those that apply)	General Pollutant Categories							
	Bacterial Indicators	Metals	Nutrients	Pesticides	Toxic Organic Compounds	Sediments	Trash & Debris	Oil & Grease
<input type="checkbox"/> Detached Residential Development	P	N	P	P	N	P	P	P
<input type="checkbox"/> Attached Residential Development	P	N	P	P	N	P	P	P ⁽²⁾
<input checked="" type="checkbox"/> Commercial/Industrial Development	P ⁽³⁾	P	P ⁽¹⁾	P ⁽¹⁾	P ⁽⁵⁾	P ⁽¹⁾	P	P
<input type="checkbox"/> Automotive Repair Shops	N	P	N	N	P ^(4, 5)	N	P	P
<input type="checkbox"/> Restaurants (>5,000 ft ²)	P	N	N	N	N	N	P	P
<input type="checkbox"/> Hillside Development (>5,000 ft ²)	P	N	P	P	N	P	P	P
<input checked="" type="checkbox"/> Parking Lots (>5,000 ft ²)	P ⁽⁶⁾	P	P ⁽¹⁾	P ⁽¹⁾	P ⁽⁴⁾	P ⁽¹⁾	P	P
<input checked="" type="checkbox"/> Retail Gasoline Outlets	N	P	N	N	P	N	P	P
Project Priority Pollutant(s) of Concern	<input checked="" type="checkbox"/>							

P = Potential

N = Not Potential

⁽¹⁾ A potential Pollutant if non-native landscaping exists or is proposed onsite; otherwise not expected

⁽²⁾ A potential Pollutant if the project includes uncovered parking areas; otherwise not expected

⁽³⁾ A potential Pollutant is land use involving animal waste

⁽⁴⁾ Specifically petroleum hydrocarbons

⁽⁵⁾ Specifically solvents

⁽⁶⁾ Bacterial indicators are routinely detected in pavement runoff

E.2 Stormwater Credits

Projects that cannot implement LID BMPs but nevertheless implement smart growth principles are potentially eligible for Stormwater Credits. Utilize Table 3-8 within the WQMP Guidance Document to identify your Project Category and its associated Water Quality Credit. If not applicable, write N/A.

Table E.2 Water Quality Credits

Qualifying Project Categories	Credit Percentage ²
N/A	N/A
<i>Total Credit Percentage¹</i>	

¹Cannot Exceed 50%

²Obtain corresponding data from Table 3-8 in the WQMP Guidance Document

E.3 Sizing Criteria

After you appropriately considered Stormwater Credits for your project, utilize Table E.3 below to appropriately size them to the DCV, or Design Flow Rate, as applicable. Please reference Chapter 3.5.2 of the WQMP Guidance Document for further information.

Table E.3 Treatment Control BMP Sizing

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I _f	DMA Runoff Factor	DMA Area x Runoff Factor	CDS Unit (Hydrodynamic Separator)			
						Design Rainfall Intensity (in/hr)	Minimum Design Capture Volume or Design Flow Rate (cubic feet or cfs)	Total Storm Water Credit % Reduction	Proposed Volume or Flow on Plans (cubic feet or cfs)
	[A]		[B]	[C]	[A] x [C]				
DMA 1/1A	2,720	Roofs	1.00	0.892	2,426				
DMA 1/2A	30,363	Concrete or Asphalt	1.00	0.892	27,084				
DMA 1/3A	13,344	Landscape	0.10	0.110	1,474				
DMA 2/1B	4,218	Roofs	1.00	0.892	3,763				
DMA 2/2B	26,271	Concrete or Asphalt	1.00	0.892	23,434				
DMA 2/3B	11,913	Landscape	0.10	0.110	1,316				
	A _T = 88,829				Σ = 59,496	0.20	0.3 cfs	0	0.3 cfs

[B], [C] is obtained as described in Section 2.3.1 from the WQMP Guidance Document

[E] is obtained from Exhibit A in the WQMP Guidance Document

[G] is for Flow-Based Treatment Control BMPs [G] = 43,560, for Volume-Based Control Treatment BMPs, [G] = 12

[H] is from the Total Credit Percentage as Calculated from Table E.2 above

[I] as obtained from a design procedure sheet from the BMP manufacturer and should be included in Appendix 6

E.4 Treatment Control BMP Selection

Treatment Control BMPs typically provide proprietary treatment mechanisms to treat potential pollutants in runoff, but do not sustain significant biological processes. Treatment Control BMPs must have a removal efficiency of a medium or high effectiveness as quantified below:

- **High:** equal to or greater than 80% removal efficiency
- **Medium:** between 40% and 80% removal efficiency

Such removal efficiency documentation (e.g., studies, reports, etc.) as further discussed in Chapter 3.5.2 of the WQMP Guidance Document, must be included in Appendix 6. In addition, ensure that proposed Treatment Control BMPs are properly identified on the WQMP Site Plan in Appendix 1.

Table E.4 Treatment Control BMP Selection

Selected Treatment Control BMP Name or ID ¹	Priority Pollutant(s) of Concern to Mitigate ²	Removal Efficiency Percentage ³
CDS for Pre-treatment	Bacterial Indicators, Metal, Nutrients, Pesticides, Toxic Organic Compounds, Sediments, Trash & Debris, Oil & Grease	80%

¹ Treatment Control BMPs must not be constructed within Receiving Waters. In addition, a proposed Treatment Control BMP may be listed more than once if they possess more than one qualifying pollutant removal efficiency.

² Cross Reference Table E.1 above to populate this column.

³ As documented in a Co-Permittee Approved Study and provided in Appendix 6.

Section F: Hydromodification

F.1 Hydrologic Conditions of Concern (HCOC) Analysis

Once you have determined that the LID design is adequate to address water quality requirements, you will need to assess if the proposed LID Design may still create a HCOC. Review Chapters 2 and 3 (including Figure 3-7) of the WQMP Guidance Document to determine if your project must mitigate for Hydromodification impacts. If your project meets one of the following criteria which will be indicated by the check boxes below, you do not need to address Hydromodification at this time. However, if the project does not qualify for Exemptions 1, 2 or 3, then additional measures must be added to the design to comply with HCOC criteria. This is discussed in further detail below in Section F.2.

See Appendix 7 for the Riverside County HCOC Applicability Map, which determines areas that are HCOC exempt. Per the Map the proposed project is located in an area where HCOC does not apply. Thus, this project will not have to address or mitigate for HCOC's.

HCOC EXEMPTION 1: The Priority Development Project disturbs less than one acre. The Copermitttee has the discretion to require a Project-Specific WQMP to address HCOCs on projects less than one acre on a case by case basis. The disturbed area calculation should include all disturbances associated with larger common plans of development.

Does the project qualify for this HCOC Exemption? Y N

If Yes, HCOC criteria do not apply.

HCOC EXEMPTION 2: The volume and time of concentration¹ of storm water runoff for the post-development condition is not significantly different from the pre-development condition for a 2-year return frequency storm (a difference of 5% or less is considered insignificant) using one of the following methods to calculate:

- Riverside County Hydrology Manual
- Technical Release 55 (TR-55): Urban Hydrology for Small Watersheds (NRCS 1986), or derivatives thereof, such as the Santa Barbara Urban Hydrograph Method
- Other methods acceptable to the Co-Permittee

Does the project qualify for this HCOC Exemption? Y N

If Yes, report results in Table F.1 below and provide your substantiated hydrologic analysis in Appendix 7.

Table F.1 Hydrologic Conditions of Concern Summary

	2 year – 24 hour		
	Pre-condition	Post-condition	% Difference
Time of Concentration	INSERT VALUE	INSERT VALUE	INSERT VALUE
Volume (Cubic Feet)	INSERT VALUE	INSERT VALUE	INSERT VALUE

¹ Time of concentration is defined as the time after the beginning of the rainfall when all portions of the drainage basin are contributing to flow at the outlet.

HCOC EXEMPTION 3: All downstream conveyance channels to an adequate sump (for example, Prado Dam, Lake Elsinore, Canyon Lake, Santa Ana River, or other lake, reservoir or naturally erosion resistant feature) that will receive runoff from the project are engineered and regularly maintained to ensure design flow capacity; no sensitive stream habitat areas will be adversely affected; or are not identified on the Co-Permittees Hydromodification Sensitivity Maps.

Does the project qualify for this HCOC Exemption? Y N

If Yes, HCOC criteria do not apply and note below which adequate sump applies to this HCOC qualifier:

F.2 HCOC Mitigation

If none of the above HCOC Exemption Criteria are applicable, HCOC criteria is considered mitigated if they meet one of the following conditions:

- a. Additional LID BMPS are implemented onsite or offsite to mitigate potential erosion or habitat impacts as a result of HCOCs. This can be conducted by an evaluation of site-specific conditions utilizing accepted professional methodologies published by entities such as the California Stormwater Quality Association (CASQA), the Southern California Coastal Water Research Project (SCCRWP), or other Co-Permittee approved methodologies for site-specific HCOC analysis.
- b. The project is developed consistent with an approved Watershed Action Plan that addresses HCOC in Receiving Waters.
- c. Mimicking the pre-development hydrograph with the post-development hydrograph, for a 2-year return frequency storm. Generally, the hydrologic conditions of concern are not significant, if the post-development hydrograph is no more than 10% greater than pre-development hydrograph. In cases where excess volume cannot be infiltrated or captured and reused, discharge from the site must be limited to a flow rate no greater than 110% of the pre-development 2-year peak flow.

Be sure to include all pertinent documentation used in your analysis of the items a, b or c in Appendix 7.

Project Site is located within the mapped HCOC exemption area as is found in the Riverside County WAP Geodatabase approved April 20, 2017.

Section G: Source Control BMPs

The proposed project does not use source control BMP's.

Source control BMPs include permanent, structural features that may be required in your project plans — such as roofs over and berms around trash and recycling areas — and Operational BMPs, such as regular sweeping and “housekeeping”, that must be implemented by the site’s occupant or user. The MEP standard typically requires both types of BMPs. In general, Operational BMPs cannot be substituted for a feasible and effective permanent BMP. Using the Pollutant Sources/Source Control Checklist in Appendix 8, review the following procedure to specify Source Control BMPs for your site:

1. **Identify Pollutant Sources:** Review Column 1 in the Pollutant Sources/Source Control Checklist. Check off the potential sources of Pollutants that apply to your site.
2. **Note Locations on Project-Specific WQMP Exhibit:** Note the corresponding requirements listed in Column 2 of the Pollutant Sources/Source Control Checklist. Show the location of each Pollutant source and each permanent Source Control BMP in your Project-Specific WQMP Exhibit located in Appendix 1.
3. **Prepare a Table and Narrative:** Check off the corresponding requirements listed in Column 3 in the Pollutant Sources/Source Control Checklist. In the left column of Table G.1 below, list each potential source of runoff Pollutants on your site (from those that you checked in the Pollutant Sources/Source Control Checklist). In the middle column, list the corresponding permanent, Structural Source Control BMPs (from Columns 2 and 3 of the Pollutant Sources/Source Control Checklist) used to prevent Pollutants from entering runoff. **Add additional narrative** in this column that explains any special features, materials or methods of construction that will be used to implement these permanent, Structural Source Control BMPs.
4. **Identify Operational Source Control BMPs:** To complete your table, refer once again to the Pollutant Sources/Source Control Checklist. List in the right column of your table the Operational BMPs that should be implemented as long as the anticipated activities continue at the site. Copermittee stormwater ordinances require that applicable Source Control BMPs be implemented; the same BMPs may also be required as a condition of a use permit or other revocable Discretionary Approval for use of the site.

Table G.1 Permanent and Operational Source Control Measures

Potential Sources of Runoff pollutants	Permanent Structural Source Control BMPs	Operational Source Control BMPs
Need for future indoor & structural pest control	Note building design features that discourage entry of pests.	Provide Integrated Pest Management information to owners, lessees, and operators.
Landscape/Outdoor Pesticide Use	-State the final landscape plans will accomplish all of the following: -Preserve existing native trees, shrubs, and ground cover to maximum extent possible.	-Maintain landscaping using minimum or no pesticides. -See applicable operational BMPs in “What you should know for....Landscaping and Gardening” at http://rcflood.org/stormwater

	<ul style="list-style-type: none"> - Design landscaping to minimize irrigation and runoff, to promote surface infiltration where appropriate, and to minimize the use of fertilizers and pesticides that can contribute to stormwater pollution. -Where landscaped areas are used to retain or detail stormwater, specify plants that are tolerant of saturated soil conditions. -Consider using pest-resistant plants, especially adjacent to hardscape. -To insure successful establishment, select plants appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions. 	<ul style="list-style-type: none"> -Provide IPM information to new owners, lessees and operators.
Food Service	<ul style="list-style-type: none"> -For restaurants, grocery stores, and other food service operations, show location (indoors or in a covered area outdoors) of a floor sink or other area for cleaning floor mats, containers, and equipment. -On the drawing, show a note that this drain will be connected to a grease interceptor before discharging to the sanitary sewer. -Describe the location and features of the designated cleaning area. -Describe the items to be cleaned in this facility and how it has been sized to insure that the largest items can be accommodated. 	<ul style="list-style-type: none"> - See the brochure, "The Food Service Industry Best Management Practices for Restaurants, Grocery Stores, Delicatessens and Bakeries "at http://rcflood.org/stormwater
Refuse Areas	<ul style="list-style-type: none"> -Show where site refuse and recycled material will be handled and stored for pickup. See local municipal requirements for sizes and other details of refuse areas. -If dumpsters or other receptacles are outdoors, show how the designated area will be covered, grades, and paved to prevent runoff and show locations of berms to prevent runoff from the area. -Any drains from dumpsters, compactors, and shallow bin areas shall 	<ul style="list-style-type: none"> -An adequate number of receptacles will be provided. -Drainage design to route flow of site away from trash enclosures and minimize runoff from trash enclosures. The trash enclosures will be covered to eliminate contamination. Appendix 1 is a detail of the typical trash enclosure. -Inspect receptacles regularly; repair or replace leaky receptacles. Keep receptacles covered.

	<p>be connected to a grease removal device before discharge to sanitary sewer.</p> <p>-State how site refuse will be handled and provide supporting detail to what is shown on plans.</p> <p>-State that signs will be posted on or near dumpsters with the words "Do not dump hazardous materials here" or similar.</p>	<p>Prohibit/prevent dumping of liquid or hazardous wastes. Post "no hazardous materials" signs. Inspect and pick up litter daily and clean up spills immediately. Keep spill control materials available on-site. See Fact Sheet SC-34, "Waste Handling and Disposal" in the CASQA stormwater quality handbooks at www.cabmphandbooks.com.</p>
Fire Sprinkler Test Water	<p>-Provide a means to drain fire sprinkler test water to the sanitary sewer.</p>	<p>-See the note in Fact Sheet SC-41, "Building and Grounds Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com</p>
Plazas, Sidewalks, and Parking Lots		<p>-Sweep plazas, sidewalks, and parking lots regularly to prevent accumulation of litter and debris. Collect debris from pressure washing to prevent entry into the storm drain system. Collect washwater containing any cleaning agent or degreaser and discharge to the sanitary sewer not to a storm drain.</p>
On-Site Storm Drain system		<p>-Provide stormwater pollution prevention information to new site owners, lessees, or operators.</p> <p>-See applicable Operational BMP's in Fact Sheet SC-44, "Drainage System Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com</p> <p>-Include the following in lease agreements: "Tenant shall not allow anyone to discharge anything to storm drains or to store or deposit materials so as to create a potential discharge to the storm drains."</p>
Roof drains	<p>-Roof drains to discharge to splash block or curb face and sheet flow to designated treatment BMP.</p>	<p>-Clear roof drains and gutters of debris to prevent redirection of flow.</p>

Section H: Construction Plan Checklist

Populate Table H.1 below to assist the plan checker in an expeditious review of your project. The first two columns will contain information that was prepared in previous steps, while the last column will be populated with the corresponding plan sheets. This table is to be completed with the submittal of your final Project-Specific WQMP.

To be provided with final WQMP.

Table H.1 Construction Plan Cross-reference

BMP No. or ID	BMP Identifier and Description	Corresponding Plan Sheet(s)

Note that the updated table — or Construction Plan WQMP Checklist — is **only a reference tool** to facilitate an easy comparison of the construction plans to your Project-Specific WQMP. Co-Permittee staff can advise you regarding the process required to propose changes to the approved Project-Specific WQMP.

Section I: Operation, Maintenance and Funding

The Copermittee will periodically verify that Stormwater BMPs on your site are maintained and continue to operate as designed. To make this possible, your Copermittee will require that you include in Appendix 9 of this Project-Specific WQMP:

1. A means to finance and implement facility maintenance in perpetuity, including replacement cost.
2. Acceptance of responsibility for maintenance from the time the BMPs are constructed until responsibility for operation and maintenance is legally transferred. A warranty covering a period following construction may also be required.
3. An outline of general maintenance requirements for the Stormwater BMPs you have selected.
4. Figures delineating and designating pervious and impervious areas, location, and type of Stormwater BMP, and tables of pervious and impervious areas served by each facility. Geo-locating the BMPs using a coordinate system of latitude and longitude is recommended to help facilitate a future statewide database system.
5. A separate list and location of self-retaining areas or areas addressed by LID Principles that do not require specialized O&M or inspections but will require typical landscape maintenance as noted in Chapter 5, pages 85-86, in the WQMP Guidance. Include a brief description of typical landscape maintenance for these areas.

Your local Co-Permittee will also require that you prepare and submit a detailed Stormwater BMP Operation and Maintenance Plan that sets forth a maintenance schedule for each of the Stormwater BMPs built on your site. An agreement assigning responsibility for maintenance and providing for inspections and certification may also be required.

Details of these requirements and instructions for preparing a Stormwater BMP Operation and Maintenance Plan are in Chapter 5 of the WQMP Guidance Document.

Maintenance Mechanism: The proposed ADS Stormtech MC-4500 Chambers will require to be maintained by the owner following the manufacturer specifications.

Will the proposed BMPs be maintained by a Home Owners' Association (HOA) or Property Owners Association (POA)?

Y N

Include your Operation and Maintenance Plan and Maintenance Mechanism in Appendix 9. Additionally, include all pertinent forms of educational materials for those personnel that will be maintaining the proposed BMPs within this Project-Specific WQMP in Appendix 10.

This section will be completed and addressed at the time of the final WQMP Submittal.

Appendix 1: Maps and Site Plans



Vicinity Map (Not To Scale)



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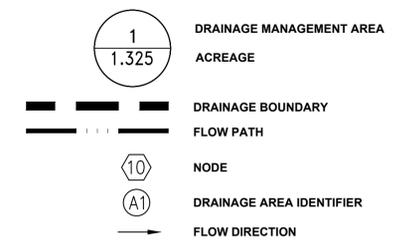
ENGINEERING ENVIRONMENTAL BUILDING LAND
Orange County Sacramento Denver Dallas
San Luis Obispo Riverside Boise Atlanta

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DATE: 1/5/2021
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DATE: --
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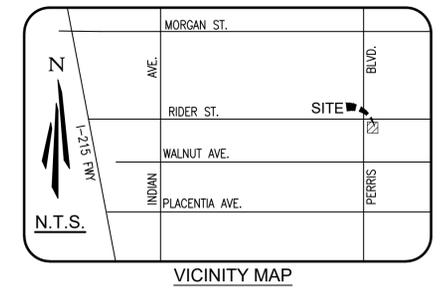
RECEIVING WATERS MAP

CITY OF PERRIS, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA
DRAINAGE AREA MAP
7-ELEVEN #1045028

LEGEND



ABBREVIATIONS
 N.A.P.: NOT A PART
 DMA: DRAINAGE MANAGEMENT AREA
 BMP: BEST MANAGEMENT PRACTICE
 DCV: DESIGN CAPTURE VOLUME
 V: VOLUME
 CONC: CONCRETE
 AC: ASPHALT CONCRETE

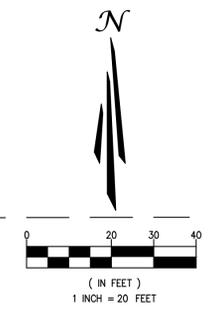
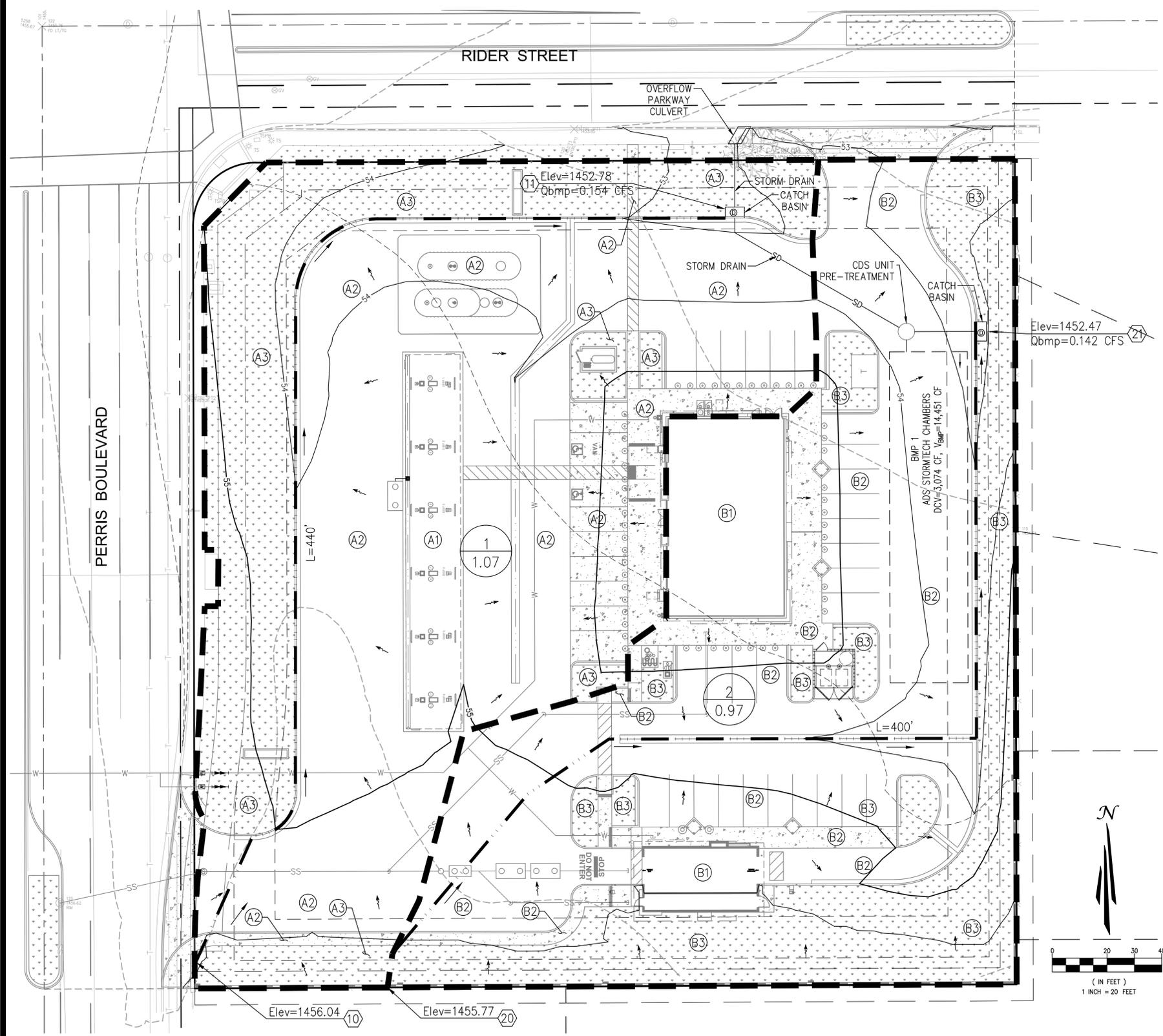


DRAINAGE MANAGEMENT AREAS SUMMARY TABLE

DMA NAME	DMA AREA	PERVIOUS AREA	IMPERVIOUS AREA	DCV	VOLUME PROVIDED	Qbmp
DMA 1	46,427 SF	13,145 SF	33,282 SF	1,609 CF	14,451 CF	0.154 CFS
DMA 2	42,402 SF	11,821 SF	30,581 SF	1,477 CF	14,451 CF	0.142 CFS

DMA SUMMARY
BMP 1 - ADS STORMTECH CHAMBERS

IDENTIFIER	AREA (SF)	SURFACE TYPE	TREATMENT
A1	2,720	ROOFS	DRAINS TO BMP
A2	30,363	CONC/AC	DRAINS TO BMP
A3	13,344	LANDSCAPE	SELF-TREATING
B1	4,218	ROOFS	DRAINS TO BMP
B2	26,271	CONC/AC	DRAINS TO BMP
B3	11,913	LANDSCAPE	SELF-TREATING



Feb 02, 2021 - 4:18pm by agonzalez K:\Drawings\7 Eleven\SE11670 - 1045028 - Rider St. & Perris Blvd., Perris\ENG\WOMP_SE1167 Perris - Drainage Area Map.dwg

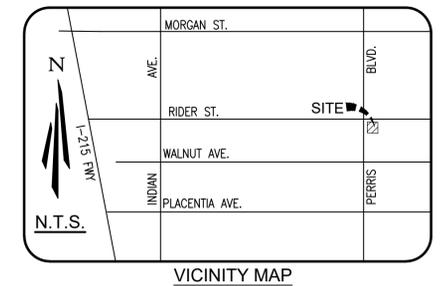
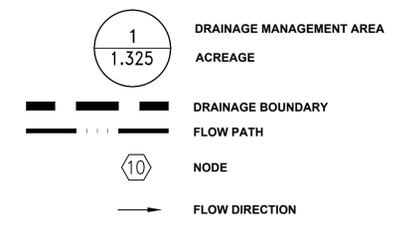
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 San Luis Obispo Riverside Boise Atlanta

DRAINAGE AREA MAP
7-ELEVEN #1045028
 PERRIS TRACKING NO. P19-05281
 SEC RIDER STREET & PERRIS BOULEVARD
 PERRIS, CA 92751

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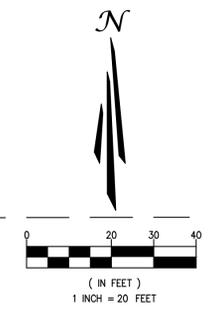
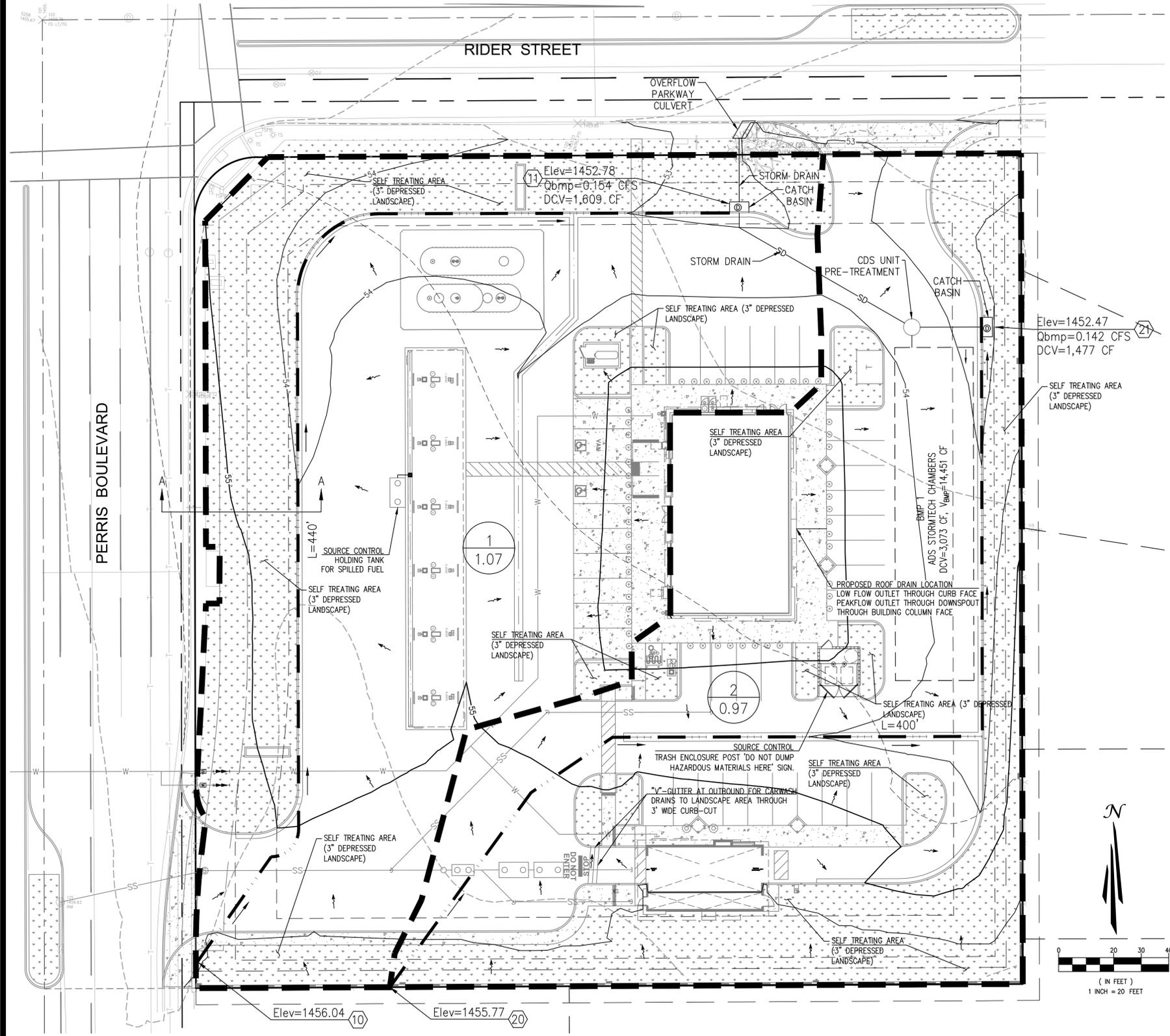
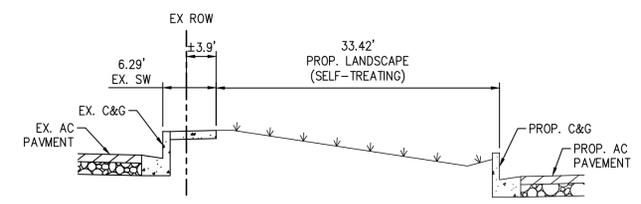
CITY OF PERRIS, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA
POST-CONSTRUCTION BMP SITE PLAN
7-ELEVEN #1045028

LEGEND



ABBREVIATIONS
 N.A.P.: NOT A PART
 DMA: DRAINAGE MANAGEMENT AREA
 BMP: BEST MANAGEMENT PRACTICE
 DCV: DESIGN CAPTURE VOLUME
 V: VOLUME

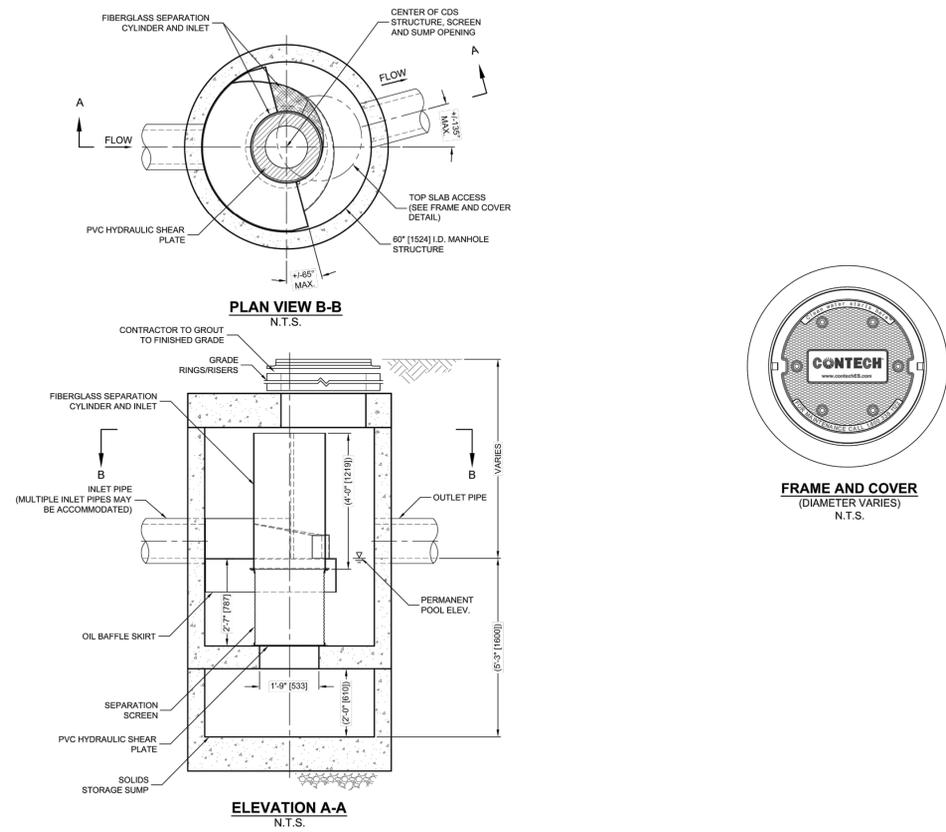
NOTE:
 THIS SITE IS NOT SUBJECT TO STORM WATER RUN-ON.



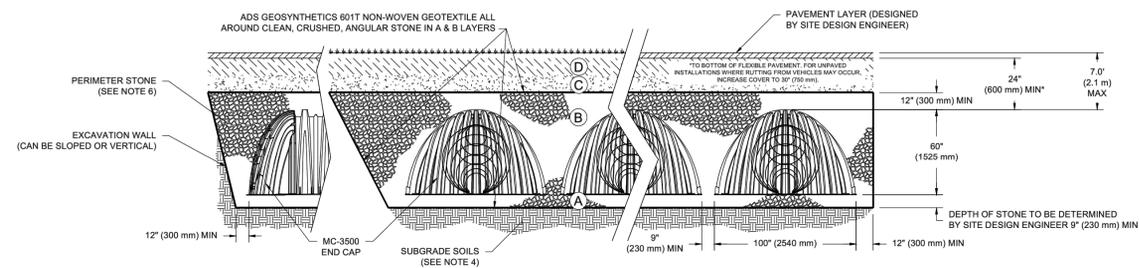
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 Since 1944 San Luis Obispo, Riverside, Perris, Atlanta
POST-CONSTRUCTION BMP SITE PLAN
 7-ELEVEN #1045028
 PERRIS TRACKING NO. P19-05281
 SEC RIDER STREET & PERRIS BOULEVARD
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 1 OF 2

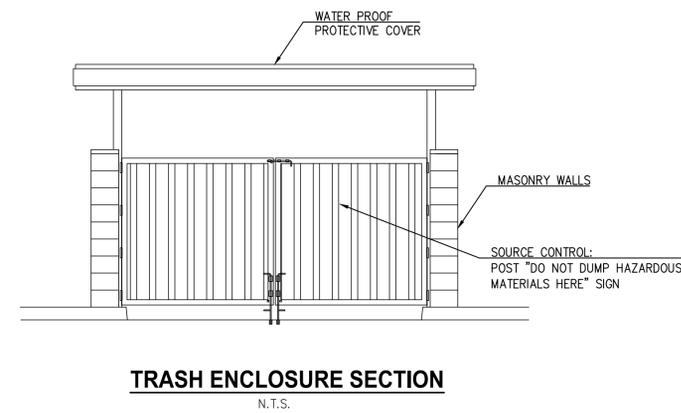
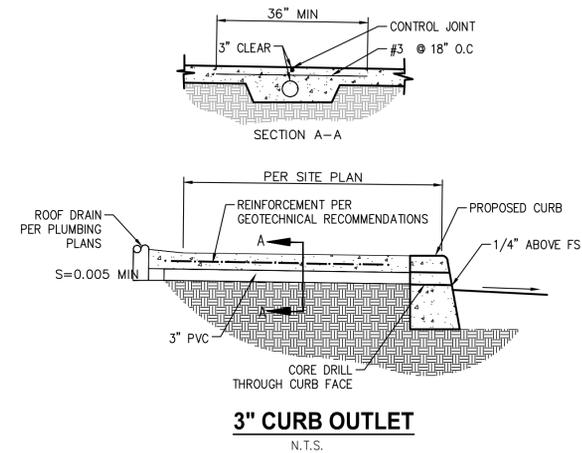
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CDS UNIT PRE-TREATMENT
SCALE: NTS



ADS CHAMBERS SECTION
SCALE: NTS



TRASH ENCLOSURE SECTION
N.T.S.

DRAWN: RH
DATE: 07/20/2020
CHECKED: MS
DATE: 07/21/2020
JOB NO: SE1167

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POST-CONSTRUCTION BMP SITE PLAN DETAILS
7-ELEVEN #1045028
PERRIS TRACKING NO. P19-05281
SEC RIDER STREET & PERRIS BOULEVARD
PERRIS, CA 92751

Appendix 2: Construction Plans

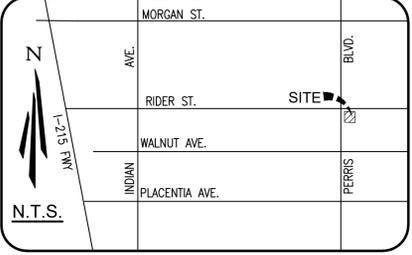
CITY OF PERRIS, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA
CONCEPTUAL GRADING PLAN

PREPARED FOR:
 HONG LING LEE & TSU HO LEE - C/O JACK LEE
 6761 SOLTERRA VISTA PARKWAY
 SAN DIEGO, CA 92130

DRAWN: AG
 DATE: 2/2/2021
 CHECKED: MS
 DATE: 2/2/2021
 JOB NO.: SE1187

GRADING KEYNOTES

- 1 CURB
- 2 CURB & GUTTER
- 3 CONCRETE PAVEMENT
- 4 ASPHALT PAVEMENT
- 5 "V"-GUTTER
- 6 CONCRETE SIDEWALK
- 7 DRIVEWAY APPROACH W/PEDESTRIAN PATH PER RIV. CO. STD. NO. 207A. ACCESS RESTRICTED TO RIGHT-IN/RIGHT-OUT.
- 8 CATCH BASIN W/MANHOLE AND FULL TRASH CAPTURE DEVICE
- 9 STORM DRAIN PIPE
- 10 UNDERGROUND INFILTRATION CHAMBERS
- 11 BOLLARD
- 12 CONVENIENCE STORE
- 13 FUEL CANOPY, GAS PUMPS, & CONCRETE FUELING PAD
- 14 UNDERGROUND STORAGE TANKS & CONCRETE PAD
- 15 CAR WASH
- 16 HEALY TANK ENCLOSURE
- 17 TRASH ENCLOSURE
- 18 MONUMENT SIGN
- 19 TRANSFORMER
- 20 PRETREATMENT DEVICE (HYDRODYNAMIC SEPARATOR)
- 21 BIKE RACK
- 22 AIR & WATER STATION
- 23 DEAD-END SUMP
- 24 DRAIN INLET
- 25 ACCESSIBLE CURB RAMP
- 26 4' WIDE PARKWAY CULVERT
- 27 14' WIDE MEDIAN ISLAND W/LANDSCAPING
- 28 SPLIT-FACED BLOCK WALL (H=8') W/PILASTERS
- 29 CURB CUT



ASSESSOR'S PARCEL NUMBER:

COUNTY OF RIVERSIDE:
 APN 300-300-026

AREA SUMMARY:

89,947± S.F. / 2.06± ACRES

ZONING & SITE DEVELOPMENT STANDARDS:

PER SITE INVESTIGATION REPORT FOR SITE # 1045028 (SE1187) PREPARED BY TAIT & ASSOCIATES DATED 03-27-2019:

ZONE: COMMERCIAL (C) - SPECIFIC PLAN BUSINESS PARK OFFICE (BPO)

MINIMUM SETBACKS FOR BUILDINGS/PARKING:

FRONT: 10'
 SIDE (INTERIOR): 10', 25' IF LOADING AND UNLOADING ARE PROVIDED
 SIDE (STREET): 10'
 REAR: NONE, 10' IF ADJOINING A RESIDENTIAL ZONE.

OVERHANG ALLOWED IN SETBACK? NO

CANOPY SETBACK:

FRONT: 10'
 SIDE 1: 10'
 SIDE 2: 10'
 REAR: NONE

MAX HT. ABOVE FINISH GRADE: 35'

PARKING REQUIREMENTS: 1/250 S.F. FOR GENERAL RETAIL

UTILITY PURVEYORS:

STORM DRAIN:
 CITY OF PERRIS
 TRI LAKE CONSULTANTS
 24 S D ST #100
 PERRIS, CA 92570
 TEL: 951-943-6504

TELEPHONE/CABLE:
 AT&T
 TEL: 800-310-2355

GAS:
 SOCAL GAS
 TEL: 800-427-2200

SPECTRUM:
 TEL: 855-243-8892

ELECTRIC:
 SO. CAL. EDISON
 26100 MENIFEE RD
 ROMOLAND, CA 92585
 TEL: 800-684-8123

VERIZON:
 TEL: 800-483-4000

FRONTIER:
 TEL: 855-697-5609

BASIS OF BEARINGS:

THE BEARINGS SHOWN HEREON ARE BASED ON FOUND MONUMENTS ON THE CENTERLINE OF PERRIS BLVD. AS SHOWN ON PARCEL MAP NO. 4417, RECORDED IN BOOK 72 PAGES 10-13 O.R., BEARING CENTERLINE NORTH 00°07'34" WEST.

BENCH MARK:

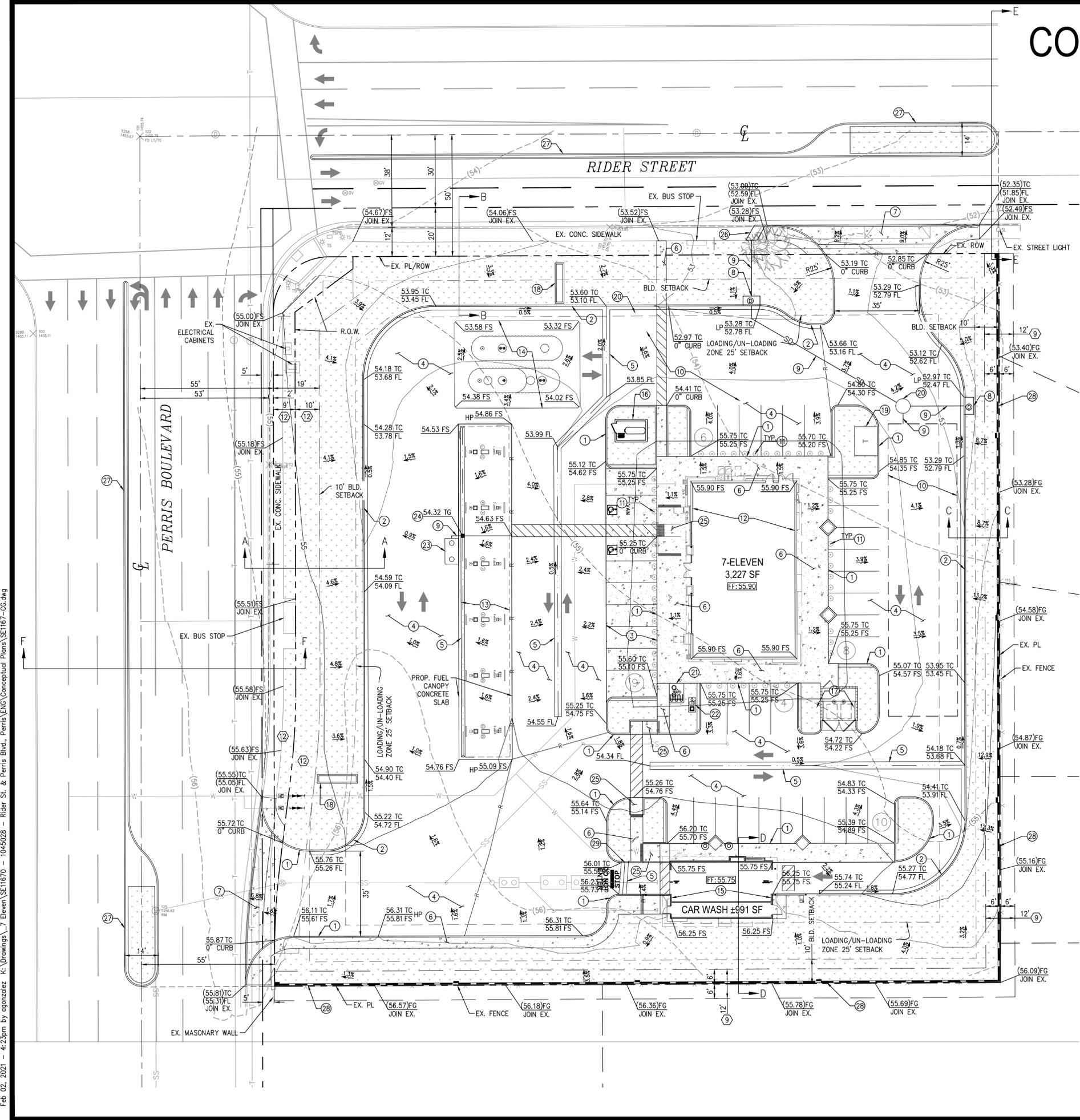
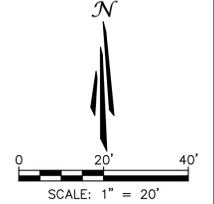
THE ELEVATIONS SHOW HEREON ARE BASED ON FOUND NGS MONUMENT "432" ADJUSTED ORTHOMETRIC HEIGHT = 1455.11 FEET NAVD 88

DESCRIBED: 3-1/4" STANDARD MWDSC ALUMINUM DISK SET ON THE EAST SIDE OF A 3.5' X 2.7' STEEL TRAFFIC SIGNAL LIGHT POLE CONCRETE FOOTING.

TITLE EXCEPTIONS:

- 1-6 TITLE REPORT NOTES.
- 7 GENERAL AND SPECIAL TAXES.
- 8 THE LIEN OF SUPPLEMENTAL TAXES.
- 9 AN EASEMENT IN FAVOR OF SOUTHERN CALIFORNIA EDISON COMPANY, A CORPORATION, FOR OVERHEAD AND UNDERGROUND ELECTRICAL SUPPLY SYSTEMS AND COMMUNICATION SYSTEMS AND INCIDENTAL PURPOSES, RECORDED MAY 17, 1972 AS INSTRUMENT NO. 63715, O.R. (AFFECTS SUBJECT PROPERTY AND PLOTTED HEREON)
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- 11 COVENANTS, CONDITIONS, RESTRICTIONS AND EASEMENTS RECORDED SEPTEMBER 4, 1974 AS INSTRUMENT NO. 113882, O.R. AND MODIFIED BY DOCUMENTS RECORDED MARCH 27, 1979 AS INSTRUMENT NO. 60667 AND JUNE 30, 1981 AS INSTRUMENT NO. 123186, O.R. (NO AFFECT TO SUBJECT PROPERTY)
- 12 AN OFFER OF DEDICATION IN FAVOR OF THE CITY OF PERRIS, A MUNICIPAL CORPORATION, FOR PUBLIC STREET, HIGHWAY AND INCIDENTAL PURPOSES, RECORDED MARCH 11, 2014 AS INSTRUMENT NO. 2014-0089816, O.R.

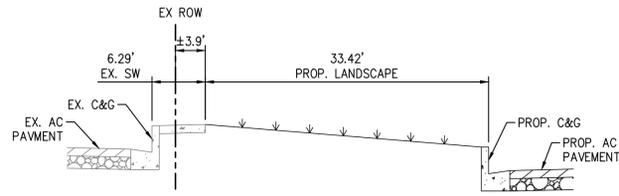
13-16 TITLE REPORT NOTES.



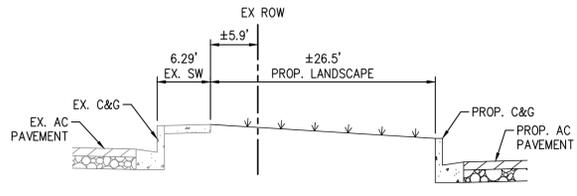
Feb. 02, 2021 - 4:23pm by agonzalez, K:\Drawings\7 Eleven\SE1187\0 - Rider St. & Perris Blvd., Perris\ENG\Conceptual Plans\SE1187-CG.dwg

CONCEPTUAL GRADING PLAN

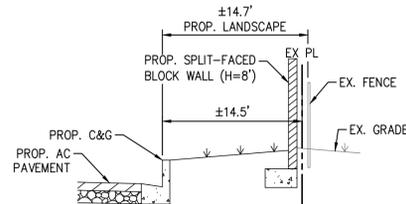
7-ELEVEN C-STORE WITH FUELING AND CAR WASH - SITE NO. 1045028
 SEC RIDER STREET & PERRIS BOULEVARD
 PERRIS, CA 92571



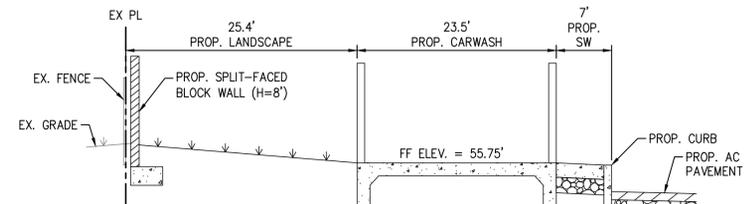
SECTION A-A
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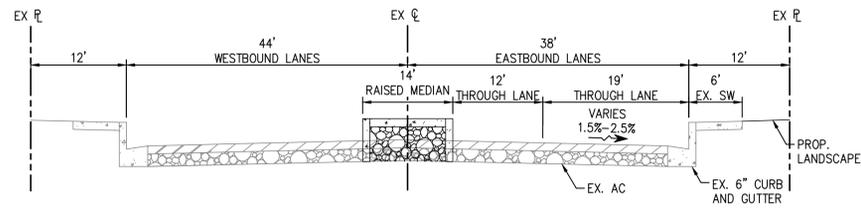
SECTION B-B
SCALE: NTS



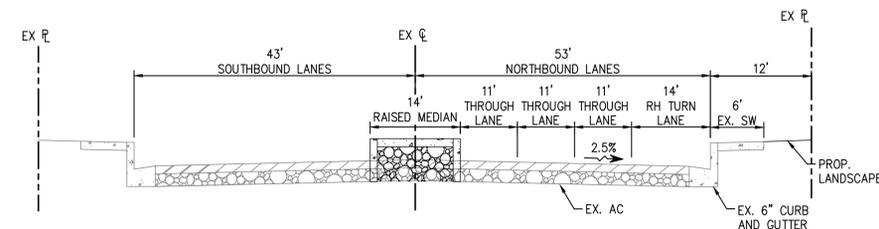
SECTION C-C
SCALE: NTS



SECTION D-D
SCALE: NTS



RIDER STREET
SECTION E-E
SCALE: NTS



PERRIS BOULEVARD
SECTION F-F
SCALE: NTS

CITY OF PERRIS, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA
CONCEPTUAL UTILITY PLAN

PREPARED FOR:
HONG LING LEE & TSU HO LEE - C/O JACK LEE
 6761 SOLTERRA VISTA PARKWAY
 SAN DIEGO, CA 92130

SEWER KEYNOTES

- ① CONNECT SEWER LINE TO EXISTING SEWER MANHOLE
- ② CONNECT SEWER LINE TO BUILDING.
- ③ 4" PVC SDR 35 SEWER PIPE. (PRIVATE)
- ④ 6" PVC SDR 35 SEWER PIPE. (EMWD)
- ⑤ 6" PVC SDR 35 SEWER PIPE. (PRIVATE)
- ⑥ MANHOLE PER RIV. CO. STANDARDS. (PRIVATE)
- ⑦ GREASE INTERCEPTOR W/SAMPLE BOX PER EMWD STANDARDS.
- ⑧ CAR WASH WATER RECLAMATION SYSTEM.
- ⑨ CLEANOUT PER RIV. CO. STANDARDS.

WATER KEYNOTES

- ⑩ CONNECT WATER LINE TO EXISTING 18" D.I.P. WATER LINE.
- ⑪ CONNECT WATER LINE TO BUILDING.
- ⑫ 2" WATER SERVICE CONNECTION PER EMWD STANDARDS. (EMWD)
- ⑬ 1" DOMESTIC WATER METER PER EMWD STANDARDS.
- ⑭ 1" BACKFLOW PREVENTER PER EMWD STANDARDS.
- ⑮ 1" LANDSCAPE WATER METER PER EMWD STANDARDS.
- ⑯ 1" PVC SCH 40 WATER LINE. (PRIVATE)

LEGEND

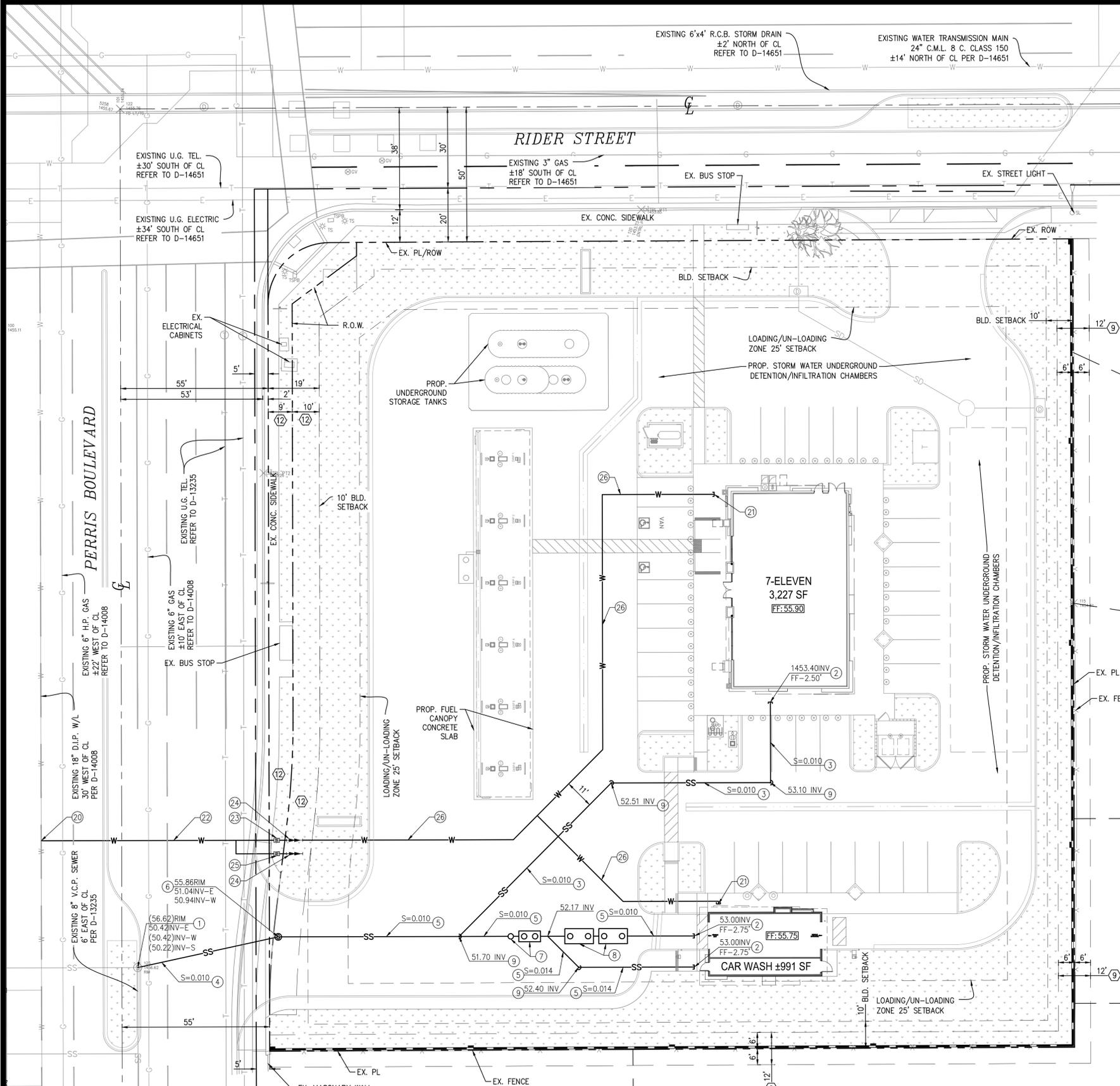
- STREET CENTERLINE
- - - PROPERTY LINE/RIGHT-OF-WAY
- - - SETBACK
- - - EASEMENT
- W PROPOSED WATER LINE
- W EXISTING WATER LINE
- SS PROPOSED SEWER LINE
- SS EXISTING SEWER LINE
- E EXISTING ELECTRICAL
- G EXISTING GAS
- T EXISTING TELECOMMUNICATIONS
- BACKFLOW PREVENTER
- ⊕ WATER METER
- ⊕ SEWER CLEANOUT
- ⊕ GREASE INTERCEPTOR
- ⊕ SEWER MANHOLE

EMWD SEWER NOTES:

1. EMWD SYSTEM CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH EMWD'S STANDARDS AND SPECIFICATIONS.
2. GRAVITY SEWER PROFILE ELEVATIONS ARE TO FLOW LINE (CONDUIT INVERT). FORCE MAIN PROFILE ELEVATIONS ARE TO CENTERGRADE (C.G.).
3. CONTRACTOR HAS THE OPTION TO INSTALL PLASTIC OR VCP SEWERS EXCEPT WHERE SPECIFICALLY DESIGNATED ON PLANS PER EMWD STANDARDS AND SPECIFICATIONS.
4. MANHOLES SHALL BE CONSTRUCTED IN ACCORDANCE WITH STANDARD DRAWINGS SB-53, SB-58 AND SB-61, AS APPLICABLE. SEWER MAINS MAY BE LAID THROUGH THE MANHOLES AND USED AS A FORM FOR THE INVERT.
5. MANHOLES OF DEPTHS LESS THAN FIVE FEET FROM FINISH STREET GRADE TO SEWER PIPE SHELF ARE TO BE CONSTRUCTED IN ACCORDANCE WITH STANDARD DRAWING SB-30.
6. ALL LATERALS SHALL HAVE AN ON-SITE CLEANOUT IN ACCORDANCE WITH STANDARD DRAWINGS SB-52. IN ADDITION, FOR LATERALS SERVING INDUSTRIAL AND/OR COMMERCIAL DEVELOPMENTS, THE REQUIREMENTS FOR SAMPLING AND/OR PRETREATMENT FACILITIES SHALL BE DETERMINED BY CONTACTING EMWD'S SOURCE CONTROL DIVISION AT (951) 928-3777, EXT. 6203.
7. MAINLINE CLEANOUTS, WHERE CALLED FOR ON THE PLANS, SHALL BE CONSTRUCTED IN ACCORDANCE WITH STANDARD DRAWING SB-52.
8. PRIOR TO CONSTRUCTION OF SEWER, CONTRACTOR SHALL EXPOSE EXISTING SEWER AND VERIFY ITS EXISTING ELEVATION AND LOCATION. WHERE CONNECTING TO EXISTING MANHOLES AND INLET STUB OF PROPER SIZE EXISTS, NO ALTERATIONS SHALL BE MADE TO EXISTING MANHOLE BASE OR STUB EXCEPT AS SPECIFICALLY AUTHORIZED BY EMWD.
9. ALL SEWER INLETS AT THE MANHOLE SHALL BE SUCH THAT ITS CROWN SHALL BE LEVEL WITH THE CROWN OF THE OUTLET PIPE, AT THEIR PROJECTIONS TO THE MANHOLE CENTERLINE.
10. RECONSTRUCTION OF EXISTING MANHOLES SHALL BE SCHEDULED AT THE CONVENIENCE OF EMWD AND SHALL BE COMPLETED WITHIN FIVE WORKING DAYS FOLLOWING ITS COMMENCEMENT.
11. SEWER LATERALS SHALL BE CONSTRUCTED IN ACCORDANCE WITH SB-177. LOCATIONS OF WYES AND LATERALS, WHERE NOT SHOWN ON THE PLANS, ARE TO BE DETERMINED IN THE FIELD PRIOR TO CONSTRUCTION TO MISS DRIVEWAYS. ALL LATERALS ARE TO BE 4" IN DIAMETER UNLESS OTHERWISE SHOWN ON PLANS. CONNECTIONS OF NEW LATERALS TO EXISTING SEWER ARE TO BE PER STANDARD DRAWING SB-176.
12. THE CONTRACTOR IS ADVISED THAT THE WORK ON THIS PROJECT MAY INVOLVE WORKING IN A CONFINED AIR SPACE. CONTRACTOR SHALL BE RESPONSIBLE FOR "CONFINED AIR SPACE" ARTICLE 108, TITLE 8, CALIFORNIA ADMINISTRATIVE CODE.
13. WHERE GROUNDWATER IS ENCOUNTERED, ALL VCP PIPE SHALL BE TREATED FOR ABSORPTION RESISTANCE PER EMWD'S SPECIFICATIONS.
14. BACKWATER VALVES SHALL BE INSTALLED PER SECTION 710.1 OF THE UNIFORM PLUMBING CODE.
15. ALL PIPE ZONE BEDDING & TRENCH BACKFILL ARE TO BE PER STANDARD DRAWING SB-157, SB-158 AND SB-159.

EMWD WATER NOTES:

1. WATER PIPELINE AND APPURTENANT CONSTRUCTION SHALL BE IN ACCORDANCE WITH EMWD STANDARDS AND SPECIFICATIONS.
2. PRIOR TO CONSTRUCTION OF PIPELINE, CONTRACTOR SHALL EXPOSE EXISTING WATER SYSTEM AND VERIFY ITS EXISTING ELEVATION AND LOCATION.
3. WHERE SEWERS HAVE BEEN CONSTRUCTED BY AGENCIES OTHER THAN EMWD, CONTRACTOR SHALL VERIFY SEWER LATERAL LOCATIONS PRIOR TO EXCAVATION FOR WATER PIPELINE. IN THE EVENT SEWER LATERALS ARE FOUND TO BE AT A DEPTH LESS THAN IN ACCORDANCE WITH EMWD SEWER STANDARDS, WATER PIPELINE CONTRACTOR SHALL ADJUST WATER PIPELINE DEPTH AS DIRECTED BY THE ENGINEER TO CROSS OVER THE SEWER LATERAL IF POSSIBLE, TO PROVIDE 36" MINIMUM COVER TO FINISH ROAD GRADE; OTHERWISE, CROSS UNDER THE LATERAL, WHICH REQUIRES SPECIAL CONSTRUCTION.
4. ALL SERVICE CONNECTIONS SHALL BE 2" SERVICES x 1 1/2" METERS, UNLESS OTHERWISE NOTED; AND SHALL BE LOCATED AS SHOWN ON THE PLANS AND ADJUSTED AS NECESSARY TO MISS DRIVEWAYS. WATER SERVICE ASSEMBLIES SHALL BE INSTALLED IN ACCORDANCE WITH STD. DWG. B-344A AND B-658, TYPE "A". ADJOINING LOT METER BOXES SHALL BE PLACED TOGETHER AT PROPERTY LINE.
5. AIR VALVE ASSEMBLIES SHALL BE INSTALLED IN ACCORDANCE WITH STD. DWG. B-598.
6. WATER SYSTEM PROFILE ELEVATIONS ARE TO CENTERLINE (CENTER GRADE) OF PIPE.
7. APPROVED REDUCTION PRESSURE BACKFLOW PREVENTION DEVICE (B-597A) REQUIRED FOR ALL INDUSTRIAL, COMMERCIAL, APARTMENT COMPLEXES AND LANDSCAPE SERVICES.
8. INSTALL LOCATOR WIRE OVER WATER MAIN PER STD. DWG. B-656.
9. BLOW-OFF ASSEMBLIES SHALL BE INSTALLED IN ACCORDANCE WITH STD. DWG. B-357.
10. TEMPORARY BLOW-OFF ASSEMBLIES SHALL BE INSTALLED IN ACCORDANCE WITH STD. DWG. B-561.
11. SUPER FIRE HYDRANT ASSEMBLIES SHALL BE INSTALLED IN ACCORDANCE WITH STD. DWG. B-517. ALL BARRELS SHALL BE PAINTED OSHA YELLOW WITH TOPS AND NOZZLE CAPS PAINTED LIGHT BLUE.
12. ALL PVC PIPE THROUGH 12 INCH SHALL BE TYPE C-900, DR 18, EXCEPT WHERE NOTED OTHERWISE. PIPE SHALL CONFORM TO AWWA SPECIFICATIONS.
13. FITTINGS FOR PVC PIPE SHALL BE DUCTILE OR GRAY IRON. FITTINGS SHALL BE FLANGED, BOLTED MECHANICAL JOINTS, OR PUSH ON JOINTS, AND SHALL BE CEMENT MORTAR LINED AND TAR (SEAL) COATED PER EMWD STANDARDS AND SPECIFICATIONS.
14. ALL DUCTILE OR GRAY IRON FITTINGS SHALL BE POLYETHYLENE ENCASED AT THE TIME OF INSTALLATION PER EMWD STANDARDS AND SPECIFICATIONS.
15. A JOINT RESTRAINT DEVICE SHALL BE USED ON ALL MAIN LINE PIPE JOINTS WITHIN SPECIFIED LIMITS AND ALL JOINTS OR WATER APPURTENANCE LATERALS OFF MAIN LINE, PER EMWD STD. DWG. B-663.
16. A MINIMUM 10-FOOT HORIZONTAL CLEARANCE IS REQUIRED BETWEEN THE EDGE OF AN EMWD SERVICE LATERAL TO EDGE OF TREE TRUNK. A MINIMUM 3-FOOT CLEARANCE IS REQUIRED FROM EDGE OF WATER FACILITY TO EDGE OF ANY PLANT THAT WILL OBSCURE OR LIMIT ACCESS TO THE FACILITY.



- EASEMENTS:**
- 9 AN EASEMENT IN FAVOR OF SOUTHERN CALIFORNIA EDISON COMPANY, A CORPORATION, FOR OVERHEAD AND UNDERGROUND ELECTRICAL SUPPLY SYSTEMS AND COMMUNICATION SYSTEMS AND INCIDENTAL PURPOSES. RECORDED MAY 17, 1972 AS INSTRUMENT NO. 63715, O.R. (AFFECT SUBJECT PROPERTY AND PLOTTED HEREON)
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UTILITY PURVEYORS:

STORM DRAIN:
 CITY OF PERRIS - TRI LAKE CONSULTANTS
 24 S D ST #100
 PERRIS, CA 92570
 TEL: 951-943-6504

SEWER/WATER:
 EASTERN MUNICIPAL WATER DISTRICT
 2270 TRUMBULL RD
 PERRIS, CA 92570
 TEL: 951-928-3777

TELEPHONE/CABLE:
 AT&T
 TEL: 800-310-2355

SPECTRUM:
 TEL: 855-243-8992

VERIZON:
 TEL: 800-483-4000

FRONTIER:
 TEL: 855-697-5609

GAS:
 SOCAL GAS
 TEL: 800-427-2200

ELECTRIC:
 SO. CAL EDISON
 26100 MENIFEE RD
 ROMOLAND, CA 92585
 TEL: 800-684-8123

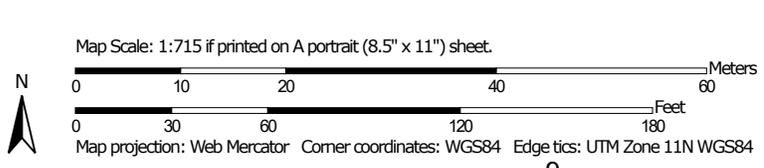
DRAWN: AG DATE: 2/22/2021 CHECKED: MS
 701 North Parkcenter Drive Santa Ana, CA 92705 p: 714.540.9200 www.tait.com
 ENGINEERING ENVIRONMENTAL BUILDING LAND DESIGN CONSULTANTS
 Sacramento Denver San Jose Orange County Riverside
 Dallas Denver Boise Atlanta
 Since 1944
TAIT
 & ASSOCIATES
CONCEPTUAL UTILITY PLAN
 7-ELEVEN C-STORE WITH FUELING AND CAR WASH - SITE NO. 1045028
 SEC RIDER STREET & PERRIS BOULEVARD
 PERRIS, CA 92571
 1 OF 1

Appendix 3: Soils Information

Custom Soil Resource Report Soil Map



Soil Map may not be valid at this scale.



MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features

-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot

-  Spoil Area
-  Stony Spot
-  Very Stony Spot
-  Wet Spot
-  Other
-  Special Line Features

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 1:15,800.

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: Western Riverside Area, California
 Survey Area Data: Version 13, May 27, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 25, 2019—Jun 25, 2019

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.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
PaA	Pachappa fine sandy loam, 0 to 2 percent slopes	2.2	100.0%
Totals for Area of Interest		2.2	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Custom Soil Resource Report

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Western Riverside Area, California

PaA—Pachappa fine sandy loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: hcxn
Elevation: 1,000 feet
Mean annual precipitation: 14 inches
Mean annual air temperature: 63 degrees F
Frost-free period: 270 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Pachappa and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pachappa

Setting

Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

H1 - 0 to 20 inches: fine sandy loam
H2 - 20 to 63 inches: loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Salinity, maximum in profile: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Available water storage in profile: Moderate (about 9.0 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 3c
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Greenfield

Percent of map unit: 5 percent
Hydric soil rating: No

Custom Soil Resource Report

San emigdio

Percent of map unit: 5 percent

Hydric soil rating: No

Hanford

Percent of map unit: 5 percent

Hydric soil rating: No

July 27, 2020

Project No. 20093-01

Mr. Jack M.Y. Lee
6761 Solterra Vista Parkway
San Diego, California 92130

Subject: Preliminary Geotechnical Evaluation for Proposed Convenience Store and Fueling Station, 23 East Rider Street, Perris, California

In accordance with your request, LGC Geotechnical, Inc. has performed a preliminary geotechnical evaluation for the proposed convenience store and fueling station to be located at 23 East Rider Street in Perris, California. The purpose of our study was to evaluate the existing onsite geotechnical conditions and to provide preliminary geotechnical recommendations relative to the proposed development.

Should you have any questions regarding this report, please do not hesitate to contact our office. We appreciate this opportunity to be of service.

Respectfully,

LGC Geotechnical, Inc.



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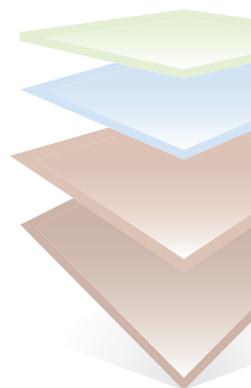


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1.0 INTRODUCTION

LGC Geotechnical has performed a geotechnical evaluation for the proposed convenience store and fueling station to be located at 23 East Rider Street in Perris, California (Figure 1). This report summarizes our findings, conclusions, and preliminary geotechnical design recommendations relative to the proposed development of the site.

1.1 Project Description

The approximately 2-acre, roughly square-shaped site is bound to the north by East Rider Street, to the west by North Perris Boulevard and to the south and east by existing residential mobile home park. The site is an undeveloped lot with minor amount of existing asphalt near the northeastern entrance. Topographically, the site is relatively flat. Based on the conceptual site plan, the proposed development includes construction of an at-grade one-story convenience store, carwash, fueling station and associated perimeter drive and parking (Tait, 2020). Preliminary building (dead plus live) loads were not provided at the time of this report. However, we have estimated the maximum column and wall structural (dead plus live) loads to be 40 kips and 4 kips per lineal foot, respectively. A preliminary grading plan was not available at the time of this report. However, proposed grades are not anticipated to significantly change from existing. Retaining walls are not anticipated. Preliminary provided information indicates that infiltration will be performed in the northeast and southwest areas of the site.

The recommendations given in this report are based on the layout and provided estimated structural loads and grading information as indicated above. LGC Geotechnical should be provided with any updated project information, plans and/or any structural loads when they become available, in order to either confirm or modify the recommendations provided herein.

1.2 Background

Lawson and Associated Geotechnical Consultants (Lawson) performed a geotechnical evaluation of the site in 2007 consisting of excavation of three hollow-stem, auger borings (HS-1 through HS-3) ranging in depth from approximately 20 to 50 feet below existing grade and six test pits (TP-1 through TP-6) ranging in depth from approximately 5 to 10 feet below existing grade (Lawson, 2007). Pertinent data gathered in this report has been considered as part of our evaluation of the site. Boring logs and laboratory test results from the previous site geotechnical study (Lawson, 2007) have been included herein in Appendix B and C, respectively.

1.3 Subsurface Exploration

A geotechnical field evaluation was performed by LGC Geotechnical consisting of excavation of six hollow-stem auger borings. The borings (LGC-HS-4 and LGC-HS-5, and LGC-I-6 through LGC-I-9), were excavated using a truck-mounted drill rig equipped with 8-inch-diameter hollow-stem augers with depths ranging from approximately 10 to 30 feet below existing grade. Borings I-6 through I-9 were drilled to approximately 10 feet in depth for field percolation testing. An LGC Geotechnical representative observed the drilling operations, logged the

borings, and collected soil samples for laboratory testing. Driven soil samples were collected by means of the Standard Penetration Test (SPT) and Modified California Drive (MCD) sampler. The SPT sampler (1.4-inch ID) and MCD sampler (2.4-inch ID, 3.0-inch OD) were driven using a 140-pound automatic hammer falling 30 inches to advance the sampler a total depth of 18 inches or until refusal. Bulk samples were also collected and logged for laboratory testing at select depths. The raw blow counts for each 6-inch increment of penetration were recorded on the boring logs. The borings were backfilled with cuttings. At the completion of infiltration testing of I-6 through I-9, the upper portion of the installed pipe was removed, and the resulting void backfilled with the excavated soils.

The approximate locations of our subsurface explorations are provided on Figure 2. The boring logs and previous boring and test pit logs are provided in Appendix B. Elevations provided on the boring logs are sourced from Google Earth and should be considered approximate.

1.4 Field Percolation Testing

Four falling head field percolation tests (I-6 through I-9) were performed to approximate depths of 10 feet below existing grade. The approximate locations are shown on the Geotechnical Map (Figure 2). Estimation of infiltration rates was accomplished in general accordance with the guidelines set forth by the County of Riverside (2011). A 3-inch diameter perforated PVC pipe was placed in the borehole, and the annulus was backfilled with gravel, including placement of approximately 2 inches of gravel at the bottom of the borehole. The infiltration wells were pre-soaked a minimum of two hours prior to pre-testing. During the pre-test, if the water level drops more than 6 inches in 25 minutes for two consecutive readings, the test procedure for coarse-grained soils should be followed. If the water level does not meet that criterion, the procedure for fine-grained soils should be followed. The procedure for coarse-grained soils requires performing the test for one hour and taking one reading every 10 minutes from a fixed reference point. The procedure for fine-grained soils requires performing the test for six hours and taking one reading every 30 minutes from a fixed reference point.

The pre-tests indicated the procedure for coarse grained soils should be followed. The tests were performed with an average head (depth of water) of approximately 2½ to 3½ feet above the bottom of the infiltration surfaces. The calculated infiltration is normalized relative to the three-dimensional flow that occurs within the field test to a one-dimensional flow out of the bottom of the boring only (i.e., "Porchet Method"). The tested infiltration rates are provided in Table 1 on the following page. Please note that that these infiltration rates do not include any factor of safety which is required for the design infiltration rate. Infiltration tests are performed using relatively clean water free of particulates, silt, etc. Infiltration data is provided in Appendix B, refer to discussion provided in Section 4.9.

TABLE 1

Summary of Field Infiltration Testing

Infiltration Test Location	Tested Infiltration Rate (inch/hr.)*
I-6	0.9
I-7	1.8
I-8	2.4
I-9	1.0

*Does not include any factor of safety.

1.5 Laboratory Testing

Representative bulk and driven samples were obtained for laboratory testing during our field evaluation. Laboratory testing included in-situ moisture content, fines content, Atterberg Limits, consolidation, collapse/swell, expansion index, and corrosion (soluble sulfate, chloride, pH and minimum resistivity).

- Dry density of the samples collected ranged from approximately 102 pounds per cubic foot (pcf) to 129 pcf, with an average of approximately 121 pcf. Field moisture contents ranged from approximately 2 percent to 24 percent, with an average of 8 percent.
- Three fines content tests were performed and indicated a fines content (passing No. 200 sieve) ranging from approximately 35 to 37 percent. Based on the Unified Soils Classification System (USCS), tested samples would be classified as “coarse-grained.”
- Two Atterberg Limit (liquid limit and plastic limit) tests were performed. Results indicated Plasticity Index (PI) values of 5 and 6. Previous Atterberg Limits indicated PI values of 9 and 14 (Lawson, 2007).
- An Expansion Index (EI) test of a near-surface sample indicated an EI value of 0, corresponding to “Very Low” expansion potential. Previously two EI tests were both 0, corresponding to “Very Low” expansion potential (Lawson, 2007).
- Two consolidation and two collapse/swell tests were performed. Results indicated relatively negligible (½ percent or less) collapse and swell at water inundation. The deformation versus vertical stress plots are provided in Appendix C.
- Corrosion testing indicated a soluble sulfate content of less than approximately 0.01 percent, a chloride content of 83 parts per million (ppm), pH of 7.7, and a minimum resistivity of 4,050 ohm-centimeters.

Laboratory test results obtained from our field evaluation included previous laboratory testing (Lawson, 2007) provided in Appendix C. The moisture and dry density results are presented on the boring logs in Appendix B.

2.0 GEOTECHNICAL CONDITIONS

2.1 Geology

Regionally, the site is centrally located within the Perris structural block between the Elsinore and San Jacinto fault zones in the northern part of the Peninsular Ranges Geomorphic Province. Steep, elongated valleys that trend west to northwest characterize the Peninsular Ranges. The northwest-trending topography is controlled by the Elsinore fault zone, which extends from the San Gabriel River Valley southeasterly to the United States/Mexico border. The Santa Ana Mountains lie along the western side of the Elsinore fault zone, while the Perris Block is located along the eastern side of the fault zone. Pre-Cretaceous, metasedimentary and metavolcanic rocks along with Cretaceous plutonic rocks of the Southern California Batholith underlie the mountainous regions of the Peninsular Ranges. Tertiary and Quaternary rocks within this area are generally comprised of non-marine sediments consisting of sandstone, mudstones, conglomerates, and occasional volcanic units.

Based on our subsurface evaluation, the site is underlain by a considerably thick sequence of Quaternary age alluvial fan deposits. A brief description of the alluvial fan deposit, as encountered onsite in our subsurface evaluation, is presented below. The approximate lateral limits of the geologic units are presented on the Geotechnical Map (Figure 2).

2.1.1 Quaternary Very Old Alluvial Fan Deposit (Map Symbol - Qvof)

Quaternary alluvial fan deposits of brown, clayey/silty fine to coarse grained sand, and gravelly sand were encountered from existing grade throughout the entire depth of our subsurface evaluation.

2.1.2 Generalized Subsurface Conditions

In general, our borings indicate that the site contains primarily medium dense to very dense sands with varying amounts of clays and silts and occasional gravels to the maximum explored depth. Previously a layer of very stiff sandy clay was encountered at a depth of approximately 40 feet below existing grade (Lawson, 2007). Soils in the upper 5 feet were found to have generally below optimum moisture content.

It should be noted that borings are only representative of the location and time where/when they are performed and varying subsurface conditions may exist outside of the performed location. In addition, subsurface conditions can change over time. The soil descriptions provided above should not be construed to mean that the subsurface profile is uniform, and that soil is homogeneous within the project area. For details on the stratigraphy at the exploration locations, refer to Appendix B.

2.2 Geologic Structure

Geologic structure was not identified in the subject site geotechnical evaluation. The alluvial

materials encountered are generally massive, but may include low angle bedding, dipping in a westerly direction.

No faults have been mapped on or in the vicinity of the site nor were any encountered during our field study.

2.3 Landslides

Our research and field observations do not indicate the presence of landslides on the site or in the immediate vicinity. Review of regional geologic maps of the area do not indicate the presence of known or suspected landslides in the vicinity of the site (Morton, 2003).

2.4 Groundwater

Groundwater was not encountered during our subsurface evaluation to the maximum explored depth of approximately 30 feet below existing grade. Previously groundwater was not encountered to the maximum explored depth of approximately 50 feet below existing grade (Lawson, 2007). Based on our review of the California Department of Water Resources Water Data Library the nearest groundwater monitoring well is approximately 0.4 miles northwest of the subject site. The high groundwater level recorded was at a depth of greater than 70 feet below ground surface (CDWR, 2020).

Groundwater and/or groundwater seepage conditions may occur in the future due to changes in land use and/or following periods of heavy rain. Seasonal fluctuations of groundwater elevations should be expected over time. In general, groundwater levels fluctuate with the seasons and local zones of perched groundwater may be present within the near-surface deposits due to local landscape irrigation or precipitation especially during rainy seasons.

2.5 Faulting

Prompted by damaging earthquakes in Northern and Southern California, State legislation and policies concerning the classification and land-use criteria associated with faults have been developed. The Alquist-Priolo Earthquake Fault Zoning Act was implemented in 1972 to prevent the construction of urban developments across the trace of active faults. California Geologic Survey Special Publication 42 was created to provide guidance for following and implementing the law requirements. Special Publication 42 was most recently revised in 2018 (CGS, 2018). According to the State Geologist, an “active” fault is defined as one which has had surface displacement within Holocene time (roughly the last 11,700 years). Regulatory Earthquake Fault Zones have been delineated to encompass traces of known, Holocene-active faults to address hazards associated with surface fault rupture within California. Where developments for human occupation are proposed within these zones, the state requires detailed fault evaluations be performed so that engineering-geologists can identify the locations of active faults and recommend setbacks from locations of possible surface fault rupture.

There are no known active or potentially active faults mapped on the site. The possibility of damage due to ground rupture, as a result of faulting, is considered very low since active faults are not known to cross the site.

Secondary effects of seismic shaking resulting from large earthquakes on the major faults in the Southern California region, which may affect the site, include ground lurching and shallow ground rupture, soil liquefaction, dynamic settlement, seiches and tsunamis. These secondary effects of seismic shaking are a possibility throughout the Southern California region and are dependent on the distance between the site and causative fault and the onsite geology. A discussion of these secondary effects is provided in the following sections.

2.5.1 Lurching and Shallow Ground Rupture

Soil lurching refers to the rolling motion on the ground surface by the passage of seismic surface waves. Effects of this nature are not likely to be significant where the thickness of soft sediments do not vary appreciably under structures. Ground rupture due to active faulting is not likely to occur onsite due to the absence of known active fault traces. Ground cracking due to shaking from distant seismic events is not considered a significant hazard, although it is a possibility at any site.

2.5.2 Liquefaction and Dynamic Settlement

Liquefaction is a seismic phenomenon in which loose, saturated, granular soils behave similarly to a fluid when subject to high-intensity ground shaking. Liquefaction occurs when three general conditions coexist: 1) shallow groundwater; 2) low density non-cohesive (granular) soils; and 3) high-intensity ground motion. Studies indicate that saturated, loose near surface cohesionless soils exhibit the highest liquefaction potential, while dry, dense, cohesionless soils and cohesive soils exhibit low to negligible liquefaction potential. In general, cohesive soils are not considered susceptible to liquefaction, depending on their plasticity and moisture content (Bray & Sancio, 2006). Effects of liquefaction on level ground include settlement, sand boils, and bearing capacity failures below structures. Dynamic settlement of dry loose sands can occur as the sand particles tend to settle and densify as a result of a seismic event.

The site located in a zone of Low potential for liquefaction as delineated by the County of Riverside (RCMP, 2020). Site soils are not generally susceptible to liquefaction due to a lack of groundwater in the upper 50 feet, however isolated sandy layers are susceptible to sand seismic settlement. Seismically induced dry sand settlements were estimated by the procedures outlined by Pradel (Pradel, 1998) using the PGA_M per the 2019 CBC and a moment magnitude of 7.03 (USGS, 2008). Based on the data obtained from our field evaluation, seismic sand settlement is estimated to be on the order of approximately 1/2-inch. Differential settlement may be estimated as one-half of the total settlement over a horizontal span of 40 feet.

2.5.3 Lateral Spreading

Lateral spreading is a type of liquefaction-induced ground failure associated with the lateral displacement of surficial blocks of sediment resulting from liquefaction in a subsurface layer. Once liquefaction transforms the subsurface layer into a fluid mass, gravity plus the earthquake inertial forces may cause the mass to move down-slope towards a free face (such as a river channel or an embankment). Lateral spreading may cause large horizontal displacements and such movement typically damages pipelines, utilities, bridges, and structures.

Due to the very low potential for liquefaction, the potential for lateral spreading is also considered very low.

2.5.4 Tsunamis and Seiches

Based on the distance to open bodies of water, there is a low possibility of damage to the site during a large tsunami event.

2.6 Seismic Design Parameters

The site seismic characteristics were evaluated per the guidelines set forth in Chapter 16, Section 1613 of the 2019 California Building Code (CBC) and applicable portions of ASCE 7-16 which has been adopted by the CBC. Please note that the following seismic parameters are only applicable for code-based acceleration response spectra and are not applicable for where site-specific ground motion procedures are required by ASCE 7-16. Representative site coordinates of latitude 33.8297 degrees north and longitude -117.2253 degrees west were utilized in our analyses. The maximum considered earthquake (MCE) spectral response accelerations (S_{MS} and S_{M1}) and adjusted design spectral response acceleration parameters (S_{DS} and S_{D1}) for Site Class D are provided in Table 2 on the following page. Since site soils are Site Class D, additional adjustments are required to code acceleration response spectrums as outlined below and provided in ASCE 7-16. The structural designer should contact the geotechnical consultant if structural conditions (e.g., number of stories, seismically isolated structures, etc.) require site-specific ground motions.

A deaggregation of the PGA based on a 2,475-year average return period (MCE) indicates that an earthquake magnitude of 7.03 at a distance of approximately 15.36 km from the site would contribute the most to this ground motion. A deaggregation of the PGA based on a 475-year average return period (Design Earthquake) indicates that an earthquake magnitude of 6.87 at a distance of approximately 18.41 km from the site would contribute the most to this ground motion (USGS, 2008).

Section 1803.5.12 of the 2019 CBC (per Section 11.8.3 of ASCE 7) states that the maximum considered earthquake geometric mean (MCE_G) Peak Ground Acceleration (PGA) should be used for liquefaction potential. The PGA_M for the site is equal to 0.550g (SEAOC, 2020). The design PGA is equal to 0.367g (2/3 of PGA_M).

TABLE 2
Seismic Design Parameters

Selected Parameters from 2019 CBC, Section 1613 - Earthquake Loads	Seismic Design Values	Notes/Exceptions
Distance to applicable faults classifies the site as a "Near-Fault" site.		Section 11.4.1 of ASCE 7
Site Class	D*	Chapter 20 of ASCE 7
S _s (Risk-Targeted Spectral Acceleration for Short Periods)	1.500g	From SEAOC, 2020
S ₁ (Risk-Targeted Spectral Accelerations for 1-Second Periods)	0.569g	From SEAOC, 2020
F _a (per Table 1613.2.3(1))	1.000	For Simplified Design Procedure of Section 12.14 of ASCE 7, F _a shall be taken as 1.4 (Section 12.14.8.1)
F _v (per Table 1613.2.3(2))	1.731	Value is only applicable per requirements/exceptions per Section 11.4.8 of ASCE 7
S _{MS} for Site Class D [Note: S _{MS} = F _a S _s]	1.500g	-
S _{M1} for Site Class D [Note: S _{M1} = F _v S ₁]	0.985g	Value is only applicable per requirements/exceptions per Section 11.4.8 of ASCE 7
S _{DS} for Site Class D [Note: S _{DS} = (² /3)S _{MS}]	1.000g	-
S _{D1} for Site Class D [Note: S _{D1} = (² /3)S _{M1}]	0.657g	Value is only applicable per requirements/exceptions per Section 11.4.8 of ASCE 7
C _{RS} (Mapped Risk Coefficient at 0.2 sec)	0.934	ASCE 7 Chapter 22
C _{R1} (Mapped Risk Coefficient at 1 sec)	0.913	ASCE 7 Chapter 22
*Since site soils are Site Class D and S ₁ is greater than or equal to 0.2, the seismic response coefficient C _s is determined by Eq. 12.8-2 for values of T ≤ 1.5T _s and taken equal to 1.5 times the value calculated in accordance with either Eq. 12.8-3 for T _L ≥ T > T _s , or Eq. 12.8-4 for T > T _L . Refer to ASCE 7-16.		

2.7 **Rippability**

In general, excavation for foundations and underground improvements are anticipated to be achievable with the appropriate equipment.

2.8 Oversized Material

Generation of a surplus of oversized material (material greater than 8 inches in maximum dimension) is generally not anticipated during site grading. However, some oversized material may be encountered, which may result in excavation difficulty for narrow excavations. Recommendations are provided for appropriate handling of oversized materials in Appendix D. If feasible, crushing oversized materials or exporting to an offsite location may be considered.

3.0 FINDINGS AND CONCLUSIONS

Based on the results of our geotechnical evaluation, it is our opinion that the proposed site development is feasible from a geotechnical standpoint, provided the following conclusions and recommendations are incorporated into the site design, grading, and construction.

The following is a summary of the primary geotechnical factors, which may affect future development of the site.

- In general, our borings indicate that the site contains primarily medium dense to very dense sands with varying amounts of clays and silts and occasional gravels to the maximum explored depth. The moisture content of soils in the upper approximate 5 feet are generally below optimum. The near-surface loose and compressible soils are not suitable for the planned improvements in their present condition (refer to Section 4.1).
- From a geotechnical perspective, the existing onsite soils are suitable material for use as general fill (not retaining wall backfill), provided that they are relatively free from rocks (larger than 8 inches in maximum dimension), construction debris, and significant organic material.
- Groundwater was not encountered during our subsurface evaluation to the maximum explored depth of approximately 30 feet below existing grade and previously not encountered to the maximum explored depth of approximately 50 feet below existing grade (Lawson, 2007). Based on nearby groundwater well, groundwater is anticipated to be at a depth of at least 70 feet or greater below existing grade (CDWR, 2020).
- The proposed development will likely be subjected to strong seismic ground shaking during its design life from one of the regional faults. The subject site is not located within an Earthquake Fault Rupture Hazard Zone and no faults were identified on the site during our site evaluation.
- The subject site is not located within an Alquist-Priolo Earthquake Fault Zone or a County of Riverside Fault Zone and no faults were identified on the site during our site evaluation. The proposed development will likely be subjected to strong seismic ground shaking during its design life from one of the regional faults.
- Site soils are not considered susceptible to liquefaction due to lack of groundwater, however, isolated sandy layers are susceptible to seismic settlement. Total dynamic settlement is estimated to be on the order ½-inch. Differential settlement may be estimated as one-half of the total settlement over a horizontal span of 40 feet.
- Soils exposed at the proposed foundation level are anticipated to have a “Very Low” expansion potential (EI not exceeding 20). This shall be confirmed at the completion of site earthwork.
- Excavation for foundations and underground improvements should be achievable with the appropriate equipment.
- Four field percolation tests resulted in tested infiltration rates ranging from approximately 0.9 to 2.4 inches per hour. These infiltration rates do not include any factors of safety/reduction factors that would be required for a design infiltration rate. Refer to Section 4.9.

4.0 RECOMMENDATIONS

The following recommendations are to be considered preliminary and should be confirmed upon completion of earthwork operations. In addition, they should be considered minimal from a geotechnical viewpoint, as there may be more restrictive requirements from the architect, structural engineer, building codes, governing agencies, or the City. It is the responsibility of the builder to ensure these recommendations are provided to the appropriate parties.

It should be noted that the following geotechnical recommendations are intended to provide sufficient information to develop the site in general accordance with the 2019 California Building Code (CBC) requirements. With regard to the potential occurrence of potentially catastrophic geotechnical hazards such as fault rupture, earthquake-induced landslides, liquefaction, etc. the following geotechnical recommendations should provide adequate protection for the proposed development to the extent required to reduce seismic risk to an “acceptable level.” The “acceptable level” of risk is defined by the California Code of Regulations as “the level that provides reasonable protection of the public safety, though it does not necessarily ensure continued structural integrity and functionality of the project” [Section 3721(a)]. Therefore, repair and remedial work of the proposed improvement may be required after a significant seismic event. With regards to the potential for less significant geologic hazards to the proposed development, the recommendations contained herein are intended as a reasonable protection against the potential damaging effects of geotechnical phenomena such as expansive soils, fill settlement, groundwater seepage, etc. It should be understood, however, that although our recommendations are intended to maintain the structural integrity of the proposed development and structures given the site geotechnical conditions, they cannot preclude the potential for some cosmetic distress or nuisance issues to develop as a result of the site geotechnical conditions.

The geotechnical recommendations contained herein must be confirmed to be suitable or modified based on the actual exposed conditions.

4.1 Site Earthwork

We anticipate that earthwork at the site will consist of required earthwork removals, foundation construction and utility line construction and backfill. We recommend that earthwork onsite be performed in accordance with the following recommendations, 2019 CBC/City of Perris and the General Earthwork and Grading Specifications included in Appendix D. In case of conflict, the following recommendations shall supersede previous recommendations and those included as part of Appendix D.

4.1.1 Site Preparation

Prior to grading of areas to receive structural fill, engineered structures or improvements, the area should be cleared of existing vegetation (grass, etc.), surface obstructions, existing debris and potentially compressible or otherwise unsuitable material. Debris should be removed and properly disposed of off-site. Holes resulting from the removal of buried obstructions, which extend below proposed removal bottoms, should be replaced with suitable compacted fill material. Any abandoned utility lines should be completely removed and replaced with properly compacted fill.

If cesspools or septic systems are encountered, they should be removed in their entirety. The resulting excavation should be backfilled with properly compacted fill soils. As an alternative, cesspools can be backfilled with lean sand-cement slurry. Any encountered wells should be properly abandoned in accordance with regulatory requirements. At the conclusion of the clearing operations, a representative of LGC Geotechnical should observe and accept the site prior to further grading.

4.1.2 Removal Depths and Limits

For preliminary planning purposes, the depth of required removals may be estimated as indicated below. It should be noted that updated recommendations may be required based on grading/foundation plan review, changes to building layouts and/or structural loads.

Building Structures: In order to provide a relatively uniform bearing condition for the planned structural improvements, we recommend that removals extend a minimum depth of 5 feet below existing grade or 2 feet below proposed footings, whichever is greater. In general, the envelope for removals should extend laterally a minimum horizontal distance of 5 feet beyond the edges of the proposed improvements. Building lines may be defined as the perimeter of the building proper, plus attached or adjacent foundation supported features, including canopies, elevators, or walls.

Retaining/Free-Standing Wall Structures: For any planned retaining walls, removals should extend a minimum of 5 feet below existing grade or 2 feet below proposed footings, whichever is greater. For minor structures such as free-standing and screen walls, the removals should extend at least 3 feet beneath the existing grade or 2 feet beneath the base of foundations, whichever is deeper.

Fueling Station Island: Removals should extend to a depth of at least 2 feet below the existing grade or at least 1 foot below the bottom of any foundation element (e.g., perimeter embedment, etc.), whichever is greater. In general, the envelope for removals should extend laterally a minimum lateral distance of 2 feet beyond the edges of the proposed improvements.

Pavement and Hardscape Areas: Removals should extend to a depth of at least 2 feet below the existing grade. Removals in any design cut areas of the pavement may be reduced by the depth of the design cut but should not be less than 1-foot below the finished subgrade (i.e., below planned aggregate base/asphalt concrete). In general, the envelope for removals should extend laterally a minimum lateral distance of 2 feet beyond the edges of the proposed improvements.

Local conditions may be encountered during excavation that could require additional over-excavation beyond the above-noted minimum in order to obtain an acceptable subgrade. The actual depths and lateral extents of grading will be determined by the geotechnical consultant, based on subsurface conditions encountered during grading. Removal areas should be accurately staked in the field by the Project Surveyor.

4.1.3 Temporary Excavations

We expect temporary excavation slopes up to approximately 10 feet in height to be grossly stable at 1:1 (horizontal to vertical) inclinations or flatter, however, excavations must be performed in accordance with all Occupational Safety and Health Administration (OSHA) requirements.

Vehicular traffic, stockpiles, and equipment storage should be set back from the perimeter of excavations a distance equivalent to a 1:1 projection from the bottom of the excavation, or 5 feet whichever is greater. The contractor will be responsible for providing the “competent person” required by Cal/OSHA standards to evaluate soil conditions. Close coordination with the geotechnical consultant should be maintained to facilitate construction while providing safe excavations. Excavation safety is the responsibility of the contractor. Once an excavation has been initiated, it should be backfilled as soon as practical. Prolonged exposure of temporary excavations may result in some localized instability. Excavations should be planned so that they are not initiated without sufficient time to shore/fill them prior to weekends, holidays, or forecasted rain.

It should be noted that any excavation that extends below a 1:1 (horizontal to vertical) projection of an existing foundation will remove existing support of the structure foundation. If requested, temporary shoring parameters will be provided.

4.1.4 Removal Bottoms and Subgrade Preparation

In general, removal bottom areas and any areas to receive compacted fill should be scarified to a minimum depth of 6 inches, brought to a near-optimum moisture condition, and re-compacted per project recommendations.

Removal bottoms and areas to receive fill should be observed and accepted by the geotechnical consultant prior to subsequent fill placement.

4.1.5 Material for Fill

From a geotechnical perspective, the onsite soils are generally considered suitable for use as general compacted fill (i.e., non-retaining wall backfill), provided they are screened of organic materials, construction debris and any oversized material (8 inches in greatest dimension). Moisture conditioning of site soils should be anticipated as outlined in the section below.

Retaining wall backfill should consist of sandy soils with a maximum of 35 percent fines (passing the No. 200 sieve) per American Society for Testing and Materials (ASTM) Test Method D1140 (or ASTM D6913/D422) and a Very Low expansion potential (EI of 20 or less per ASTM D4829). Soils should also be screened of organic materials, construction debris and any material greater than 3 inches in maximum dimension. The site contains soils that are not suitable for retaining wall backfill due to their fines content, therefore select grading and stockpiling and/or import will be required by the contractor for obtaining suitable retaining wall backfill soil.

From a geotechnical viewpoint, any required import soils should consist of clean, relatively granular soils of Very Low expansion potential (expansion index 20 or less based on ASTM D4829) and no particles larger than 3 inches in greatest dimension. Source samples of planned importation should be provided to the geotechnical consultant for laboratory testing a minimum of 3 working days prior to any planned importation for required laboratory testing.

Aggregate base (crushed aggregate base or crushed miscellaneous base) should conform to the requirements of Section 200-2 of the Standard Specifications for Public Works Construction ("Greenbook") for untreated base materials (except processed miscellaneous base) or Caltrans Class 2 aggregate base.

4.1.6 Fill Placement and Compaction

Material to be placed as fill should be brought to near-optimum moisture content (generally at about 2 percent above optimum moisture content) and recompact to at least 90 percent relative compaction (per ASTM D1557). Moisture conditioning of site soils should be anticipated in order to achieve the required degree of compaction. Soils will likely require additional moisture conditioning in order to achieve the required compaction. Drying and/or mixing the very moist soils may also be required prior to reusing the materials in compacted fills. The optimum lift thickness to produce a uniformly compacted fill will depend on the type and size of compaction equipment used. In general, fill should be placed in uniform lifts not exceeding 8 inches in compacted thickness. Each lift should be thoroughly compacted and accepted prior to subsequent lifts. Generally, placement and compaction of fill should be performed in accordance with local grading ordinances and with observation and testing by the geotechnical consultant. Oversized material as previously defined should be removed from site fills.

Fill placed on any slopes greater than 5:1 (horizontal to vertical) should be properly keyed and benched into firm and competent soils as it is placed in lifts.

Aggregate base material should be compacted to a minimum of 95 percent relative compaction at or slightly above-optimum moisture content per ASTM D1557. Subgrade below aggregate base should be compacted to a minimum of 90 percent relative compaction per ASTM D1557 at or slightly above-optimum moisture content.

If gap-graded ¾-inch rock is used for backfill (around storm drain storage chambers, retaining wall backfill, etc.) it will require compaction. Rock shall be placed in thin lifts (typically not exceeding 6 inches) and mechanically compacted with observation by geotechnical consultant. Backfill rock shall meet the requirements of ASTM D2321. Gap-graded rock is required to be wrapped in filter fabric to prevent the migration of fines into the rock backfill.

4.1.7 Trench and Retaining Wall Backfill and Compaction

The onsite soils may generally be suitable as trench backfill, provided the soils are screened of rocks and other materials greater than 3 inches in diameter and organic

matter. If trenches are shallow, or the use of conventional equipment may result in damage to the utilities, sand having a sand equivalent (SE) of 30 (per California Test Method [CTM] 217) or greater may be used to bed and shade the pipes. Sand backfill within the pipe bedding zone may be densified by jetting or flooding and then tamping to ensure adequate compaction. Subsequent trench backfill should be compacted in uniform thin lifts by mechanical means to at least 90 percent relative compaction (per ASTM D1557).

Retaining wall backfill should consist of predominately granular, sandy soils outlined in Section 4.1.5. The limits of select sandy backfill should extend at minimum ½ the height of the retaining wall or the width of the heel (if applicable), whichever is greater (Refer to Figure 3). Retaining wall backfill soils should be compacted in relatively uniform thin lifts to a minimum of 90 percent relative compaction (per ASTM D1557). Jetting or flooding of retaining wall backfill materials should not be permitted.

A representative from LGC Geotechnical should observe, probe, and test the backfill to verify compliance with the project recommendations.

4.1.8 Shrinkage and Subsidence

Allowance in the earthwork volumes budget should be made for an estimated ±5 percent reduction in volume of near-surface (upper approximate 5 feet) soils. It should be stressed that these values are only estimates and that an actual shrinkage factor would be extremely difficult to predetermine. Subsidence, due to earthwork operations, is expected to be on the order of 0.1-foot. These values are estimates only and exclude losses due to removal of any vegetation or debris. The effective shrinkage of onsite soils will depend primarily on the type of compaction equipment and method of compaction used onsite by the contractor and accuracy of the topographic survey.

4.2 Preliminary Foundation Recommendations

Provided that the remedial grading recommendations provided herein are implemented, the site may be considered suitable for the support of the proposed structures using a conventional or mat foundation system. Site soils are anticipated to be “Very Low” expansion potential (EI of 20 or less per ASTM D4829) and special design considerations from a geotechnical perspective is not anticipated, however, this must be verified based on as-graded conditions. Please note that the following foundation recommendations are preliminary and must be confirmed by LGC Geotechnical. Recommended soil bearing and estimated settlement due to structural loads are provided in Section 4.3. Dynamic sand settlement is presented in Section 2.5.2.

For elastic design of a mat foundation supporting sustained concentrated loads, a modulus of vertical subgrade reaction (k) of 150 pounds per cubic inch (pounds per square inch per inch of deflection) may be used, provided the recommended earthwork is performed. This value is for a 1-foot by 1-foot square loaded area and should be adjusted by the structural designer for the area of the proposed foundation using the following formula:

$$k = 150 \times [(B+1)/2B]^2$$

k = modulus of vertical subgrade reaction, pounds per cubic inch (pci)
B = foundation width (feet)

The moisture content of near surface fill soils should be kept at optimum up to the time of concrete placement.

4.2.1 Shallow Foundation Maintenance

Moisture conditioning of the subgrade soils is recommended prior to trenching the foundation. The subgrade moisture condition of the building pad soils should be maintained up to the time of concrete placement. This moisture content should be maintained around the immediate perimeter of the slab during construction and up to occupancy.

Roots that extend near the vicinity of foundations can cause distress to foundations. Trees/large shrubs should not be planted closer to the foundations than a distance equal to half the mature height of the tree or 20 feet, whichever is more conservative unless specifically provided with root barriers to prevent root growth below the building foundation.

4.2.2 Slab Underlayment Guidelines

The following is for informational purposes only since slab underlayment (e.g., moisture retarder, sand or gravel layers for concrete curing and/or capillary break) is unrelated to the geotechnical performance of the foundation and thereby not the purview of the geotechnical consultant. Post-construction moisture migration should be expected below the foundation. The foundation engineer/architect should determine whether the use of a capillary break (sand or gravel layer), in conjunction with the vapor retarder, is necessary or required by code. Sand layer thickness and location (above and/or below vapor retarder) should also be determined by the foundation engineer/architect.

4.3 Soil Bearing and Lateral Resistance

Provided our earthwork recommendations are implemented, an allowable soil bearing pressure of 1,500 pounds per square foot (psf) may be used for the design of footings having a minimum width of 12 inches and minimum embedment of 18 inches below lowest adjacent ground surface. This value may be increased by 500 psf for each additional foot of embedment and by 300 psf for each additional foot of foundation width to a maximum value of 2,500 psf. A mat foundation may be designed for an allowable soil bearing pressure of 1,200 psf. These allowable bearing pressures are applicable for level (ground slope equal to or flatter than 5 horizontal feet to 1-foot vertical) conditions only. Bearing values indicated are for total dead loads and frequently applied live loads and may be increased by $\frac{1}{3}$ for short duration loading (i.e., wind or seismic loads). The increase of bearing capacity is based on a reduced factor of safety (seismic factor of safety equal to three-fourths of the static factor of safety) for short duration loading.

Soil settlement is a function of footing dimensions and applied soil bearing pressure. In utilizing the above-mentioned allowable bearing capacity, assumed structural loads, and provided our

earthwork recommendations are implemented, foundation settlement due to structural loads is anticipated to be on the order of 1-inch or less and 1/2-inch over a horizontal span of 40 feet for total and differential settlement, respectively. Differential settlement should be anticipated between nearby columns or walls where a large differential loading condition exists. Dynamic sand settlement is presented in Section 2.5.2. Settlement estimates should be evaluated by LGC Geotechnical when foundation plans are available.

Resistance to lateral loads can be provided by friction acting at the base of foundations and by passive earth pressure. For concrete/soil frictional resistance, an allowable coefficient of friction of 0.35 may be assumed with dead-load forces. An allowable passive lateral earth pressure of 250 psf per foot of depth (or pcf) to a maximum of 2,500 psf may be used for lateral resistance. For isolated pole footings (for items such as a canopy foundation support, trellis, etc.) spaced a minimum of 3 diameters on-center, an allowable passive pressure of 500 pcf may be used for passive resistance. The provided passive pressure is based on an arching factor of 2 (e.g., 250 pcf x 2) and should be limited to a maximum of 10 times the value provided above (e.g., 500 pcf to a maximum of 5,000 psf). These passive pressure values are applicable for level (ground slope equal to or flatter than 5 horizontal feet to 1-foot vertical) conditions only. Frictional resistance and passive pressure may be used in combination without reduction. We recommend that the upper foot of passive resistance be neglected if finished grade will not be covered with concrete or asphalt concrete. The provided allowable passive pressure values are based on a static factor of safety of 1.5 and may be increased by one-third for short duration wind or seismic loading. This increase is based on a reduced factor of safety for short duration loading.

4.4 Lateral Earth Pressures for Retaining Walls

The following preliminary lateral earth pressures may be used for retaining wall structures 6 feet or less. Lateral earth pressures are provided as equivalent fluid unit weights, in pound per square foot (psf) per foot of depth or pcf. These values do not contain an appreciable factor of safety, so the retaining wall designer should apply the applicable factors of safety and/or load factors during design.

The following lateral earth pressures are presented on Table 3 on the following page for approved select granular soils with a maximum of 35 percent fines (passing the No. 200 sieve per ASTM D-421/422) and Very Low expansion potential (EI of 20 or less per ASTM D4829). The wall designer should clearly indicate on the retaining wall plans the required sandy soil backfill criteria.

TABLE 3

Lateral Earth Pressures – Sandy Backfill

Conditions	Equivalent Fluid Unit Weight (pcf)
	Level Backfill
	Approved Soils
Active	35
At-Rest	55

If the wall can yield enough to mobilize the full shear strength of the soil, it can be designed for “active” pressure. If the wall cannot yield under the applied load, the earth pressure will be higher. This would include 90-degree corners of retaining walls. Such walls should be designed for “at-rest.” The equivalent fluid pressure values assume free-draining conditions. Retaining wall structures should be provided with appropriate drainage and appropriately waterproofed, refer to Figure 3. Please note that waterproofing and outlet systems are not the purview of the geotechnical consultant. If conditions other than those assumed above are anticipated, the equivalent fluid pressure values should be provided on an individual-case basis by the geotechnical consultant.

Surcharge loading effects from any adjacent structures should be evaluated by the retaining wall designer. In general, structural loads within a 1:1 (horizontal to vertical) upward projection from the bottom of the proposed retaining wall footing will surcharge the proposed retaining structure. In addition to the recommended earth pressure, basement/retaining walls adjacent to streets should be designed to resist vehicular traffic if applicable. Uniform surcharges may be estimated using the applicable coefficient of lateral earth pressure using a rectangular distribution. A factor of 0.5 and 0.30 may be used for at-rest and active conditions, respectively. The vertical traffic surcharge may be determined by the structural designer. The structural designer should contact the geotechnical consultant for any required geotechnical input in estimating any applicable surcharge loads.

If required, the retaining wall designer may use a seismic lateral earth pressure increment of 10 pcf. This increment should be applied in addition to the provided static lateral earth pressure using a “normal” triangular distribution with the resultant acting at H/3 in relation to the base of the retaining structure (where H is the retained height). For the restrained, at-rest condition, the seismic increment may be added to the applicable active lateral earth pressure (in lieu of the at-rest lateral earth pressure) when analyzing short duration seismic loading. Per Section 1803.5.12 of the 2019 CBC, the seismic lateral earth pressure is applicable to structures assigned to Seismic Design Category D through F for retaining wall structures supporting more than 6 feet of backfill height. This seismic lateral earth pressure is estimated using the procedure outlined by the Structural Engineers Association of California (Lew, et al, 2010).

Soil bearing and lateral resistance (friction coefficient and passive resistance) are provided in Section 4.3. Earthwork considerations (temporary backcuts, backfill, compaction, etc.) for retaining walls are provided in Section 4.1 (Site Earthwork) and the subsequent earthwork

related sub-sections.

4.5 **Preliminary Pavement Sections**

The following preliminary minimum asphalt concrete (AC) pavement sections are provided in Table 4 based on an R-value of 40. These recommendations must be confirmed with R-value testing of representative near-surface soils at the completion of grading and after underground utilities have been installed and backfilled. Determination of the Traffic Index (TI) is not the purview of the geotechnical consultant. Final pavement sections should be confirmed by the project civil/transportation engineer based upon the final design Traffic Index. If requested, LGC Geotechnical will provide sections for alternate TI values.

TABLE 4

Asphalt Concrete Pavement Section Options

Pavement Area	Assumed Traffic Index*	Section Thickness (inches)	
		Asphalt Concrete	Aggregate Base
Auto Parking	4.5	4.0	4.0
Circulation Drives (little to no truck traffic)	5.0	4.0	4.0
Truck Driveways	6.0	4.0	4.5

*Determination of the Traffic Index is not the purview of the geotechnical consultant

For preliminary planning purposes, a Portland Cement concrete pavement section may consist of a minimum of 6 inches of concrete (reinforced with No. 3 rebar at 24 inches on-center each way) over 4 inches of compacted aggregate base over compacted subgrade soils. The concrete should have a minimum compressive strength of 4,000 psi at the time the pavement is subjected to traffic. To reduce the potential (but not eliminate) for cracking, concrete paving should include control joints at regular intervals not exceeding 10 feet in each direction. This pavement section assumes that edge restraints like a curb and gutter will be provided. The recommended concrete section provided above is based on an approximate Traffic Index of 5.0. The thickness of the section should be thickened for increased heavy truck loading conditions based on the anticipated traffic volume determined by others.

The pavement thicknesses provided are minimum thicknesses. Increasing the thickness of any or all of the above layers will reduce the likelihood of the pavement experiencing distress during its service life. The above recommendations are based on the assumption that proper maintenance and irrigation of the areas adjacent to the roadway will occur through the design life of the pavement. Failure to maintain a proper maintenance and/or irrigation program may jeopardize the integrity of the pavement.

Earthwork recommendations regarding aggregate base and subgrade are provided in the previous section "Site Earthwork" and the related sub-sections of this report.

4.6 Soil Corrosivity

Although not corrosion engineers (LGC Geotechnical is not a corrosion consultant), several governing agencies in Southern California require the geotechnical consultant to determine the corrosion potential of soils to buried concrete and metal facilities. We therefore present the results of our testing with regard to corrosion for the use of the client and other consultants, as they determine necessary.

Corrosion testing indicated a soluble sulfate content of less than approximately 0.01 percent, a chloride content of 83 parts per million (ppm), pH of 7.7, and a minimum resistivity of 4,050 ohm-centimeters. Previous corrosion testing indicated a soluble sulfate content less than 0.02 percent, chloride content of 128 ppm, pH of 7.0, and a minimum resistivity of 1,590 ohm-centimeters (Lawson, 2007). Based on Caltrans Corrosion Guidelines (2018), soils are considered corrosive if the pH is 5.5 or less, or the chloride concentration is 500 ppm or greater, or the sulfate concentration is 1,500 ppm (0.15 percent) or greater.

Based on laboratory sulfate test results, the near-surface soils have an exposure class of "S0" per ACI 318-14, Table 19.3.1.1 with respect to sulfates. This must be verified based on as-graded conditions.

4.7 Nonstructural Concrete Flatwork

Nonstructural concrete flatwork (such as walkways, etc.) has a high potential for cracking due to changes in soil volume related to soil-moisture fluctuations. To reduce the potential for excessive cracking and lifting, concrete should be designed in accordance with the minimum guidelines outlined in Table 5. These guidelines will reduce the potential for irregular cracking and promote cracking along control joints but will not eliminate all cracking or lifting. Thickening the concrete and/or adding additional reinforcement and control joints will further reduce cosmetic distress. Please note that where tile is planned to be placed over concrete the architect must take special care to ensure that control joints are carried up through the tile from the concrete. The concrete flatwork will move over time, the architect and builder must make provisions for this movement in both design and construction.

TABLE 5

Nonstructural Concrete Flatwork

	Flatwork	City Sidewalk Curb and Gutters
Minimum Thickness (in.)	4 inches	City/Agency Standard
Presoak	Wet down prior to placing	City/Agency Standard
Minimum Reinforcement	No. 3 rebar at 24 inches on centers	City/Agency Standard
Crack Control Joints	Saw cut or deep open tool joint to a minimum of $\frac{1}{3}$ the concrete thickness	City/Agency Standard
Maximum Joint Spacing	6 feet	City/Agency Standard

4.8 Surface Drainage and Landscaping

4.8.1 Precise Grading

From a geotechnical perspective, we recommend that compacted finished grade soils adjacent to proposed residences be sloped away from the proposed building structures and towards an approved drainage device or unobstructed swale. Drainage swales, wherever feasible, should not be constructed within 5 feet of buildings. Where lot and building geometry necessitates that drainage swales be routed closer than 5 feet to structural foundations, we recommend the use of area drains together with drainage swales. Drainage swales used in conjunction with area drains should be designed by the project civil engineer so that a properly constructed and maintained system will prevent ponding within 5 feet of the foundation. Code compliance of grades is not the purview of the geotechnical consultant.

Planters with open bottoms adjacent to buildings should be avoided. Planters should not be designed adjacent to buildings unless provisions for drainage, such as catch basins, liners, and/or area drains, are made. Overwatering must be avoided.

4.8.2 Landscaping

Planters adjacent to a building or structure should be avoided wherever possible or be properly designed (e.g., lined with a membrane), to reduce the penetration of water into the adjacent footing subgrades and thereby reduce moisture-related damage to the foundation. Planting areas at grade should be provided with appropriate positive drainage. Wherever possible, exposed soil areas should be above adjacent paved grades to facilitate drainage. Planters should not be depressed below adjacent paved grades unless provisions for drainage, such as multiple depressed area drains, are constructed.

Adequate drainage gradients, devices, and curbing should be provided to prevent runoff from adjacent pavement or walks into the planting areas. Irrigation methods should promote uniformity of moisture in planters and beneath adjacent concrete flatwork. Overwatering and underwatering of landscape areas must be avoided. Irrigation levels should be kept to the absolute minimum level necessary to maintain healthy plant life.

Area drain inlets should be maintained and kept clear of debris in order to properly function. Owners and property management personnel should also be made aware that excessive irrigation of neighboring properties can cause seepage and moisture conditions. Owners and property management personnel should be furnished with these recommendations communicating the importance of maintaining positive drainage away from structures, towards streets, when they design their improvements.

The impact of heavy irrigation or inadequate runoff gradients can create perched water conditions. This may result in seepage or shallow groundwater conditions where previously none existed. Maintaining adequate surface drainage and controlled irrigation will significantly reduce the potential for nuisance-type moisture problems. To reduce differential earth movements such as heaving and shrinkage due to the change in moisture content of foundation soils, which may cause distress to a structure and associated improvements, moisture content of the soils surrounding the structure should be kept as relatively constant as possible.

4.9 Subsurface Water Infiltration

Recent regulatory changes have occurred that mandate that storm water be infiltrated below grade rather than collected in a conventional storm drain system. Typically, a combination of methods is implemented to reduce surface water runoff and increase infiltration including; permeable pavements/pavers for roadways and walkways, directing surface water runoff to grass-lined swales, retention areas, and/or drywells, etc.

It should be noted that collecting and concentrating surface water for the purpose of intentional infiltration below grade, conflicts with the geotechnical engineering objective of directing surface water away from slopes, structures, and other improvements. The geotechnical stability and integrity of a site is reliant upon appropriately handling surface water. In general, the vast majority of geotechnical distress issues are directly related to improper drainage. In general, distress in the form of movement of improvements could occur as a result of soil saturation and loss of soil support, expansion, internal soil erosion, collapse and/or settlement. If intentional infiltration is required, we recommend the absolute minimum amount of water be infiltrated into site soils.

The following should be considered for design of any required infiltration system:

- Water discharge from any infiltration systems should not occur within the zone of influence of foundation footings (column and load bearing wall locations). For preliminary purposes we recommend a minimum setback of 15 feet from the structural improvements.
- An adequate setback distance between any infiltration facility and adjacent private property should be maintained.

- It may be prudent to provide an overflow system directly connected to the storm drain system in order to prevent failure of the infiltration system, either as a result of lower than anticipated infiltration and/or very high flow volumes. It should be noted that if pretreatment of runoff to remove debris, soil particles, etc., cannot be performed, design infiltration rates may need to be further reduced. Over time, siltation and plugging may reduce the infiltration rate and subsequent effectiveness of the infiltration system.
- Any designed infiltration system will require periodic routine maintenance.
- As with any systems that are designed to concentrate the surface flow and direct the water into the subsurface soils, some type of nuisance water and/or other water-related issues should be expected.

Field percolation testing resulted in tested infiltration rates of 0.9 and 1.8 inches per hour for infiltration borings, I-6 and I-7, respectfully and infiltration rates of 2.4 and 1.0 for infiltration borings, I-8 and I-9, respectfully. These infiltration rates do not include any factor of safety, the County of Riverside requires a minimum factor of safety 3 to determine the design infiltration rate. These values are for native materials only and are not to be utilized for compacted fill. Infiltration shall not be permitted directly on or into compacted fill soils. The infiltration values provided are based on clean water and this requires the removal of trash, debris, soil particles, etc., and on-going maintenance. Over time, siltation, plugging, and clogging of the system may reduce the infiltration rate and subsequently reduce the effectiveness of the infiltration system. It should be noted that methods to prevent this shall be the sole responsibility of the infiltration designer and are not the purview of the geotechnical consultant. If adequate measures cannot be incorporated into the design and maintenance of the system, then the infiltration rates may need to be further reduced. These and other factors should be considered in selecting a design infiltration rate.

4.10 Pre-Construction Documentation and Construction Monitoring

It is recommended that a program of documentation and monitoring be devised and put into practice before the onset of any groundwork. LGC Geotechnical can perform these services at your request. This should include, but not necessarily be limited to, detailed documentation of the existing improvements, buildings, and utilities around the area of proposed excavation, with particular attention to any distress that is already present prior to the start of work. Subsequent readings should be scheduled consistent with the program of work.

4.11 Geotechnical Plan Review

Project plans (e.g., grading, foundation, etc.) and final project drawings should be reviewed by this office prior to construction to verify that our geotechnical recommendations, provided herein, have been appropriately incorporated. Additional or modified geotechnical recommendations may be required based on the proposed layout.

4.12 Geotechnical Observation and Testing During Construction

The recommendations provided in this report are based on limited subsurface observations and geotechnical analysis. The interpolated subsurface conditions should be checked in the field

during construction by a representative of LGC Geotechnical. Geotechnical observation and testing is required per Section 1705 of the 2019 California Building Code (CBC).

Geotechnical observation and/or testing should be performed by LGC Geotechnical at the following stages:

- During grading (removal bottoms, fill placement, etc.);
- During utility trench and retaining wall backfill and compaction;
- Preparation of pavement subgrade and placement of aggregate base;
- After building and wall footing excavation and prior to placing reinforcement and/or concrete; and
- When any unusual soil conditions are encountered during any construction operation subsequent to issuance of this report.

5.0 LIMITATIONS

Our services were performed using the degree of care and skill ordinarily exercised, under similar circumstances, by reputable engineers and geologists practicing in this or similar localities. No other warranty, expressed or implied, is made as to the conclusions and professional advice included in this report. The samples taken and submitted for laboratory testing, the observations made, and the in-situ field testing performed are believed representative of the entire project; however, soil and geologic conditions revealed by excavation may be different than our preliminary findings. If this occurs, the changed conditions must be evaluated by the project soils engineer and geologist and design(s) adjusted as required or alternate design(s) recommended.

This report is issued with the understanding that it is the responsibility of the owner, or of his/her representative, to ensure that the information and recommendations contained herein are brought to the attention of the architect and/or project engineer and incorporated into the plans, and the necessary steps are taken to see that the contractor and/or subcontractor properly implements the recommendations in the field. The contractor and/or subcontractor should notify the owner if they consider any of the recommendations presented herein to be unsafe.

The findings of this report are valid as of the present date. However, changes in the conditions of a property can and do occur with the passage of time, whether they be due to natural processes or the works of man on this or adjacent properties. Therefore, the findings, conclusions, and recommendations presented in this report can be relied upon only if LGC Geotechnical has the opportunity to observe the subsurface conditions during grading and construction of the project, in order to confirm that our preliminary findings are representative for the site.

In addition, changes in applicable or appropriate standards may occur, whether they result from legislation or the broadening of knowledge. Accordingly, the findings of this report may be invalidated wholly or partially by changes outside our control. Therefore, this report is subject to review and modification, and should not be relied upon after a period of 3 years.

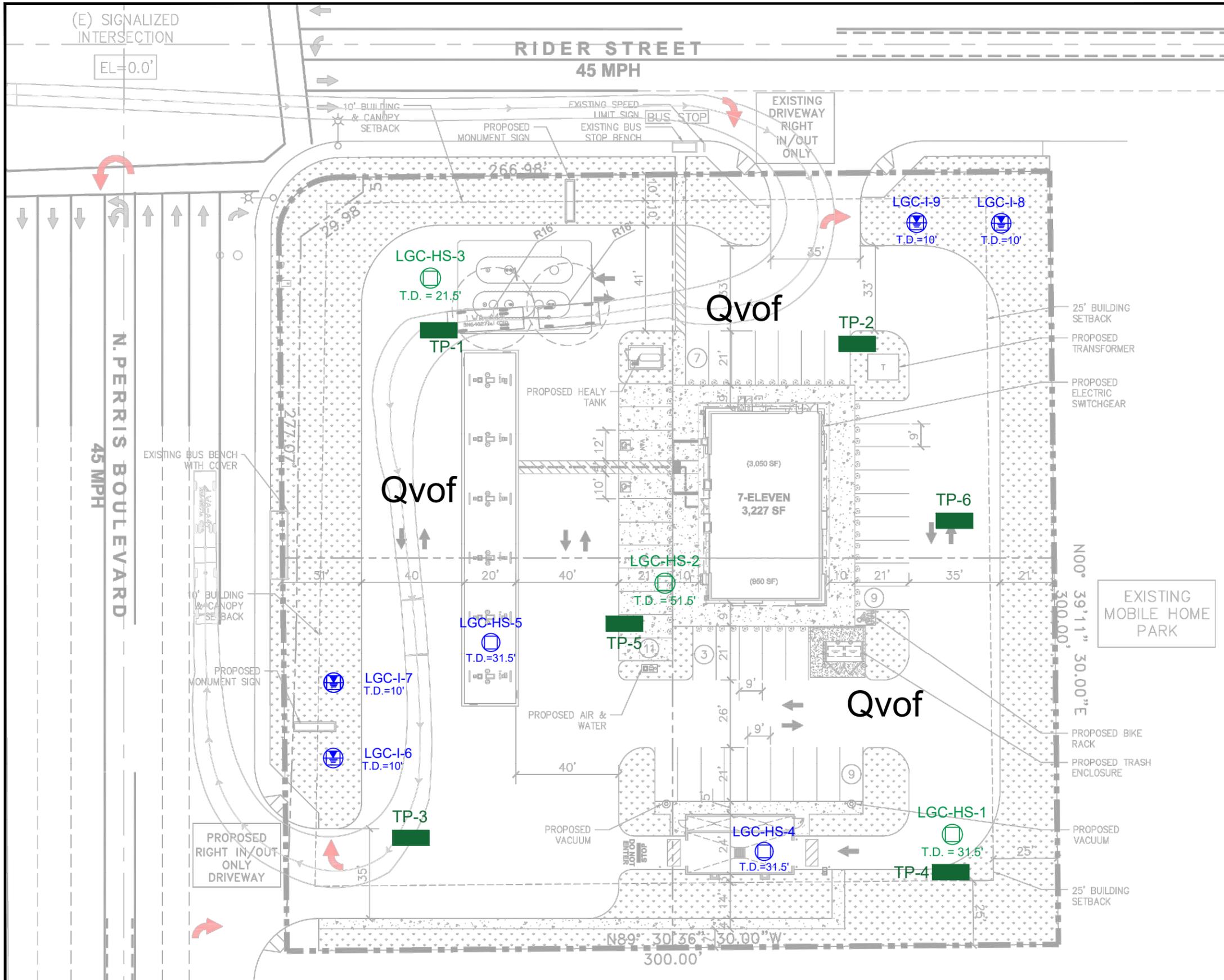


Approximate Site Location



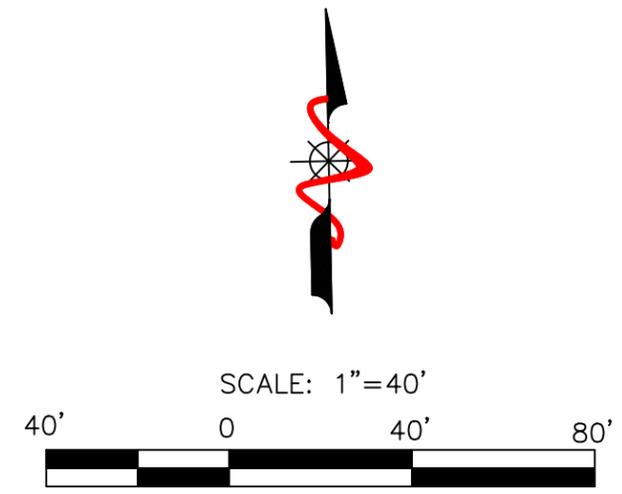
FIGURE 1
Site Location Map

PROJECT NAME	Lee - Perris
PROJECT NO.	20093-01
ENG. / GEOL.	BTZ / KBC
SCALE	Not to Scale
DATE	July 2020



Legend

Qvof	Quaternary Very Old Alluvial Fan Deposits
 LGC-HS-5 T.D.=31.5'	Approximate Location of Hollow Stem Auger Boring with Total Depth in Feet (This Report)
 LGC-I-9 T.D.=10'	Approximate Location of Pecolation Test Boring with Total Depth in Feet (This Report)
 LGC-HS-3 T.D. = 20'	Approximate Location of Hollow Stem Auger Boring with Total Depth in Feet (Lawson, 2007)
 TP-6	Approximate Location of Exploratory Trench (Lawson, 2007)




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FIGURE 2
Geotechnical Map

PROJECT NAME	Lee - Perris
PROJECT NO.	20093-01
ENG. / GEOL.	BTZ / KBC
SCALE	1" = 40'
DATE	July 2020

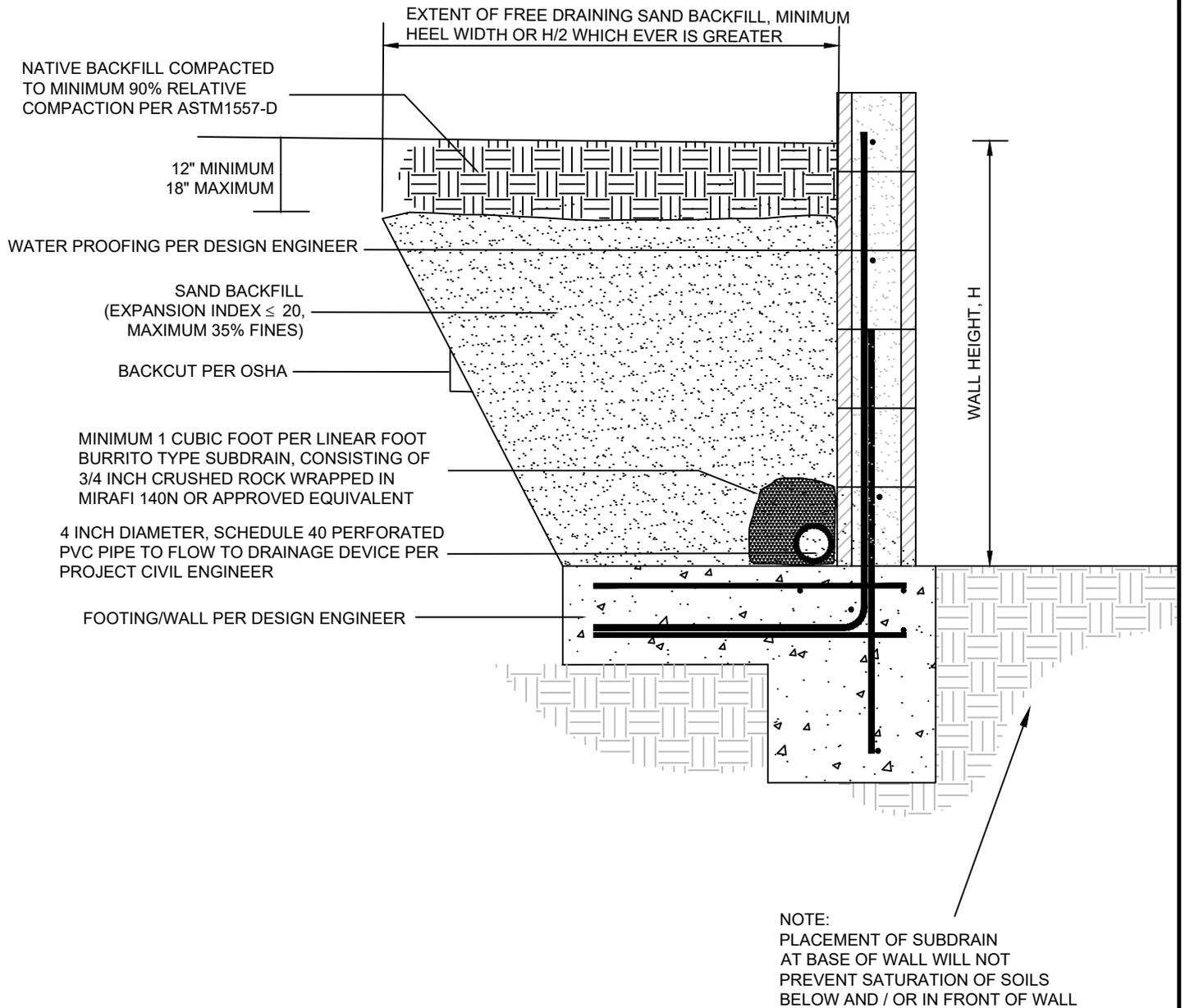


FIGURE 3
Retaining Wall
Backfill Detail

PROJECT NAME	Lee - Perris
PROJECT NO.	20093-01
ENG. / GEOL.	BTZ / KBC
SCALE	Not to Scale
DATE	July 2020

Appendix A
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APPENDIX A

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Appendix B
Boring Logs & Field Infiltration Data

Geotechnical Boring Log Borehole HS-4

Date: 6/25/2020	Drilling Company: Cal Pac Drilling
Project Name: Lee - Rider	Type of Rig: Track Rig
Project Number: 20093-01	Drop: 30" Hole Diameter: 8"
Elevation of Top of Hole: ~1456' MSL	Drive Weight: 140 pounds
Hole Location: See Geotechnical Map	Page 1 of 2

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
1455	0							@0' to T.D. Quaternary Very Old Fan Deposits (Qvof)	
			R-1	3 6 7	118.7	8.0	SC	@2.5' - Clayey SAND: brown, moist, medium dense; medium grained sand; scattered coarse grains	
1450	5		SPT-1	3 5 6		7.1	SM-SC	@5' - Silty Clayey SAND: brown, slightly moist, medium dense	-200 AL
			R-2	5 10 16	117.1	4.6		@7.5' - Silty Clayey SAND: olive brown, slightly moist, medium dense; some platy mica sand grains	CN
1445	10		SPT-2	4 4 8		6.6	SC	@10' - Clayey SAND: dark brown, slightly moist, medium dense; less fines than above	
1440	15		R-3	11 18 29	128.6	10.4		@15' - Clayey SAND: dark brown, moist, dense; micaceous	
1435	20		SPT-3	8 11 15		20.1		@20' - Clayey SAND: dark brown, very moist, dense	
1430	25		R-4	21 36 50/6"	123.9	10.6		@25' - Clayey SAND: dark brown, moist, very dense; scattered very coarse sand	
	30								

	<p>THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED. THE DESCRIPTIONS PROVIDED ARE QUALITATIVE FIELD DESCRIPTIONS AND ARE NOT BASED ON QUANTITATIVE ENGINEERING ANALYSIS.</p>	<p>SAMPLE TYPES: B BULK SAMPLE R RING SAMPLE (CA Modified Sampler) G GRAB SAMPLE SPT STANDARD PENETRATION TEST SAMPLE</p> <p> GROUNDWATER TABLE</p>	<p>TEST TYPES: DS DIRECT SHEAR MD MAXIMUM DENSITY SA SIEVE ANALYSIS S&H SIEVE AND HYDROMETER EI EXPANSION INDEX CN CONSOLIDATION CR CORROSION AL ATTERBERG LIMITS CO COLLAPSE/SWELL RV R-VALUE #200 % PASSING # 200 SIEVE</p>
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Geotechnical Boring Log Borehole HS-4

Date: 6/25/2020	Drilling Company: Cal Pac Drilling
Project Name: Lee - Rider	Type of Rig: Track Rig
Project Number: 20093-01	Drop: 30" Hole Diameter: 8"
Elevation of Top of Hole: ~1456' MSL	Drive Weight: 140 pounds
Hole Location: See Geotechnical Map	Page 2 of 2

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
1425	30		SPT-4	8 10 15		15.6	SC	@30' - Clayey SAND: dark brown, very moist, dense; slightly micaceous Total Depth = 31.5' Groundwater Not Encountered Backfilled with Cuttings on 6/25/2020	
1420	35								
1415	40								
1410	45								
1405	50								
1400	55								
	60								



THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED. THE DESCRIPTIONS PROVIDED ARE QUALITATIVE FIELD DESCRIPTIONS AND ARE NOT BASED ON QUANTITATIVE ENGINEERING ANALYSIS.

SAMPLE TYPES: B BULK SAMPLE R RING SAMPLE (CA Modified Sampler) G GRAB SAMPLE SPT STANDARD PENETRATION TEST SAMPLE GROUNDWATER TABLE	TEST TYPES: DS DIRECT SHEAR MD MAXIMUM DENSITY SA SIEVE ANALYSIS S&H SIEVE AND HYDROMETER EI EXPANSION INDEX CN CONSOLIDATION CR CORROSION AL ATTERBERG LIMITS CO COLLAPSE/SWELL RV R-VALUE #200 % PASSING # 200 SIEVE
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Geotechnical Boring Log Borehole HS-5

Date: 6/25/2020	Drilling Company: Cal Pac Drilling
Project Name: Lee - Rider	Type of Rig: Track Rig
Project Number: 20093-01	Drop: 30" Hole Diameter: 8"
Elevation of Top of Hole: ~1456' MSL	Drive Weight: 140 pounds
Hole Location: See Geotechnical Map	Page 1 of 2

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
1455	0	B						@0' to T.D. Quaternary Very Old Fan Deposits (Qvof)	
			SPT-1	4 4 3		8.1	SC	@2.5' - Clayey SAND: brown, moist, loose; micaceous; medium grained sand	EI CR
1450	5		R-1	5 9 10	122.7	4.8		@5' - Clayey SAND: brown, slightly moist, medium dense; scattered poorly developed rhizoliths	
			SPT-2	9 9 9		5.3		@7.5' - Clayey SAND: dark brown, slightly moist, medium dense; scattered coarse sand	
1445	10		R-2	10 17 18	124.7	4.8	CL-ML	@10' - Silty CLAY with Sand: olive brown, slightly moist, very stiff; micaceous	CN AL
1440	15		SPT-3	7 11 13		7.9	SC	@15' - Clayey SAND: brown, moist, dense; scattered coarse sand	
1435	20		R-3	8 14 28	102.4	24.2	ML	@20' - Sandy SILT: dark brown, very moist, hard; very fine sand; occasional very coarse sand	
1430	25		SPT-4	9 13 19		13.5	CL	@25' - Sandy CLAY: dark brown, moist to very moist, hard; abundant rhizoliths	
	30								



THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED. THE DESCRIPTIONS PROVIDED ARE QUALITATIVE FIELD DESCRIPTIONS AND ARE NOT BASED ON QUANTITATIVE ENGINEERING ANALYSIS.

<p>SAMPLE TYPES:</p> <p>B BULK SAMPLE R RING SAMPLE (CA Modified Sampler) G GRAB SAMPLE SPT STANDARD PENETRATION TEST SAMPLE</p> <p style="text-align: center;">≡</p> <p>GROUNDWATER TABLE</p>	<p>TEST TYPES:</p> <p>DS DIRECT SHEAR MD MAXIMUM DENSITY SA SIEVE ANALYSIS S&H SIEVE AND HYDROMETER EI EXPANSION INDEX CN CONSOLIDATION CR CORROSION AL ATTERBERG LIMITS CO COLLAPSE/SWELL RV R-VALUE #200 % PASSING # 200 SIEVE</p>
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Geotechnical Boring Log Borehole HS-5

Date: 6/25/2020	Drilling Company: Cal Pac Drilling
Project Name: Lee - Rider	Type of Rig: Track Rig
Project Number: 20093-01	Drop: 30" Hole Diameter: 8"
Elevation of Top of Hole: ~1456' MSL	Drive Weight: 140 pounds
Hole Location: See Geotechnical Map	Page 2 of 2

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
1425	30		R-4	15 27 27	121.1	7.0	SC	@30' - Clayey SAND: dark brown, slightly moist, dense; scattered coarse sand	
								Total Depth = 31.5' Groundwater Not Encountered Backfilled with Cuttings on 6/25/2020	
1420	35								
1415	40								
1410	45								
1405	50								
1400	55								
	60								



THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED. THE DESCRIPTIONS PROVIDED ARE QUALITATIVE FIELD DESCRIPTIONS AND ARE NOT BASED ON QUANTITATIVE ENGINEERING ANALYSIS.

<p>SAMPLE TYPES:</p> <p>B BULK SAMPLE R RING SAMPLE (CA Modified Sampler) G GRAB SAMPLE SPT STANDARD PENETRATION TEST SAMPLE</p> <p> GROUNDWATER TABLE</p>	<p>TEST TYPES:</p> <p>DS DIRECT SHEAR MD MAXIMUM DENSITY SA SIEVE ANALYSIS S&H SIEVE AND HYDROMETER EI EXPANSION INDEX CN CONSOLIDATION CR CORROSION AL ATTERBERG LIMITS CO COLLAPSE/SWELL RV R-VALUE #200 % PASSING # 200 SIEVE</p>
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Geotechnical Boring Log Borehole I-6

Date: 6/25/2020	Drilling Company: Cal Pac Drilling
Project Name: Lee - Rider	Type of Rig: Track Rig
Project Number: 20093-01	Drop: 30" Hole Diameter: 8"
Elevation of Top of Hole: ~1457' MSL	Drive Weight: 140 pounds
Hole Location: See Geotechnical Map	Page 1 of 1

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
1455	0		R-1	17 16 13	126.2	5.2	SC	@0' to T.D. Quaternary Very Old Fan Deposits (Qvof) @2.5' - Clayey SAND: dark brown, slightly moist, medium dense	
1450	5		SPT-1	5 5 6		4.1		@5' - Clayey SAND: dark brown, slightly moist, medium dense	
1445	10		R-2	5 10 14	116.8	8.5	CL	@7.5' - CLAY with Sand: light olive brown, slightly moist, very stiff	CO
1440	15							Total Depth = 10' Groundwater Not Encountered Infiltration Well Installed Per County Guidelines (2011) Pipe Pulled and Boring Backfilled with Cuttings on 6/26/2020	
1435	20								
1430	25								
	30								



THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED. THE DESCRIPTIONS PROVIDED ARE QUALITATIVE FIELD DESCRIPTIONS AND ARE NOT BASED ON QUANTITATIVE ENGINEERING ANALYSIS.

SAMPLE TYPES: B BULK SAMPLE R RING SAMPLE (CA Modified Sampler) G GRAB SAMPLE SPT STANDARD PENETRATION TEST SAMPLE GROUNDWATER TABLE	TEST TYPES: DS DIRECT SHEAR MD MAXIMUM DENSITY SA SIEVE ANALYSIS S&H SIEVE AND HYDROMETER EI EXPANSION INDEX CN CONSOLIDATION CR CORROSION AL ATTERBERG LIMITS CO COLLAPSE/SWELL RV R-VALUE #200 % PASSING # 200 SIEVE
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Last Edited: 7/14/2020

Geotechnical Boring Log Borehole I-7

Date: 6/25/2020	Drilling Company: Cal Pac Drilling
Project Name: Lee - Rider	Type of Rig: Track Rig
Project Number: 20093-01	Drop: 30" Hole Diameter: 8"
Elevation of Top of Hole: ~1456' MSL	Drive Weight: 140 pounds
Hole Location: See Geotechnical Map	Page 1 of 1

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
1455	0	B-1						@0' to T.D. Quaternary Very Old Fan Deposits (Qvof)	
			SPT-1	13 10 12		2.5	SM	@2.5' - Silty SAND: dark brown, slightly moist, medium dense	
1450	5		R-1	13 13 12	129.1	2.1		@5' - Silty SAND: dark brown, slightly moist, medium dense	
			SPT-2	6 8 10		7.2	SC	@7.5' - Clayey SAND: dark brown, moist, medium dense	-200
1445	10							Total Depth = 10' Groundwater Not Encountered Infiltration Well Installed Per County Guidelines (2011) Pipe Pulled and Boring Backfilled with Cuttings on 6/26/2020	
1440	15								
1435	20								
1430	25								
	30								



THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED. THE DESCRIPTIONS PROVIDED ARE QUALITATIVE FIELD DESCRIPTIONS AND ARE NOT BASED ON QUANTITATIVE ENGINEERING ANALYSIS.

SAMPLE TYPES:
 B BULK SAMPLE
 R RING SAMPLE (CA Modified Sampler)
 G GRAB SAMPLE
 SPT STANDARD PENETRATION TEST SAMPLE



TEST TYPES:
 DS DIRECT SHEAR
 MD MAXIMUM DENSITY
 SA SIEVE ANALYSIS
 S&H SIEVE AND HYDROMETER
 EI EXPANSION INDEX
 CN CONSOLIDATION
 CR CORROSION
 AL ATTERBERG LIMITS
 CO COLLAPSE/SWELL
 RV R-VALUE
 #200 % PASSING # 200 SIEVE

Geotechnical Boring Log Borehole I-8

Date: 6/25/2020	Drilling Company: Cal Pac Drilling
Project Name: Lee - Rider	Type of Rig: Track Rig
Project Number: 20093-01	Drop: 30" Hole Diameter: 8"
Elevation of Top of Hole: ~1455' MSL	Drive Weight: 140 pounds
Hole Location: See Geotechnical Map	Page 1 of 1

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
	0							Logged By ARN Sampled By ARN Checked By BTZ	
			R-1	5 6	120.8	9.6	SC	@2.5' - Clayey SAND: brown, slightly moist to moist, loose	
1450	5		SPT-1	5 9		5.8	SC/SM	@5' - Clayey SAND to Silty SAND: dusky brown, slightly moist, medium dense	
			R-2	7 8 11	116.5	2.6	SM	@7.5' - Silty SAND: light olive brown, slightly moist, medium dense	CO
1445	10							Total Depth = 10' Groundwater Not Encountered Infiltration Well Installed Per County Guidelines (2011) Pipe Pulled and Boring Backfilled with Cuttings on 6/26/2020	
1440	15								
1435	20								
1430	25								
1425	30								



THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED. THE DESCRIPTIONS PROVIDED ARE QUALITATIVE FIELD DESCRIPTIONS AND ARE NOT BASED ON QUANTITATIVE ENGINEERING ANALYSIS.

SAMPLE TYPES: B BULK SAMPLE R RING SAMPLE (CA Modified Sampler) G GRAB SAMPLE SPT STANDARD PENETRATION TEST SAMPLE GROUNDWATER TABLE	TEST TYPES: DS DIRECT SHEAR MD MAXIMUM DENSITY SA SIEVE ANALYSIS S&H SIEVE AND HYDROMETER EI EXPANSION INDEX CN CONSOLIDATION CR CORROSION AL ATTERBERG LIMITS CO COLLAPSE/SWELL RV R-VALUE #200 % PASSING # 200 SIEVE
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Last Edited: 7/14/2020

Geotechnical Boring Log Borehole I-9

Date: 6/25/2020	Drilling Company: Cal Pac Drilling
Project Name: Lee - Rider	Type of Rig: Track Rig
Project Number: 20093-01	Drop: 30" Hole Diameter: 8"
Elevation of Top of Hole: ~1455' MSL	Drive Weight: 140 pounds
Hole Location: See Geotechnical Map	Page 1 of 1

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
	0							Logged By ARN Sampled By ARN Checked By BTZ	
			SPT-1	4 5 7		7.3	SM	@0' to T.D. <u>Quaternary Very Old Fan Deposits (Qvof)</u>	
			R-1	10 10 9	119.9	7.4	SC	@2.5' - Silty SAND: brown, slightly moist, medium dense	
1450	5	B-1						@5' - Clayey SAND: dark brown, slightly moist, medium dense	
			SPT-2	5 7 9		9.4		@7.5' - Clayey SAND: dark brown, moist, medium dense	-#200
1445	10							Total Depth = 10' Groundwater Not Encountered Infiltration Well Installed Per County Guidelines (2011) Pipe Pulled and Boring Backfilled with Cuttings on 6/26/2020	
1440	15								
1435	20								
1430	25								
1425	30								



THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED. THE DESCRIPTIONS PROVIDED ARE QUALITATIVE FIELD DESCRIPTIONS AND ARE NOT BASED ON QUANTITATIVE ENGINEERING ANALYSIS.

SAMPLE TYPES: B BULK SAMPLE R RING SAMPLE (CA Modified Sampler) G GRAB SAMPLE SPT STANDARD PENETRATION TEST SAMPLE GROUNDWATER TABLE	TEST TYPES: DS DIRECT SHEAR MD MAXIMUM DENSITY SA SIEVE ANALYSIS S&H SIEVE AND HYDROMETER EI EXPANSION INDEX CN CONSOLIDATION CR CORROSION AL ATTERBERG LIMITS CO COLLAPSE/SWELL RV R-VALUE #200 % PASSING # 200 SIEVE
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Last Edited: 7/14/2020

Infiltration Test Data Sheet

LGC Geotechnical, Inc

131 Calle Iglesia Suite 200, San Clemente, CA 92672 tel. (949) 369-6141

Project Name: Lee - Perris
Project Number: 20093-01
Date: 6/26/2020
Boring Number: LGC-I-6

Test hole dimensions (if circular)

Boring Depth (feet)*: 10
 Boring Diameter (inches): 8
 Pipe Diameter (inches): 3

*measured at time of test

Test pit dimensions (if rectangular)

Pit Depth (feet): _____
 Pit Length (feet): _____
 Pit Breadth (feet): _____

Pre-Test (Sandy Soil Criteria)*

Trial No.	Start Time (24:HR)	Stop Time (24:HR)	Time Interval (min)	Initial Depth to Water (feet)	Final Depth to Water (feet)	Total Change in Water Level (feet)	Greater Than or Equal to 0.5 feet (yes/no)
1	7:29	7:54	25.0	6.40	6.98	0.58	Yes
2	7:55	8:20	25.0	6.39	6.94	0.55	Yes

*If two consecutive measurements show that six inches of water seeps away in less than 25 minutes, the test shall be run for an additional hour with measurements taken every 10 minutes. Otherwise, pre-soak (fill) overnight, and then obtain at least twelve measurements per hole over at least six hours (approximately 30 minute intervals) with a precision of at least 0.25 inches

Main Test Data

Trial No.	Start Time (24:HR)	Stop Time (24:HR)	Time Interval, t (min)	Initial Depth to Water, D _o (feet)	Final Depth to Water, D _f (feet)	Change in Water Level, D (feet)	Tested Infiltration Rate(in/hr)
1	8:23	8:33	10.0	6.42	6.66	0.24	0.8
2	8:34	8:44	10.0	6.41	6.64	0.23	0.8
3	8:45	8:55	10.0	6.33	6.59	0.26	0.8
4	8:56	9:06	10.0	6.36	6.61	0.25	0.8
5	9:07	9:17	10.0	6.28	6.53	0.25	0.8
6	9:18	9:28	10.0	6.39	6.65	0.26	0.9
7							
8							
9							
10							
11							
12							

Tested Infiltration Rate (No Factor of Safety)	0.9
Minimum Factor of Safety	3.0
Infiltration Rate (With Factor of Safety)	0.3

Sketch:

Notes:



Infiltration Test Data Sheet

LGC Geotechnical, Inc

131 Calle Iglesia Suite 200, San Clemente, CA 92672 tel. (949) 369-6141

Project Name: Lee - Perris
Project Number: 20093-01
Date: 6/26/2020
Boring Number: LGC-I-7

Test hole dimensions (if circular)	
Boring Depth (feet)*:	<u>10</u>
Boring Diameter (inches):	<u>8</u>
Pipe Diameter (inches):	<u>3</u>

*measured at time of test

Test pit dimensions (if rectangular)	
Pit Depth (feet):	<u> </u>
Pit Length (feet):	<u> </u>
Pit Breadth (feet):	<u> </u>

Pre-Test (Sandy Soil Criteria)*

Trial No.	Start Time (24:HR)	Stop Time (24:HR)	Time Interval (min)	Initial Depth to Water (feet)	Final Depth to Water (feet)	Total Change in Water Level (feet)	Greater Than or Equal to 0.5 feet (yes/no)
1	7:32	7:57	25.0	6.36	7.52	1.16	Yes
2	7:58	8:23	25.0	6.34	7.51	1.17	Yes

*If two consecutive measurements show that six inches of water seeps away in less than 25 minutes, the test shall be run for an additional hour with measurements taken every 10 minutes. Otherwise, pre-soak (fill) overnight, and then obtain at least twelve measurements per hole over at least six hours (approximately 30 minute intervals) with a precision of at least 0.25 inches

Main Test Data

Trial No.	Start Time (24:HR)	Stop Time (24:HR)	Time Interval, t (min)	Initial Depth to Water, D _o (feet)	Final Depth to Water, D _f (feet)	Change in Water Level, D (feet)	Tested Infiltration Rate(in/hr)
1	8:25	8:35	10.0	6.45	7.01	0.56	2.0
2	8:36	8:46	10.0	6.42	6.96	0.54	1.9
3	8:47	8:57	10.0	6.46	7.04	0.58	2.0
4	8:58	9:08	10.0	6.50	7.09	0.59	2.1
5	9:09	9:19	10.0	6.19	6.72	0.53	1.7
6	9:20	9:30	10.0	6.42	6.95	0.53	1.8
7							
8							
9							
10							
11							
12							

Tested Infiltration Rate (No Factor of Safety)	1.8
Minimum Factor of Safety	3.0
Infiltration Rate (With Factor of Safety)	0.6

Sketch:

Notes:



Infiltration Test Data Sheet

LGC Geotechnical, Inc

131 Calle Iglesia Suite 200, San Clemente, CA 92672 tel. (949) 369-6141

Project Name: Lee - Perris
Project Number: 20093-01
Date: 6/26/2020
Boring Number: LGC-I-8

Test hole dimensions (if circular)	
Boring Depth (feet)*:	<u>10</u>
Boring Diameter (inches):	<u>8</u>
Pipe Diameter (inches):	<u>3</u>

*measured at time of test

Test pit dimensions (if rectangular)	
Pit Depth (feet):	<u> </u>
Pit Length (feet):	<u> </u>
Pit Breadth (feet):	<u> </u>

Pre-Test (Sandy Soil Criteria)*

Trial No.	Start Time (24:HR)	Stop Time (24:HR)	Time Interval (min)	Initial Depth to Water (feet)	Final Depth to Water (feet)	Total Change in Water Level (feet)	Greater Than or Equal to 0.5 feet (yes/no)
1	7:39	8:04	25.0	7.11	8.32	1.21	Yes
2	8:05	8:30	25.0	7.01	8.19	1.18	Yes

*If two consecutive measurements show that six inches of water seeps away in less than 25 minutes, the test shall be run for an additional hour with measurements taken every 10 minutes. Otherwise, pre-soak (fill) overnight, and then obtain at least twelve measurements per hole over at least six hours (approximately 30 minute intervals) with a precision of at least 0.25 inches

Main Test Data

Trial No.	Start Time (24:HR)	Stop Time (24:HR)	Time Interval, t (min)	Initial Depth to Water, D _o (feet)	Final Depth to Water, D _f (feet)	Change in Water Level, D (feet)	Tested Infiltration Rate(in/hr)
1	9:57	10:07	10.0	7.28	7.75	0.47	2.1
2	10:08	10:18	10.0	7.23	7.77	0.54	2.4
3	10:19	10:29	10.0	7.19	7.78	0.59	2.6
4	10:30	10:40	10.0	7.25	7.79	0.54	2.4
5	10:41	10:51	10.0	7.26	7.78	0.52	2.4
6	10:52	11:02	10.0	7.21	7.75	0.54	2.4
7							
8							
9							
10							
11							
12							

Tested Infiltration Rate (No Factor of Safety)	2.4
Minimum Factor of Safety	3.0
Infiltration Rate (With Factor of Safety)	0.8

Sketch:

Notes:



Infiltration Test Data Sheet

LGC Geotechnical, Inc

131 Calle Iglesia Suite 200, San Clemente, CA 92672 tel. (949) 369-6141

Project Name: Lee - Perris
Project Number: 20093-01
Date: 6/26/2020
Boring Number: LGC-I-9

Test hole dimensions (if circular)

Boring Depth (feet)*: 10
 Boring Diameter (inches): 8
 Pipe Diameter (inches): 3

*measured at time of test

Test pit dimensions (if rectangular)

Pit Depth (feet): _____
 Pit Length (feet): _____
 Pit Breadth (feet): _____

Pre-Test (Sandy Soil Criteria)*

Trial No.	Start Time (24:HR)	Stop Time (24:HR)	Time Interval (min)	Initial Depth to Water (feet)	Final Depth to Water (feet)	Total Change in Water Level (feet)	Greater Than or Equal to 0.5 feet (yes/no)
1	7:42	8:07	25.0	6.35	7.19	0.84	Yes
2	8:08	8:33	25.0	6.44	7.24	0.80	Yes

*If two consecutive measurements show that six inches of water seeps away in less than 25 minutes, the test shall be run for an additional hour with measurements taken every 10 minutes. Otherwise, pre-soak (fill) overnight, and then obtain at least twelve measurements per hole over at least six hours (approximately 30 minute intervals) with a precision of at least 0.25 inches

Main Test Data

Trial No.	Start Time (24:HR)	Stop Time (24:HR)	Time Interval, t (min)	Initial Depth to Water, D _o (feet)	Final Depth to Water, D _f (feet)	Change in Water Level, D (feet)	Tested Infiltration Rate(in/hr)
1	9:55	10:05	10.0	6.99	7.28	0.29	1.1
2	10:06	10:16	10.0	7.04	7.35	0.31	1.3
3	10:17	10:27	10.0	7.35	7.64	0.29	1.3
4	10:28	10:38	10.0	7.03	7.3	0.27	1.1
5	10:39	10:49	10.0	6.84	7.13	0.29	1.1
6	10:50	11:00	10.0	7.13	7.38	0.25	1.0
7							
8							
9							
10							
11							
12							

Tested Infiltration Rate (No Factor of Safety)	1.0
Minimum Factor of Safety	3.0
Infiltration Rate (With Factor of Safety)	0.3

Sketch:

Notes:

Based on Guidelines from: Riverside County 09/2012
 Spreadsheet Revised on: 10/30/2019



From Lawson, 2007

Appendix B
Boring and Trench Logs

Geotechnical Boring Log Borehole LGC-HS-1

Date: 6/12/2007	Drilling Company: 2R DRILLING
Project Name: Perris Rider Center	Type of Rig: Hollow Stem Auger
Project Number: 071068-01	Drop: 30" Hole Diameter: 8"
Elevation of Top of Hole: 1453' MSL	Drive Weight: 140 pounds
Hole Location: See Geotechnical Map	Page 1 of 2

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
	0							<u>@ 0'-T.D. Quaternary Very Old Alluvial Fan (Qvof)</u>	
			R-1	8 9 10	118.4	4.9	SM	Silty SAND: medium brown, slightly moist, medium dense	
	5		S-1	2 2 2	-	-	SP	Medium grained SAND with some coarse grains: medium brown, slightly moist to moist, very loose	
			R-2	10 14 14	124.7	7.9	SM	Medium grained Silty SAND: medium brown, slightly moist, medium dense	CO
	10		S-2	4 5 8	-	-	SC	Medium grained Clayey SAND with some coarse grains: medium brown, slightly moist, medium dense	SA
	15		R-3	6 24 26	124.4	12.8		Clayey coarse SAND to medium to coarse SAND with Clay: medium brown, moist, dense	
	20		S-3	7 11 15	-	-	SM/SC	Clayey Silty SAND: medium brown, moist, medium dense	
	25		R-4	9 17 23	122.4	11.1	SC	Clayey SAND to SAND with Clay: medium brown, moist, medium dense	
	30								

<p>LAWSON AND ASSOCIATES GEOTECHNICAL CONSULTING, INC.</p>	<p>THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED.</p>	<p>SAMPLE TYPES: B BULK SAMPLE R RING SAMPLE G GRAB SAMPLE SPT STANDARD PENETRATION TEST SAMPLE</p>	<p>TEST TYPES: DS DIRECT SHEAR MD MAXIMUM DENSITY SA SIEVE ANALYSIS S&H SIEVE AND HYDROMETER EI EXPANSION INDEX CN CONSOLIDATION CR CORROSION AL ATTERBERG LIMITS CO COLLAPSE/SWELL RV R-VALUE #200 % PASSING # 200 SIEVE</p>
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Last Edited: 6/14/2007

Geotechnical Boring Log Borehole LGC-HS-1

Date: 6/12/2007	Drilling Company: 2R DRILLING
Project Name: Perris Rider Center	Type of Rig: Hollow Stem Auger
Project Number: 071068-01	Drop: 30" Hole Diameter: 8"
Elevation of Top of Hole: 1453' MSL	Drive Weight: 140 pounds
Hole Location: See Geotechnical Map	Page 2 of 2

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
	30		S-4	8 10 13	-	-	SM	<p>Quaternary Very Old Alluvial Fan Continued</p> <p>Fine Silty SAND with some coarse grains: medium brown, slightly moist, medium dense</p> <p>Total Depth = 31.5' Ground Water Not Encountered Backfilled with Cuttings on 6/12/2007</p>	
	35								
	40								
	45								
	50								
	55								
	60								

<p>LAWSON AND ASSOCIATES GEOTECHNICAL CONSULTING, INC.</p>	<p>THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED.</p>	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> SAMPLE TYPES: B BULK SAMPLE R RING SAMPLE G GRAB SAMPLE SPT STANDARD PENETRATION TEST SAMPLE </td> <td style="width: 50%; vertical-align: top;"> TEST TYPES: DS DIRECT SHEAR MD MAXIMUM DENSITY SA SIEVE ANALYSIS S&H SIEVE AND HYDROMETER EI EXPANSION INDEX CN CONSOLIDATION CR CORROSION AL ATTERBERG LIMITS CO COLLAPSE/SWELL RV R-VALUE #200 % PASSING # 200 SIEVE </td> </tr> </table>	SAMPLE TYPES: B BULK SAMPLE R RING SAMPLE G GRAB SAMPLE SPT STANDARD PENETRATION TEST SAMPLE	TEST TYPES: DS DIRECT SHEAR MD MAXIMUM DENSITY SA SIEVE ANALYSIS S&H SIEVE AND HYDROMETER EI EXPANSION INDEX CN CONSOLIDATION CR CORROSION AL ATTERBERG LIMITS CO COLLAPSE/SWELL RV R-VALUE #200 % PASSING # 200 SIEVE
SAMPLE TYPES: B BULK SAMPLE R RING SAMPLE G GRAB SAMPLE SPT STANDARD PENETRATION TEST SAMPLE	TEST TYPES: DS DIRECT SHEAR MD MAXIMUM DENSITY SA SIEVE ANALYSIS S&H SIEVE AND HYDROMETER EI EXPANSION INDEX CN CONSOLIDATION CR CORROSION AL ATTERBERG LIMITS CO COLLAPSE/SWELL RV R-VALUE #200 % PASSING # 200 SIEVE			

Geotechnical Boring Log Borehole LGC-HS-2

Date: 6/12/2007	Drilling Company: 2R DRILLING
Project Name: Perris Rider Center	Type of Rig: TRACK MOUNTED
Project Number: 071068-01	Drop: 30" Hole Diameter: 8"
Elevation of Top of Hole:	Drive Weight: 140 pounds
Hole Location: See Geotechnical Map	Page 1 of 2

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
	0							<u>@ 0'-T.D. Quaternary Very Old Alluvial Fan (Qvof)</u>	
			S-1	5 4 4	-	-	SM	Medium grained Silty SAND: medium brown, slightly moist, loose	
	5		R-1	7 9 12	125.1	10.3	SP	Medium grained SAND: medium brown, slightly moist, medium dense; white mineralization	
			S-2	4 6 6	-	-	SC	Clayey SAND with some coarse grains: medium brown, slightly moist, medium dense	SA,AL
	10		R-2	8 15 23	110.8	16.3	SM	Silty SAND to fine SAND: medium brown, slightly moist, medium dense	CN
	15		S-3	6 11 13	-	-		Medium to coarse Silty SAND: medium brown, slightly moist, medium dense	
	20		R-3	9 17 25	115.8	14.5	SC	Clayey Silty SAND: medium brown, slightly moist to moist, medium dense	CN
75	25		S-4	4 6 9	-	-		Medium to coarse Clayey SAND: medium brown, slightly moist, medium dense; white mineralization	SA
	30								

<p style="text-align: center;">LAWSON AND ASSOCIATES GEOTECHNICAL CONSULTING, INC.</p> <div style="text-align: center; font-size: 2em; font-weight: bold; background-color: black; color: white; padding: 5px; margin: 10px auto; width: 80%;">LGC</div>	<p>THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED.</p>	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;">SAMPLE TYPES:</td> <td style="width: 50%; border: none;">TEST TYPES:</td> </tr> <tr> <td style="border: none;">B BULK SAMPLE</td> <td style="border: none;">DS DIRECT SHEAR</td> </tr> <tr> <td style="border: none;">R RING SAMPLE</td> <td style="border: none;">MD MAXIMUM DENSITY</td> </tr> <tr> <td style="border: none;">G GRAB SAMPLE</td> <td style="border: none;">SA SIEVE ANALYSIS</td> </tr> <tr> <td style="border: none;">SPT STANDARD PENETRATION TEST SAMPLE</td> <td style="border: none;">S&H SIEVE AND HYDROMETER</td> </tr> <tr> <td></td> <td style="border: none;">EI EXPANSION INDEX</td> </tr> <tr> <td></td> <td style="border: none;">CN CONSOLIDATION</td> </tr> <tr> <td></td> <td style="border: none;">CR CORROSION</td> </tr> <tr> <td></td> <td style="border: none;">AL ATTERBERG LIMITS</td> </tr> <tr> <td></td> <td style="border: none;">CO COLLAPSE/SWELL</td> </tr> <tr> <td></td> <td style="border: none;">RV R-VALUE</td> </tr> <tr> <td></td> <td style="border: none;">#200 % PASSED #200 SIEVE</td> </tr> </table>	SAMPLE TYPES:	TEST TYPES:	B BULK SAMPLE	DS DIRECT SHEAR	R RING SAMPLE	MD MAXIMUM DENSITY	G GRAB SAMPLE	SA SIEVE ANALYSIS	SPT STANDARD PENETRATION TEST SAMPLE	S&H SIEVE AND HYDROMETER		EI EXPANSION INDEX		CN CONSOLIDATION		CR CORROSION		AL ATTERBERG LIMITS		CO COLLAPSE/SWELL		RV R-VALUE		#200 % PASSED #200 SIEVE
SAMPLE TYPES:	TEST TYPES:																									
B BULK SAMPLE	DS DIRECT SHEAR																									
R RING SAMPLE	MD MAXIMUM DENSITY																									
G GRAB SAMPLE	SA SIEVE ANALYSIS																									
SPT STANDARD PENETRATION TEST SAMPLE	S&H SIEVE AND HYDROMETER																									
	EI EXPANSION INDEX																									
	CN CONSOLIDATION																									
	CR CORROSION																									
	AL ATTERBERG LIMITS																									
	CO COLLAPSE/SWELL																									
	RV R-VALUE																									
	#200 % PASSED #200 SIEVE																									

Last Edited: 6/14/2007

Geotechnical Boring Log Borehole LGC-HS-2

Date: 6/12/2007	Drilling Company: 2R DRILLING
Project Name: Perris Rider Center	Type of Rig: Hollow Stem Auger
Project Number: 071068-01	Drop: 30" Hole Diameter: 8"
Elevation of Top of Hole: 1453' MSL	Drive Weight: 140 pounds
Hole Location: See Geotechnical Map	Page 2 of 2

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
	30		R-4	20 39 50	123.4	9.5	SP	<p>Quaternary Very Old Alluvial Fan Continued</p> <p>Medium to coarse SAND with some Clay: medium brown, slightly moist, very dense</p>	
	35								
	40		S-5	6 000	-	-	CL	Sandy CLAY: medium orange brown, slightly moist, very dense	S&H
	45								
	50		R-5	15 32 50/5"	123.3	6.9	SP	Medium to coarse SAND: medium orange brown, slightly moist, very dense	
	55							<p>Total Depth = 51.5'</p> <p>Ground Water Not Encountered</p> <p>Backfilled with Cuttings on 6/12/2007</p>	
	60								

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SAMPLE TYPES: B BULK SAMPLE R RING SAMPLE G GRAB SAMPLE SPT STANDARD PENETRATION TEST SAMPLE	TEST TYPES: DS DIRECT SHEAR MD MAXIMUM DENSITY SA SIEVE ANALYSIS S&H SIEVE AND HYDROMETER EI EXPANSION INDEX CN CONSOLIDATION CR CORROSION AL ATTERBERG LIMITS CO COLLAPSE/SWELL RV R-VALUE -#200 % PASSING # 200 SIEVE			

Geotechnical Boring Log Borehole LGC-HS-3

Date: 6/12/2007	Drilling Company: 2R DRILLING
Project Name: Perris Rider Center	Type of Rig: Hollow Stem Auger
Project Number: 071068-01	Drop: 30" Hole Diameter: 8"
Elevation of Top of Hole: 1453' MSL	Drive Weight: 140 pounds
Hole Location: See Geotechnical Map	Page 1 of 1

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
	0							Logged By MN Sampled By MN Checked By KBC/BTZ	
								<u>@ 0'-T.D. Quaternary Very Old Alluvial Fan (Qvof)</u>	
		█	R-1	11 13 12	123.3	7.1	SM	Medium to coarse Silty SAND: medium to dark brown, slightly moist, medium dense	
	5	X	S-1	3 3 2	-	-		Medium to coarse Silty SAND: medium to dark brown, slightly moist, loose	
		█	R-2	8 15 21	129.3	6.1		Medium to coarse Silty SAND: medium orange brown, slightly moist, medium dense	CO
	10	X	S-2	6 9 12	-	-	SC	Clayey SAND: orange brown, slightly moist, medium dense	SA,AL
	15	█	R-3	11 18 28	121.0	7.1	SM	Silty SAND: orange brown, slightly moist, medium dense	
	20	X	S-3	7 13 16	-	-		Silty SAND: orange brown, slightly moist, medium dense	
	25							Total Depth = 21.5' Ground Water Not Encountered Backfilled with Cuttings on 6/12/2007	
	30								

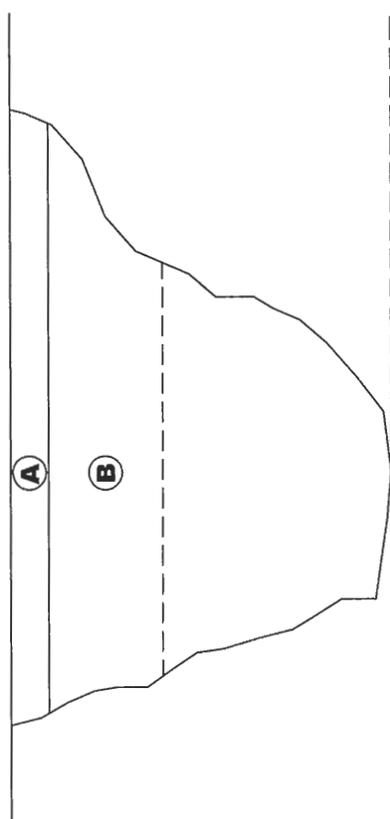
**LAWSON AND ASSOCIATES
GEOTECHNICAL CONSULTING, INC.**



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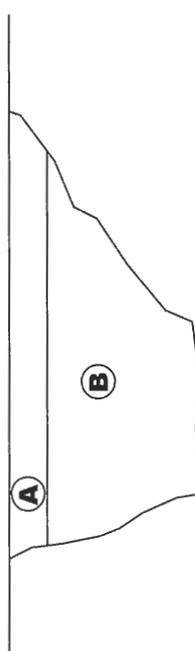
SAMPLE TYPES:
 B BULK SAMPLE
 R RING SAMPLE
 G GRAB SAMPLE
 SPT STANDARD PENETRATION TEST SAMPLE

TEST TYPES:
 DS DIRECT SHEAR
 MD MAXIMUM DENSITY
 SA SIEVE ANALYSIS
 S&H SIEVE AND HYDROMETER
 EI EXPANSION INDEX
 CN CONSOLIDATION
 CR CORROSION
 AL ATTERBERG LIMITS
 CO COLLAPSE/SWELL
 RV R-VALUE
 #200 % PASSING #200 SIEVE

Project Name: Perris/Rider Center		Logged By: MN		Trench No: TP-1			
Project Number: 071068-01		Date: 6/12/2007		Engineering Properties:			
Equipment: 580L Backhoe		Location: See Geotechnical Map					
Geologic Attitudes	Unit	SOIL DESCRIPTION:	GEOLOGIC UNIT	USCS	SAMPLE No	MOISTURE (%)	DRY DENSITY (PCF)
	A	Topsoil @ 0-1' Silty SAND: medium brown, dry, loose; roots Quaternary Very Old Alluvial-Fan Deposits	Qvof	SM	B-1		
	B	@ 1'-4' Silty SAND: medium brown, dry to slightly moist, loose medium dense; few coarse Sand grains @ 4' Medium to coarse SAND: medium brown, slightly moist to moist, medium dense; slightly porous @ 10' END		SP/SM			
GRAPHICAL REPRESENTATION BELOW:			Elevation: 1453' MSL		Surface Slope: 0 deg.		Trend: N85E
							
Total Depth: 10' Ground Water: None Backfilled: 6/12/2007 scale : 1 in = 5 ft							

Project Name: Perris/Rider Center		Logged By: MN		Trench No: TP-2			
Project Number: 071068-01		Date: 6/12/2007		Engineering Properties:			
Equipment: 580L Backhoe		Location: See Geotechnical Map					
Geologic Attitudes	Unit	SOIL DESCRIPTION:	GEOLOGIC UNIT	USCS	SAMPLE No	MOISTURE (%)	DRY DENSITY (PCF)
	A	Topsoil @ 0-1.5' Silty SAND to fine SAND with Silt: medium brown, dry, loose; roots	Qvof	SM			
	B	Quaternary Very Old Alluvial-Fan Deposits @ 1.5'-6' Silty SAND: medium brown, dry to slightly moist, loose to medium dense; few medium Sand grains @ 6' Fine to medium SAND: medium brown, slightly moist to moist, medium dense @ 7' END		SM			
GRAPHICAL REPRESENTATION BELOW:			Elevation : 1453 ' MSL		Surface Slope: 0 deg.		Trend: N83E
Total Depth: 7' Ground Water: None Backfilled: 6/12/2007 scale : 1 in = 5 ft							

Project Name: Perris/Rider Center		Logged By: MN		Trench No: TP-3			
Project Number: 071068-01		Date: 6/12/2007		Engineering Properties:			
Equipment: 580L Backhoe		Location: See Geotechnical Map					
Geologic Attitudes	Unit	SOIL DESCRIPTION:	GEOLOGIC UNIT	USCS	SAMPLE No	MOISTURE (%)	DRY DENSITY (PCF)
	A	Topsoil @ 0-0.5' Silty SAND to fine SAND with Silt: medium brown, dry, loose to medium dense		SM	B-1		
	B	Quaternary Very Old Alluvial-Fan Deposits @ 0.5'-4.5' Silty SAND: medium brown, dry to slightly moist, loose to medium dense @ 4.5' Fine to medium SAND with some Silt: medium brown, slightly moist to moist, medium dense; slightly porous @ 8' END	Qvof	SM			
GRAPHICAL REPRESENTATION BELOW:			Elevation: 1453' MSL	Surface Slope: 0 deg.	Trend: N85E		
Total Depth: 8' Ground Water: None Backfilled: 6/12/2007 scale : 1 in = 5 ft							

Project Name: Perris/Rider Center		Logged By: MN		Trench No: TP-4		LGC		
Project Number : 071068-01		Date : 6/12/2007		Engineering Properties:				
Equipment: 580L Backhoe		Location: See Geotechnical Map		GEOLOGIC UNIT	USCS	SAMPLE No	MOISTURE (%)	DRY DENSITY (PCF)
Geologic Attitudes	Unit	SOIL DESCRIPTION:						
	A	<p>Topsoil @ 0-1' Silty SAND to fine SAND with Silt: medium brown, dry, loose to medium dense</p> <p>Quaternary Very Old Alluvial-Fan Deposits @ 1'-T.D. Medium to coarse SAND: medium brown, slightly moist to moist, loose to medium dense; slightly porous; few Gravel @ 5' END</p>				SM		
		Qvof	SP					
GRAPHICAL REPRESENTATION BELOW:				Elevation : 1453 ' MSL	Surface Slope: 0 deg.	Trend: N85W		
								
				Total Depth: 5'				
				Ground Water: None				
				Backfilled: 6/12/2007				
				scale : 1 in = 5 ft				

Project Name: Perris/Rider Center		Logged By: MN		Trench No: TP-5		<h1>LGC</h1>		
Project Number : 071068-01		Date : 6/12/2007		Engineering Properties:				
Equipment: 580L Backhoe		Location: See Geotechnical Map		GEOLOGIC UNIT	USCS	SAMPLE No	MOISTURE (%)	DRY DENSITY (PCF)
Geologic Attitudes	Unit	SOIL DESCRIPTION:		Qvof	SM			
	A	Topsoil @ 0-1' Silty SAND to fine SAND with Silt: medium brown, dry, loose						
	B	Quaternary Very Old Alluvial-Fan Deposits @ 1'-4' Medium SAND with some Silt: medium brown, dry, loose to medium dense @ 4' Medium SAND: medium orange brown, slightly moist, medium dense; @ 6' END			SP/SM			
GRAPHICAL REPRESENTATION BELOW:				Elevation : 1453 ' MSL	Surface Slope: 0 deg.	Trend: N84W		
				Total Depth: 6' Ground Water: None Backfilled: 6/12/2007		scale : 1 in = 5 ft		

Project Name: Perris/Rider Center		Logged By: MN		Trench No: TP-6		LGC			
Project Number : 071068-01		Date : 6/12/2007		Engineering Properties:					
Equipment: 580L Backhoe		Location: See Geotechnical Map		GEOLOGIC UNIT	USCS	SAMPLE No	MOISTURE (%)	DRY DENSITY (PCF)	
Geologic Attitudes	SOIL DESCRIPTION:								
A	Topsoil @ 0-0.5' Silty SAND to fine SAND with Silt: medium brown, dry, loose							SM	
B	Quaternary Very Old Alluvial-Fan Deposits @ 0.5'-3.5' Medium SAND with some Silt: medium brown, dry, loose to medium dense @ 3.5'-7' Medium to coarse SAND: medium orange brown, slightly moist, medium dense; @ 7.5' END							SP/SM	
GRAPHICAL REPRESENTATION BELOW:				Elevation : 1453 ' MSL		Surface Slope: 0 deg.		Trend: N80W	
Total Depth: 7.5' Ground Water: None Backfilled: 6/12/2007 scale : 1 in = 5 ft									

Appendix C
Laboratory Test Results

APPENDIX C

Laboratory Test Results

The laboratory testing program was directed towards providing quantitative data relating to the relevant engineering properties of the soils. Samples considered representative of site conditions were tested in general accordance with American Society for Testing and Materials (ASTM) procedure and/or California Test Methods (CTM), where applicable. The following summary is a brief outline of the test type and a table summarizing the test results.

Moisture and Density Determination Tests: Moisture content (ASTM D2216) and dry density determinations (ASTM D2937) were performed on driven samples obtained from the test borings. The results of these tests are presented in the boring logs. Where applicable, only moisture content was determined from undisturbed or disturbed samples.

Grain Size Distribution/Fines Content: Representative samples were dried, weighed, and soaked in water until individual soil particles were separated (per ASTM D421) and then washed on a No. 200 sieve (ASTM D1140). Where applicable, the portion retained on the No. 200 sieve was dried and then sieved on a U.S. Standard brass sieve set in accordance with ASTM D6913 (sieve).

Sample Location	Description	% Passing # 200 Sieve
HS-4 @ 5 ft	Silty-Clayey Sand	37
I-7 @ 7.5 ft	Clayey Sand	37
I-9 @ 7.5 ft	Clayey Sand	35

Atterberg Limits: The liquid and plastic limits (“Atterberg Limits”) were determined per ASTM D4318 for engineering classification of fine-grained material and presented in the table below. The USCS soil classification indicated in the table below is based on the portion of sample passing the No. 40 sieve and may not necessarily be representative of the entire sample. The plots are provided in this Appendix.

Sample Location	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	USCS Soil Classification
HS-4 @ 5 ft	25	19	6	CL-ML
HS-5 @ 10 ft	24	19	5	CL-ML

APPENDIX C (Cont'd)

Laboratory Test Results

Expansion Index: The expansion potential of selected representative samples was evaluated by the Expansion Index Test per ASTM D4829. The results are presented in the table below.

Sample Location	Expansion Index	Expansion Potential*
HS-5 @ 1-5 ft	0	Very Low

* Per ASTM D4829

Consolidation: Consolidation tests were performed per ASTM D2435. Samples (2.4 inches in diameter and 1 inch in height) were placed in a consolidometer and increasing loads were applied. The samples were allowed to consolidate under “double drainage” and total deformation for each loading step was recorded. The percent consolidation for each load step was recorded as the ratio of the amount of vertical compression to the original sample height. The consolidation pressure curves are provided in this Appendix.

Collapse/Swell Potential: Collapse/swell tests were performed per ASTM D4546-B. Samples (2.4 inches in diameter and 1 inch in height) were placed in a consolidometer and loaded to their approximate in-situ effective stress. The curves are presented in this Appendix.

Soluble Sulfates: The soluble sulfate contents of selected samples were determined by standard geochemical methods (CTM 417). The test results are presented in the table below.

Sample Location	Sulfate Content (%)
HS-5 @ 1-5 ft	< 0.01

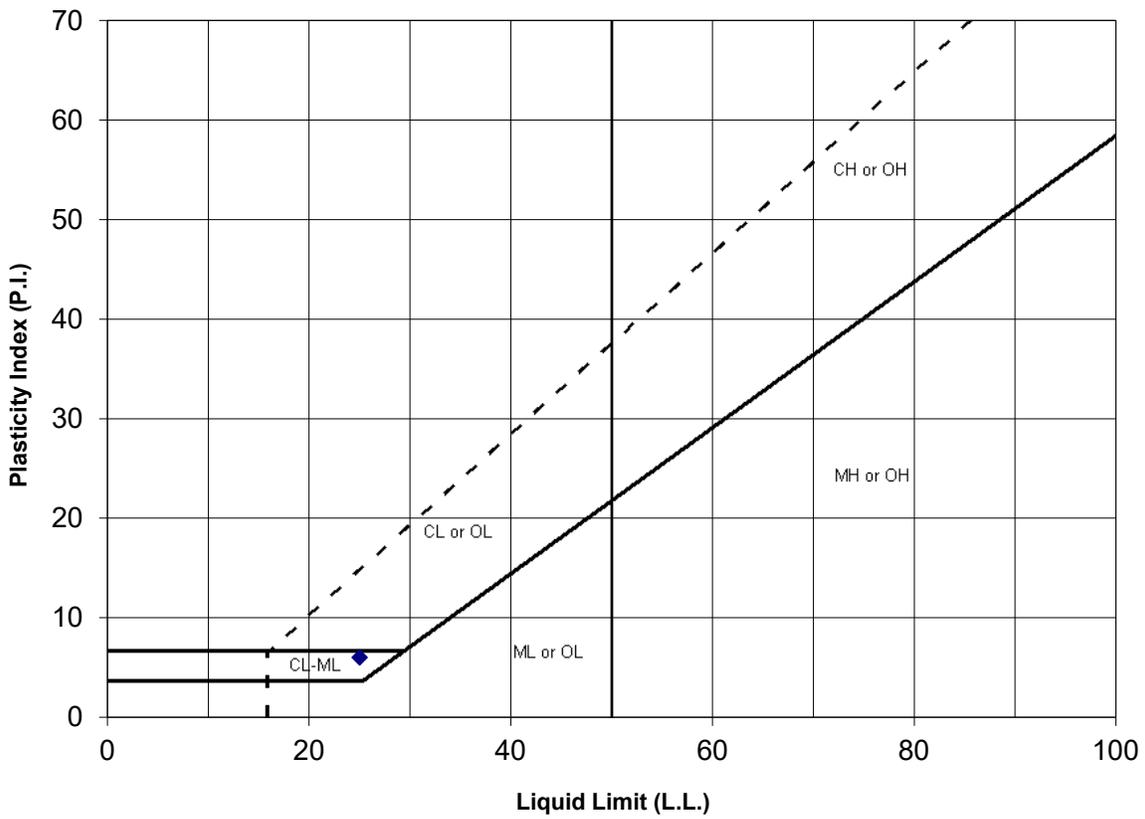
Chloride Content: Chloride content was tested per CTM 422. The results are presented below.

Sample Location	Chloride Content (ppm)
HS-5 @ 1-5 ft	83

Minimum Resistivity and pH Tests: Minimum resistivity and pH tests were performed in general accordance with CTM 643 and standard geochemical methods. The results are presented in the table below.

Sample Location	pH	Minimum Resistivity (ohms-cm)
HS-5 @ 1-5 ft	7.7	4,050

PLASTICITY CHART - CLASSIFICATION OF FINE-GRAINED SOILS



Symbol	Location.:	Sample No.:	Depth (ft)	Passing No. 200 Sieve (%)	Liquid Limit (%) LL	Plastic Limit (%) PL	Plasticity Index (%) PI	USCS
◆	HS-4	SPT-1	5	37%	25	19	6	CL-ML



ATTERBERG LIMITS
(ASTM D 4318)

Project Number: 20093-01

Date: Jul-20

Rider St. - Perris

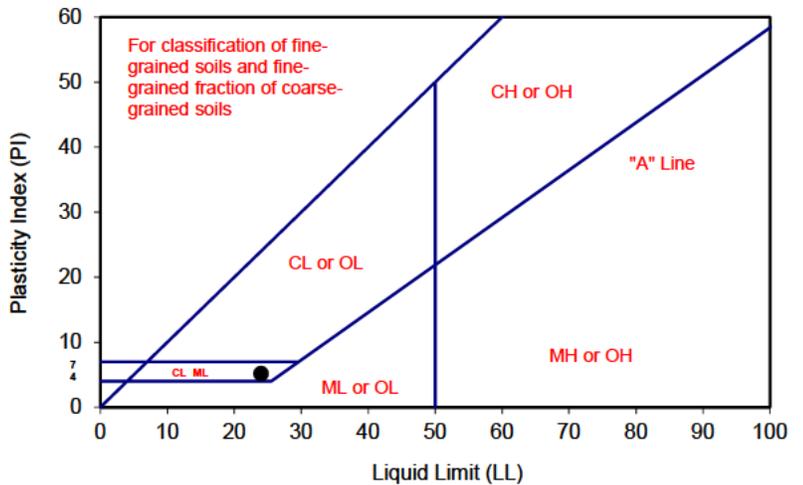
ATTERBERG LIMITS

ASTM D 4318

Project Name: <u>Rider St. Perris</u>	Tested By: <u>Y. Nguyen</u>	Date: <u>07/09/20</u>
Project No. : <u>20093-01</u>	Input By: <u>Y. Nguyen</u>	Date: <u>07/20/20</u>
Boring No.: <u>HS-5</u>	Checked By: <u>A. Santos</u>	
Sample No.: <u>R-2</u>	Depth (ft.) <u>10.0</u>	
Soil Identification: <u>Olive brown silty clay with sand (CL-ML)s</u>		

TEST NO.	PLASTIC LIMIT		LIQUID LIMIT			
	1	2	1	2	3	4
Number of Blows [N]			27	21	17	
Wet Wt. of Soil + Cont. (g)	8.80	8.96	21.06	19.89	20.46	
Dry Wt. of Soil + Cont. (g)	7.57	7.70	17.23	16.22	16.59	
Wt. of Container (g)	1.01	1.04	0.99	1.07	1.10	
Moisture Content (%) [Wn]	18.75	18.92	23.58	24.22	24.98	

Liquid Limit	24
Plastic Limit	19
Plasticity Index	5
Classification	CL-ML



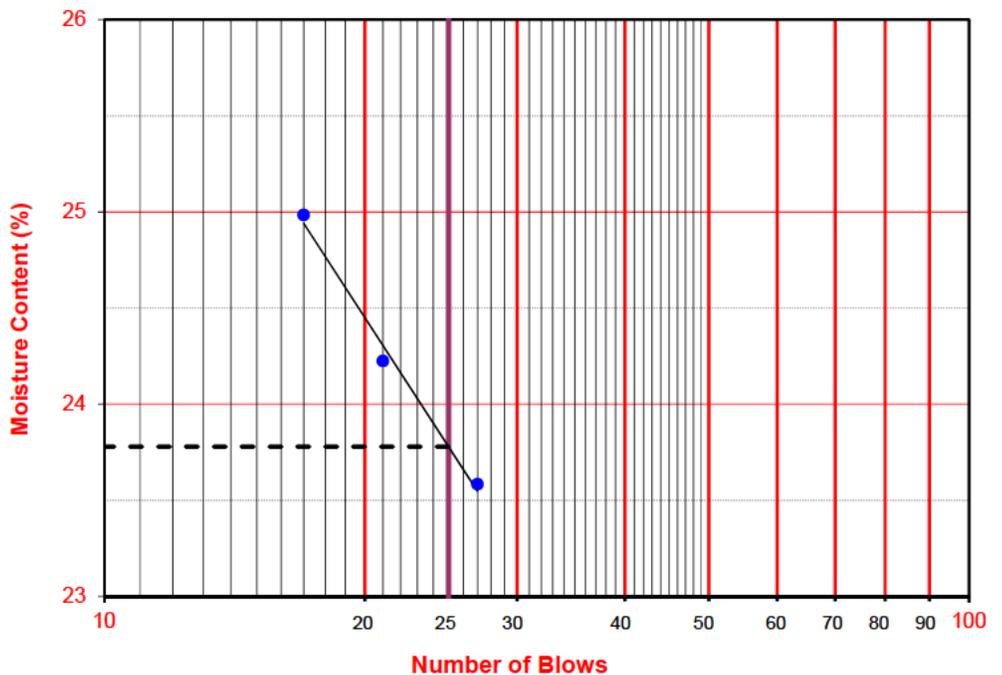
PI at "A" - Line = $0.73(LL-20)$ = 2.92

One - Point Liquid Limit Calculation

$$LL = Wn(N/25)^{0.121}$$

PROCEDURES USED

- Wet Preparation
Multipoint - Wet
- Dry Preparation
Multipoint - Dry
- Procedure A
Multipoint Test
- Procedure B
One-point Test



Location	Sample No.	Depth (ft)	Molding Moisture Content (%)	Initial Dry Density (pcf)	Final Moisture Content (%)	Expansion Index	Expansion Classification ¹
HS-5	B-1	1-5	6.0	122.4	11.0	0	Very Low

¹ Per ASTM D4829

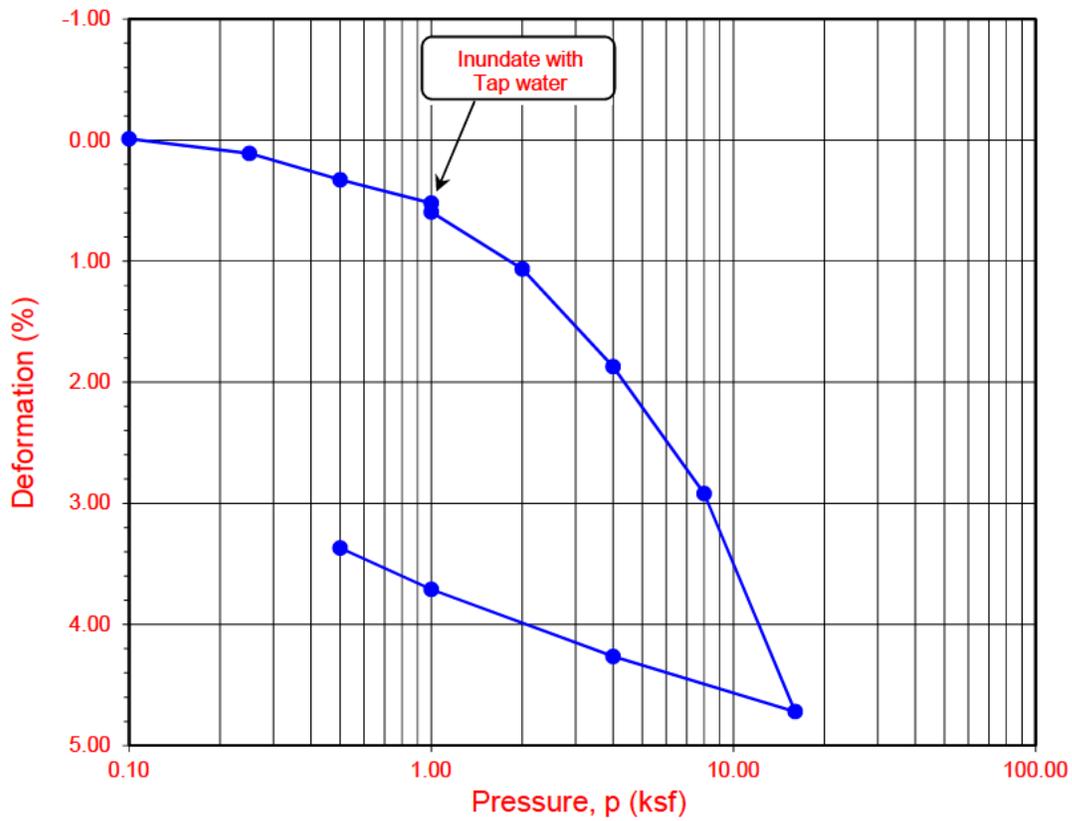
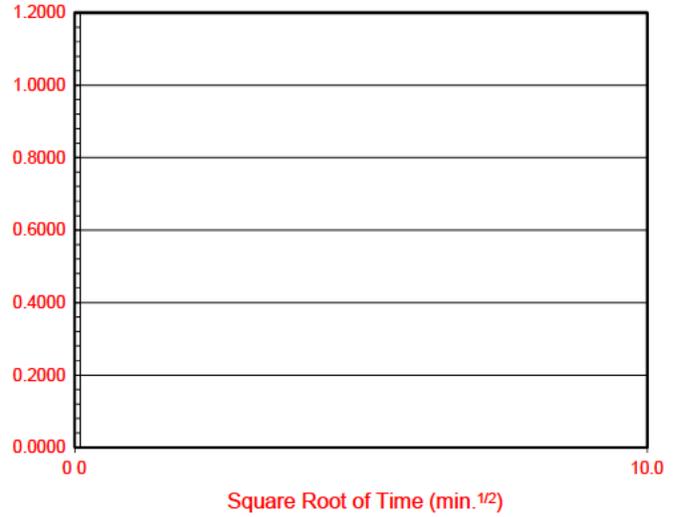
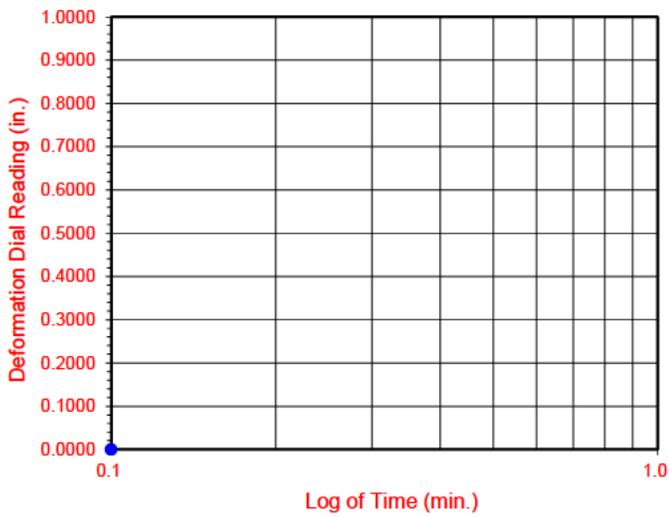


EXPANSION INDEX
(ASTM D 4829)

Project Number: 20093-01
Date: Jul-20

Rider St. Perris

Time Readings



Boring No.	Sample No.	Depth (ft.)	Moisture Content (%)		Dry Density (pcf)		Void Ratio		Degree of Saturation (%)	
			Initial	Final	Initial	Final	Initial	Final	Initial	Final
HS-4	R-2	7.5	4.6	14.4	117.1	120.9	0.440	0.391	28	99

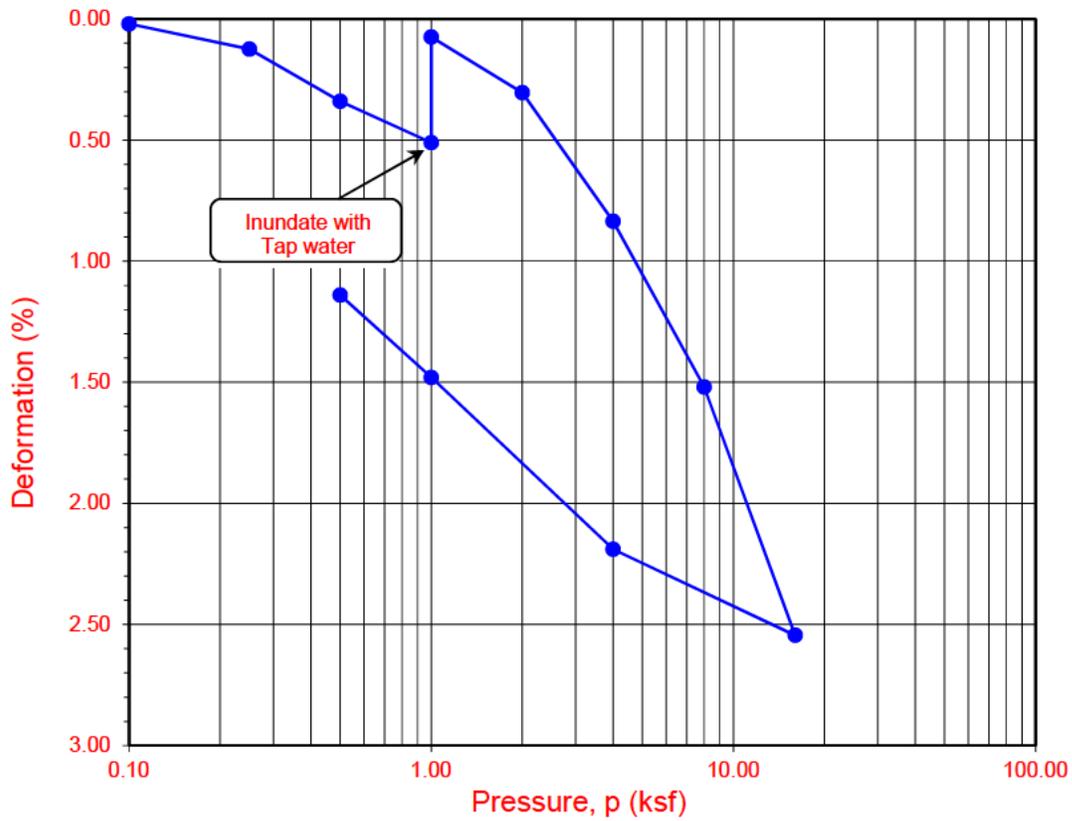
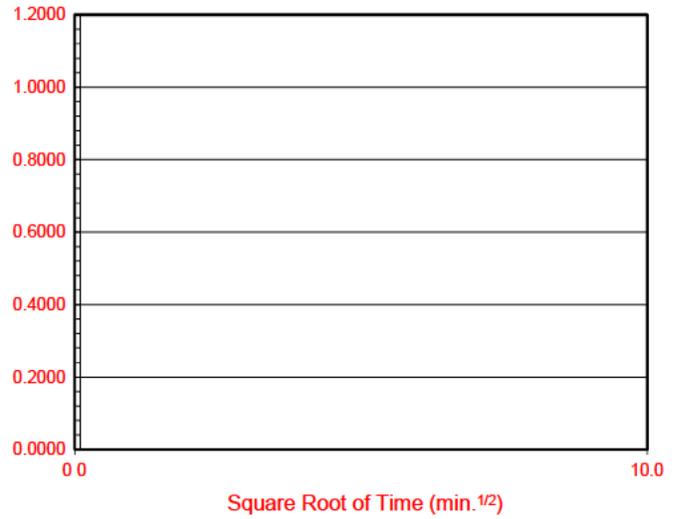
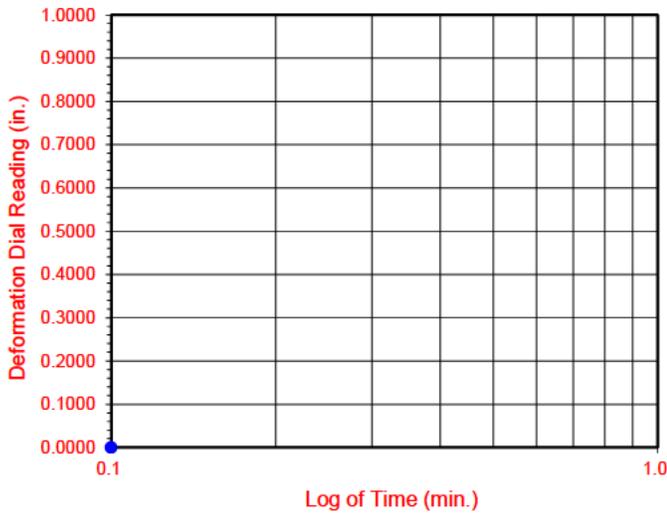
Soil Identification: Olive brown silty, clayey sand (SC-SM)

**ONE-DIMENSIONAL CONSOLIDATION
PROPERTIES of SOILS
ASTM D 2435**

Project No.: 20093-01

Rider St. Perris

Time Readings



Boring No.	Sample No.	Depth (ft.)	Moisture Content (%)		Dry Density (pcf)		Void Ratio		Degree of Saturation (%)	
			Initial	Final	Initial	Final	Initial	Final	Initial	Final
HS-5	R-2	10.0	4.8	13.8	124.7	123.9	0.352	0.336	37	103

Soil Identification: Olive brown silty clay with sand (CL-ML)_s

**ONE-DIMENSIONAL CONSOLIDATION
PROPERTIES of SOILS
ASTM D 2435**

Project No.: 20093-01

Rider St. Perris

ONE-DIMENSIONAL SWELL OR SETTLEMENT POTENTIAL OF COHESIVE SOILS ASTM D 4546

Project Name: Rider St. Perris
 Project No.: 20093-01
 Boring No.: I-6
 Sample No.: R-2
 Sample Description: Light olive brown lean clay with sand (CL)s

Tested By: G. Bathala Date: 07/10/20
 Checked By: A. Santos Date: 07/20/20
 Sample Type: Ring
 Depth (ft.): 7.5

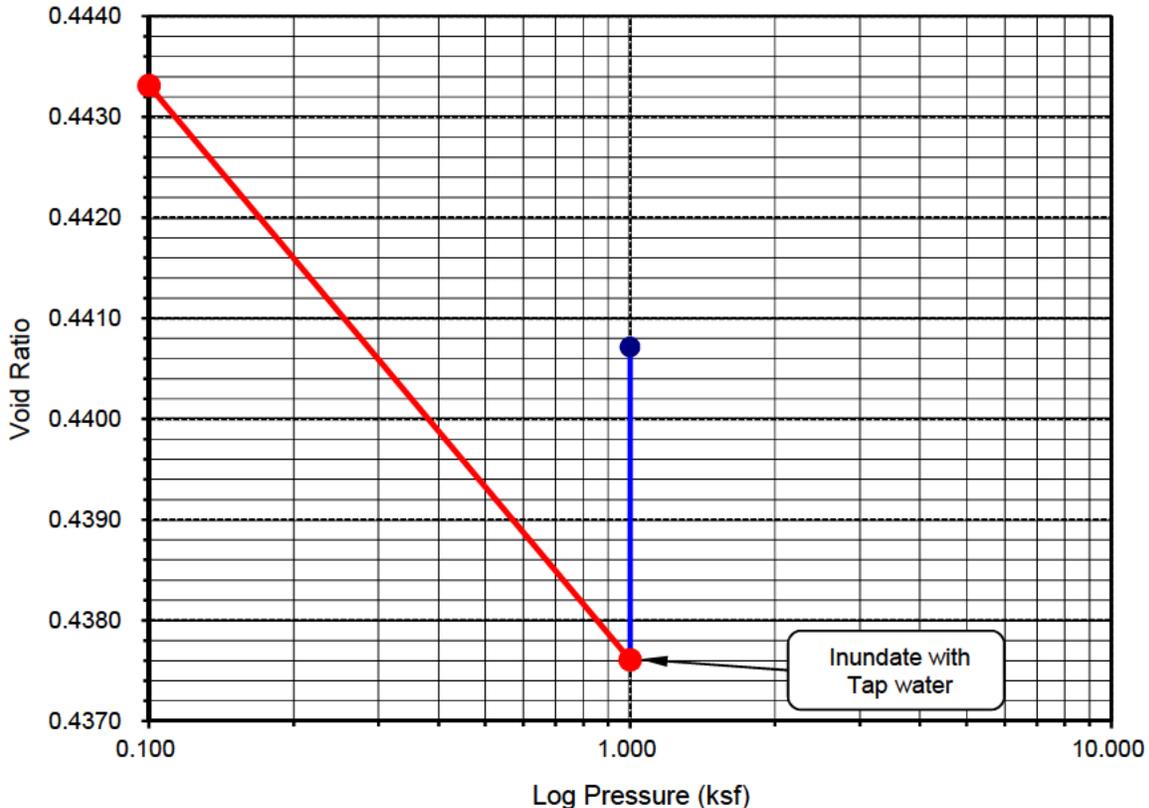
Initial Dry Density (pcf):	116.8
Initial Moisture (%):	8.47
Initial Length (in.):	1.0000
Initial Dial Reading:	0.2622
Diameter(in):	2.415

Final Dry Density (pcf):	117.0
Final Moisture (%):	14.4
Initial Void Ratio:	0.4437
Specific Gravity(assumed):	2.70
Initial Saturation (%):	51.5

Pressure (p) (ksf)	Final Reading (in)	Apparent Thickness (in)	Load Compliance (%)	Swell (+) Settlement (-) % of Sample Thickness	Void Ratio	Corrected Deformation (%)
0.100	0.2619	0.9997	0.00	-0.03	0.4433	-0.03
1.000	0.2562	0.9940	0.18	-0.61	0.4376	-0.43
H2O	0.2583	0.9961	0.18	-0.39	0.4407	-0.21

Percent Swell (+) / Settlement (-) After Inundation = 0.22

Void Ratio - Log Pressure Curve



ONE-DIMENSIONAL SWELL OR SETTLEMENT POTENTIAL OF COHESIVE SOILS ASTM D 4546

Project Name: Rider St. Perris
 Project No.: 20093-01
 Boring No.: I-8
 Sample No.: R-2
 Sample Description: Light olive brown silty sand (SM)

Tested By: G. Bathala Date: 07/10/20
 Checked By: A. Santos Date: 07/20/20
 Sample Type: Ring
 Depth (ft.): 7.5

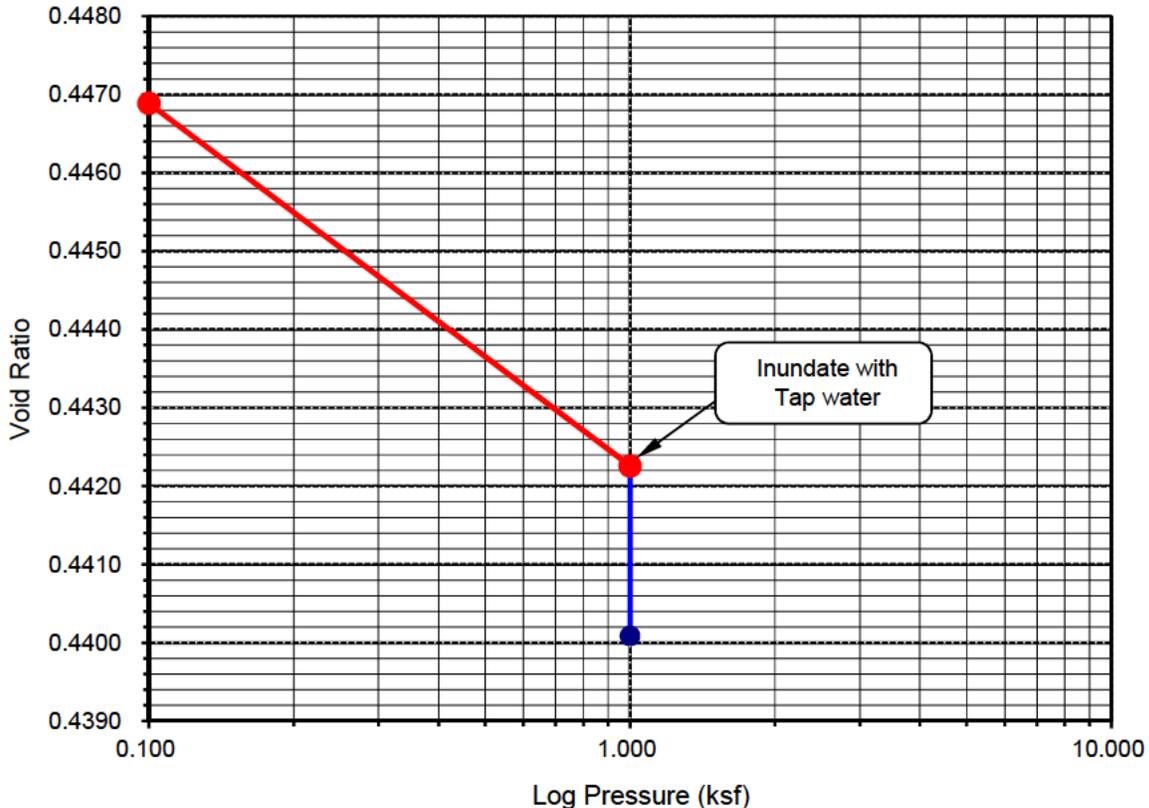
Initial Dry Density (pcf):	116.5
Initial Moisture (%):	2.62
Initial Length (in.):	1.0000
Initial Dial Reading:	0.2997
Diameter(in):	2.415

Final Dry Density (pcf):	117.0
Final Moisture (%):	14.0
Initial Void Ratio:	0.4470
Specific Gravity(assumed):	2.70
Initial Saturation (%):	15.8

Pressure (p) (ksf)	Final Reading (in)	Apparent Thickness (in)	Load Compliance (%)	Swell (+) Settlement (-) % of Sample Thickness	Void Ratio	Corrected Deformation (%)
0.100	0.2996	0.9999	0.00	-0.01	0.4469	-0.01
1.000	0.2957	0.9960	0.07	-0.40	0.4423	-0.33
H2O	0.2942	0.9945	0.07	-0.55	0.4401	-0.48

Percent Swell (+) / Settlement (-) After Inundation = -0.15

Void Ratio - Log Pressure Curve



**TESTS for SULFATE CONTENT
CHLORIDE CONTENT and pH of SOILS**

Project Name: Rider St. Perris Tested By : G. Berdy Date: 07/02/20
 Project No. : 20093-01 Checked By: A. Santos Date: 07/20/20

Boring No.	HS-5			
Sample No.	B-1			
Sample Depth (ft)	1-5			
Soil Identification:	Olive brown SM			
Wet Weight of Soil + Container (g)	173.13			
Dry Weight of Soil + Container (g)	169.43			
Weight of Container (g)	56.96			
Moisture Content (%)	3.29			
Weight of Soaked Soil (g)	100.06			

SULFATE CONTENT, DOT California Test 417, Part II

Beaker No.	307			
Crucible No.	21			
Furnace Temperature (°C)	860			
Time In / Time Out	7:00/7:45			
Duration of Combustion (min)	45			
Wt. of Crucible + Residue (g)	22.1643			
Wt. of Crucible (g)	22.1630			
Wt. of Residue (g) (A)	0.0013			
PPM of Sulfate (A) x 41150	53.50			
PPM of Sulfate, Dry Weight Basis	55			

CHLORIDE CONTENT, DOT California Test 422

ml of Extract For Titration (B)	15			
ml of AgNO ₃ Soln. Used in Titration (C)	0.6			
PPM of Chloride (C -0.2) * 100 * 30 / B	80			
PPM of Chloride, Dry Wt. Basis	83			

pH TEST, DOT California Test 643

pH Value	7.70			
Temperature °C	21.6			

SOIL RESISTIVITY TEST

DOT CA TEST 643

Project Name: Rider St. Perris
 Project No. : 20093-01
 Boring No.: HS-5
 Sample No. : B-1

Tested By : M. Manzano Date: 07/07/20
 Checked By: A. Santos Date: 07/20/20
 Depth (ft.) : 1-5

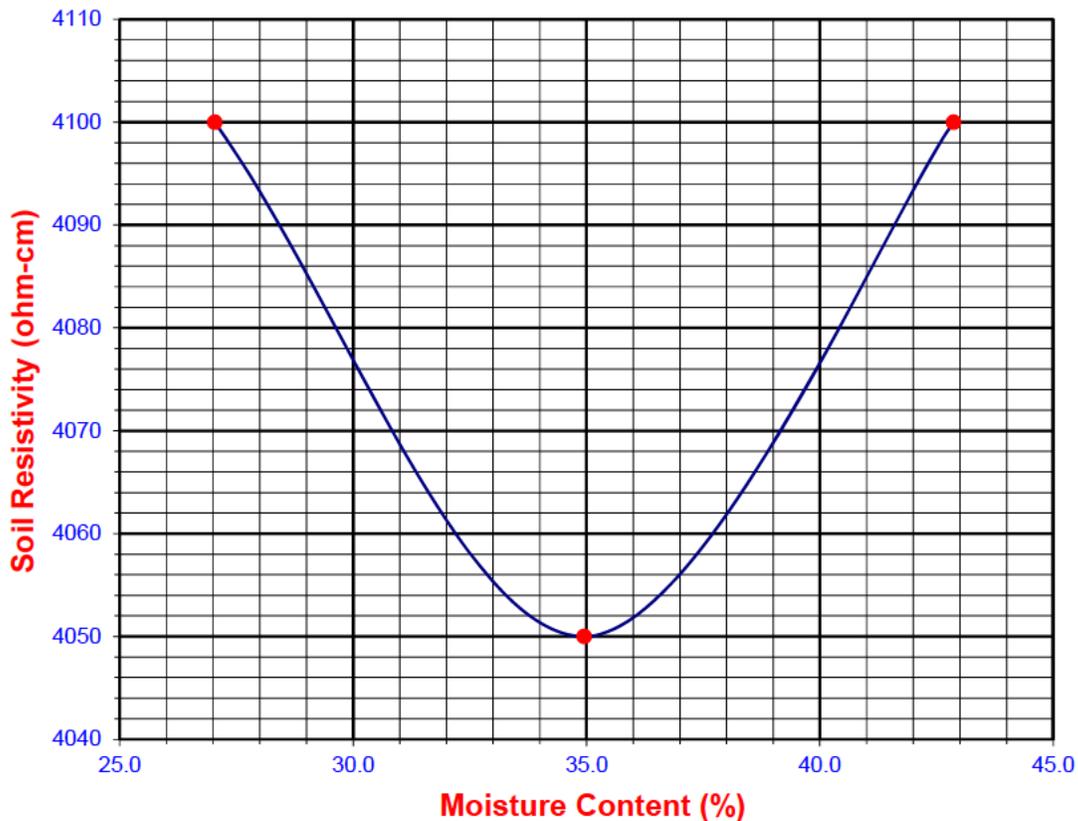
Soil Identification:* Olive brown SM

*California Test 643 requires soil specimens to consist only of portions of samples passing through the No. 8 US Standard Sieve before resistivity testing. Therefore, this test method may not be representative for coarser materials.

Specimen No.	Water Added (ml) (Wa)	Adjusted Moisture Content (MC)	Resistance Reading (ohm)	Soil Resistivity (ohm-cm)
1	30	27.03	4100	4100
2	40	34.95	4050	4050
3	50	42.86	4100	4100
4				
5				

Moisture Content (%) (Mci)	3.29
Wet Wt. of Soil + Cont. (g)	173.13
Dry Wt. of Soil + Cont. (g)	169.43
Wt. of Container (g)	56.96
Container No.	
Initial Soil Wt. (g) (Wt)	130.50
Box Constant	1.000
$MC = (((1 + Mci / 100) \times (Wa / Wt + 1)) - 1) \times 100$	

Min. Resistivity (ohm-cm)	Moisture Content (%)	Sulfate Content (ppm)	Chloride Content (ppm)	Soil pH	
				pH	Temp. (°C)
DOT CA Test 643		DOT CA Test 417 Part II	DOT CA Test 422	DOT CA Test 643	
4050	35.0	55	83	7.70	21.6



From Lawson, 2007

Appendix C
Laboratory Test Results

APPENDIX C

Laboratory Testing Procedures and Test Results

The laboratory testing program was directed towards providing quantitative data relating to the relevant engineering properties of the soils. Samples considered representative of site conditions were tested in general accordance with American Society for Testing and Materials (ASTM) procedure and/or California Test Methods (CTM), where applicable. The following summary is a brief outline of the test type and a table summarizing the test results.

Moisture and Density Determination Tests: Moisture content (ASTM D2216) and dry density determinations (ASTM D2937) were performed on relatively undisturbed samples obtained from the test borings and/or trenches. The results of these tests are presented in the boring logs.

Expansion Index: The expansion potential of selected samples was evaluated by the Expansion Index Test, ASTM D4829.

Grain Size Distribution: Representative samples were dried, weighed, and soaked in water until individual soil particles were separated (per ASTM D421) and then washed on a No. 200 sieve. The portion retained on the No. 200 sieve was dried and then sieved on a U.S. Standard brass sieve set in accordance with ASTM D422 (CTM 202). A hydrometer analysis was done to determine the distribution of soil particles passing the No. 200 sieve for one sample. The plots are provided in this Appendix.

Maximum Density (Laboratory Compaction) Tests: The maximum dry density and optimum moisture content of typical materials were determined in accordance with ASTM D1557. The results of these tests are presented on a plot provided in this Appendix.

Consolidation: Consolidation tests were performed on selected, relatively undisturbed ring samples (Modified ASTM Test Method D2435). Samples (2.42 inches in diameter and 1 inch in height) were placed in a consolidometer and increasing loads were applied. The samples were allowed to consolidate under “double drainage” and total deformation for each loading step was recorded. The percent consolidation for each load step was recorded as the ratio of the amount of vertical compression to the original sample height. The consolidation curve is presented in this Appendix.

Collapse/Swell: Collapse/swell tests were performed on selected, driven ring samples. Samples were placed in a consolidometer and incrementally a load up to near the in-situ overburden pressure was applied. Water was then added to the sample (inundated) and the percent hydro-consolidation or swell under the applied load was measured. The percent for the load was calculated as the ratio of the amount of vertical deformation to the original sample height. The plots are provided in this appendix.

Soluble Sulfates: The soluble sulfate contents of selected samples were determined by standard geochemical methods (CTM 417). The test results are presented in this appendix.

Chloride Content: Chloride content was tested in accordance with Caltrans Test Method (CTM) 422. The results are presented in this appendix.

Minimum Resistivity and pH Tests: Minimum resistivity and pH tests were performed in general accordance with CTM 643 and standard geochemical methods. The electrical resistivity of a soil is a measure of its

APPENDIX C

Laboratory Testing Procedures and Test Results

resistance to the flow of electrical current. As a result, the soil's resistivity decreases and corrosivity increases. The results are presented in this appendix.

R-value Test: R-value test was performed in general accordance with California Test Method 301.

Location	Sample No.	Depth (ft)	Molding Moisture Content (%)	Initial Dry Density (pcf)	Final Moisture Content (%)	Expansion Index	Expansion Classification ¹
TP-1	B-1	10	8.4	113.7	15.4	0	Very Low
TP-2	B-1	1	8.7	114.2	13.5	0	Very Low

¹ 1997 U.B.C. / 2001 C.B.C. Table 18-I-B

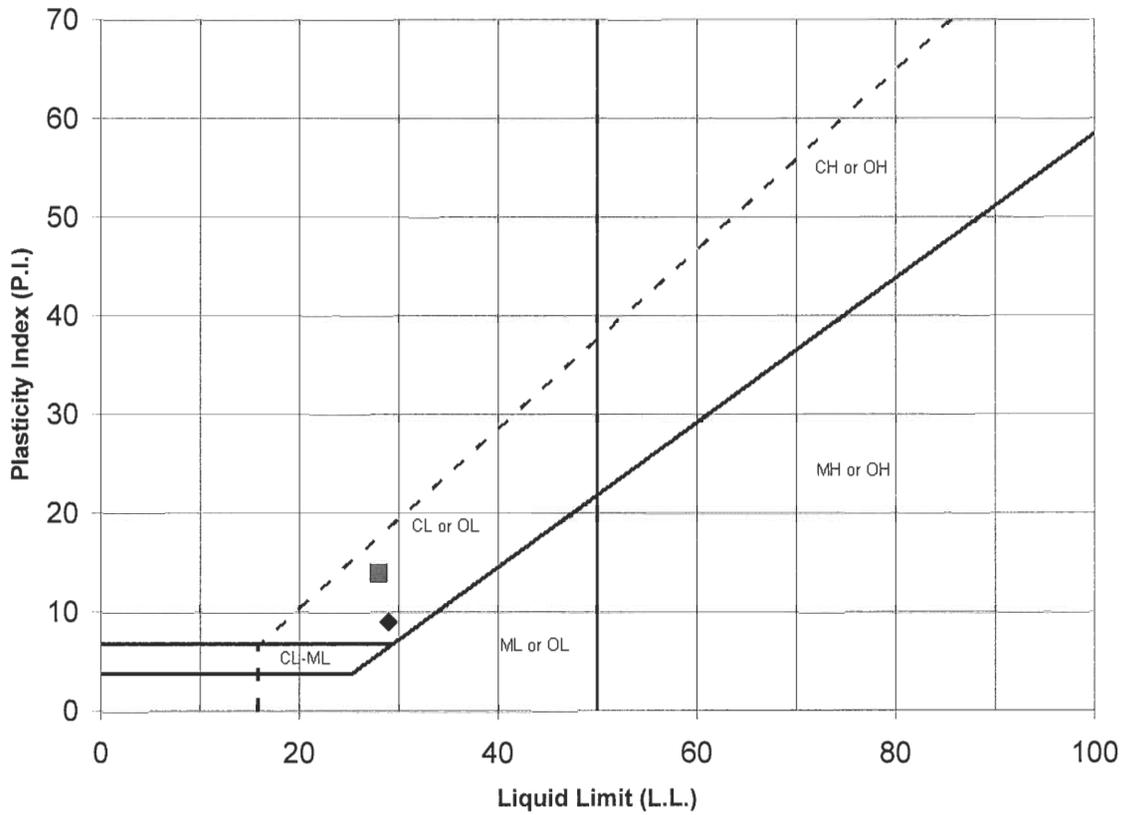
LGC

EXPANSION INDEX
(ASTM D 4829)

Project Number: 071068-01
Date: Jun-07

Perris Rider Center

PLASTICITY CHART - CLASSIFICATION OF FINE-GRAINED SOILS



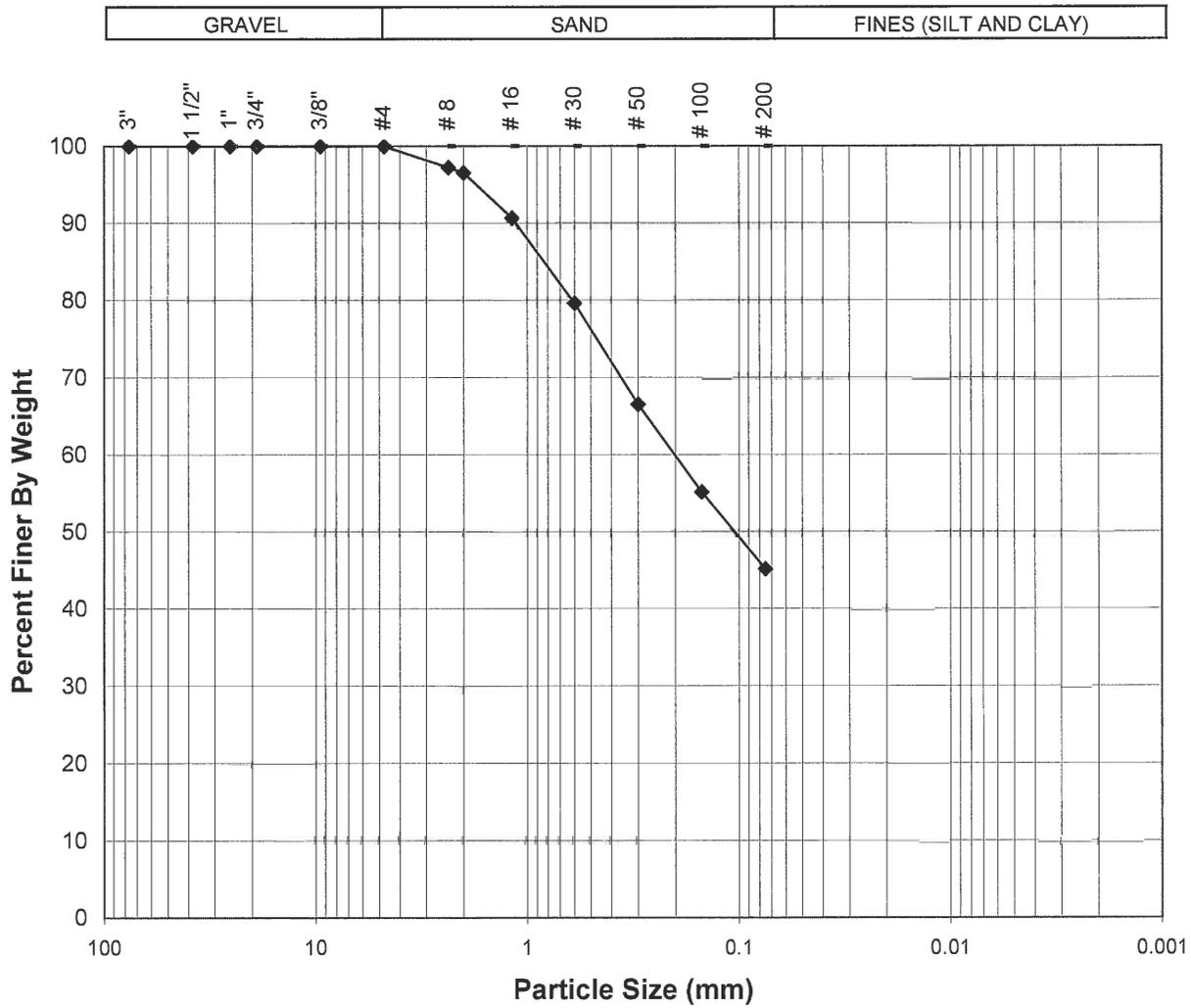
Symbol	Location.:	Sample No.:	Depth (ft)	Passing No. 200 Sieve (%)	Liquid Limit (%) LL	Plastic Limit (%) PL	Plasticity Index (%) PI	USCS
◆	LGC-HS-2	S-2	7.5	40	29	21	9	CL
■	LGC-HS-3	S-2	10	46	28	14	14	CL

LGC

ATTERBERG LIMITS
(ASTM D 4318)

Project Number: 071068-01
Date: Jun-07

Perris / Rider Center



Location:	Sample No.:	Depth (ft.)	Soil Type	Gravel (%)	Sand (%)	Fines (%)
LGC-HS-1	S-2	10	SC	0	55	45

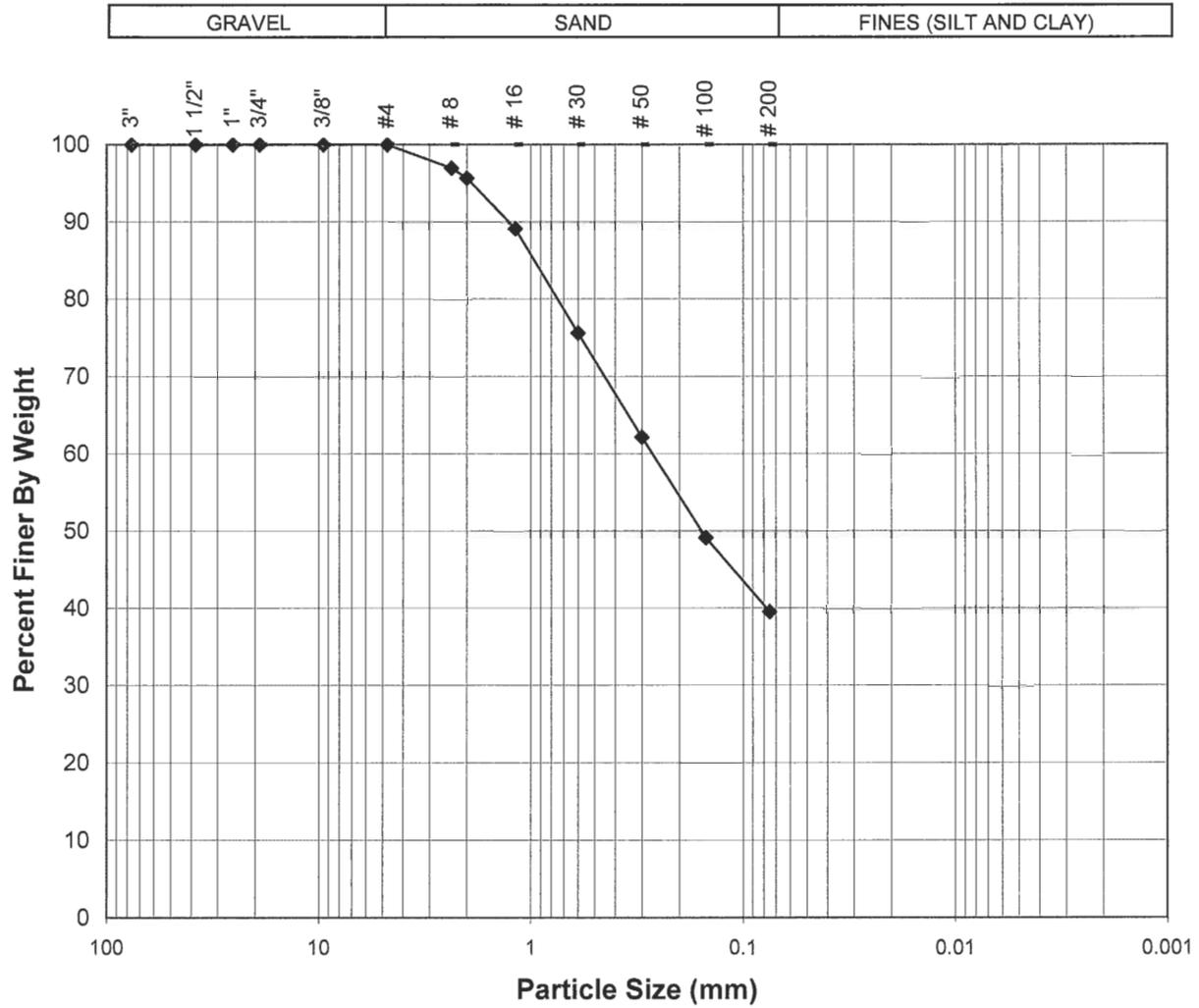
Sample Description: Clayey Sand



PARTICLE SIZE ANALYSIS
(ASTM D 422)

Project Number: 071068-01
Date: Jun-07

Perris Rider Center



Location:	Sample No.:	Depth (ft.)	Soil Type	Gravel (%)	Sand (%)	Fines (%)
LGC-HS-2	S-2	7.5	SC	0	60	40

Sample Description: Clayey Sand

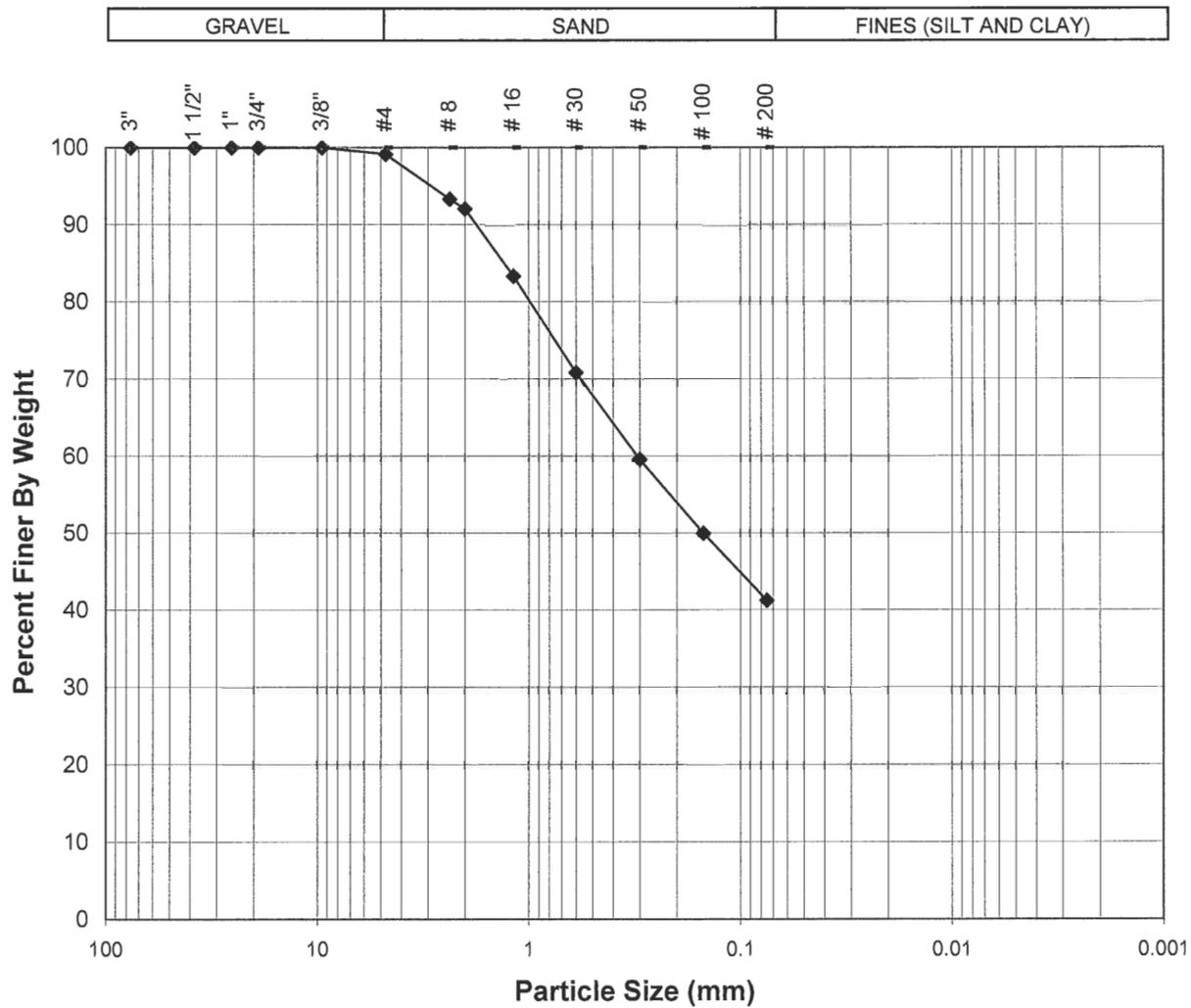
LGC

PARTICLE SIZE ANALYSIS
(ASTM D 422)

Project Number: 071068-01

Date: Jun-07

Perris Rider Center



Location:	Sample No.:	Depth (ft.)	Soil Type	Gravel (%)	Sand (%)	Fines (%)
LGC-HS-2	S-4	25	SC	1	58	41

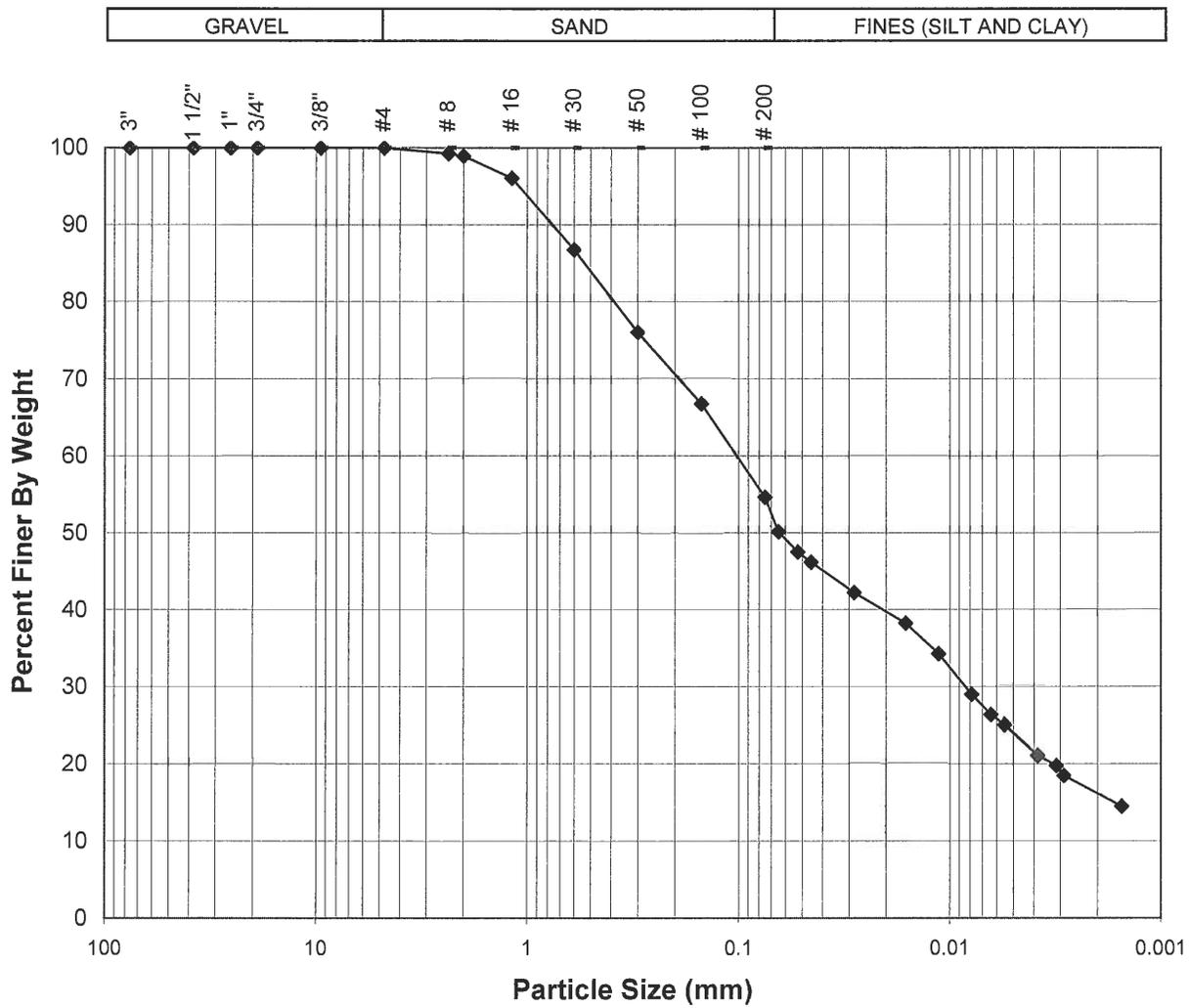
Sample Description: Clayey Sand

LGC

PARTICLE SIZE ANALYSIS
(ASTM D 422)

Project Number: 071068-01
Date: Jun-07

Perris Rider Center



Location:	Sample No.:	Depth (ft.)	Soil Type	Gravel (%)	Sand (%)	Fines (%)
LGC-HS-2	S-5	40	CL	0	45	55

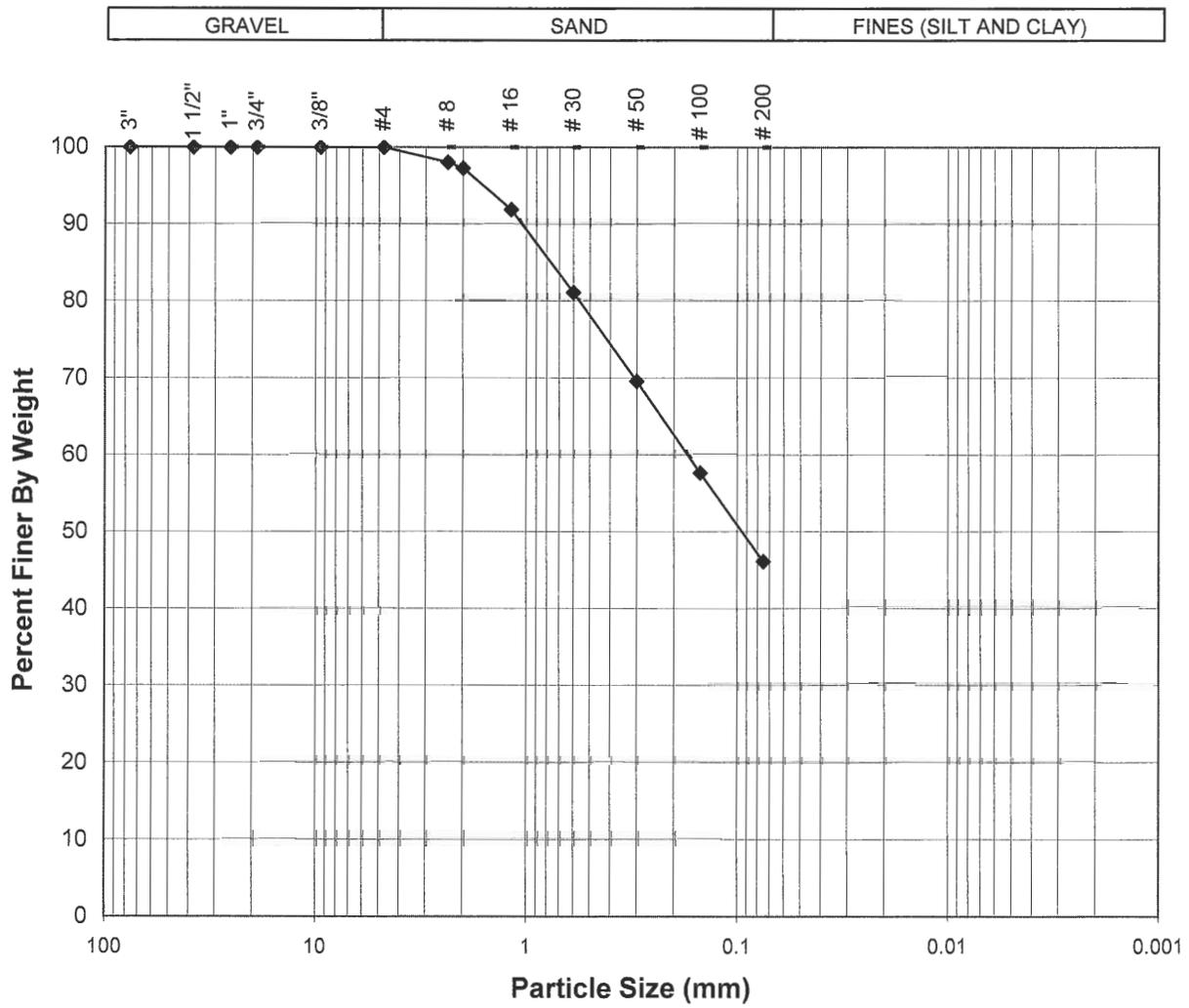
Sample Description: Sandy Clay



PARTICLE SIZE ANALYSIS
(ASTM D 422)

Project Number: 071068-01
Date: Jun-07

Perris Rider Center



Location:	Sample No.:	Depth (ft.)	Soil Type	Gravel (%)	Sand (%)	Fines (%)
LGC-HS-3	S-2	10	SC	0	54	46

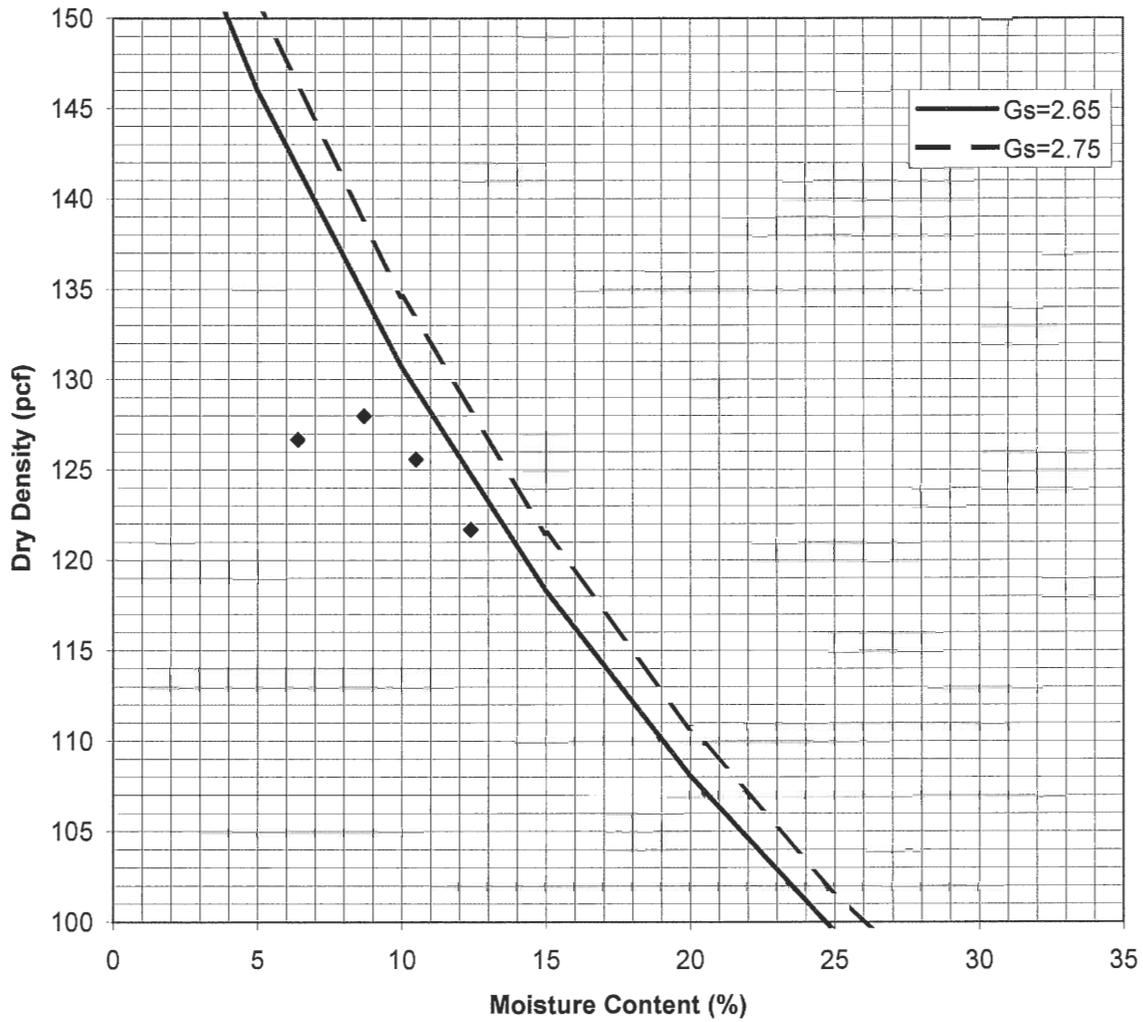
Sample Description: Clayey Sand



PARTICLE SIZE ANALYSIS
(ASTM D 422)

Project Number: 071068-01
Date: Jun-07

Perris Rider Center



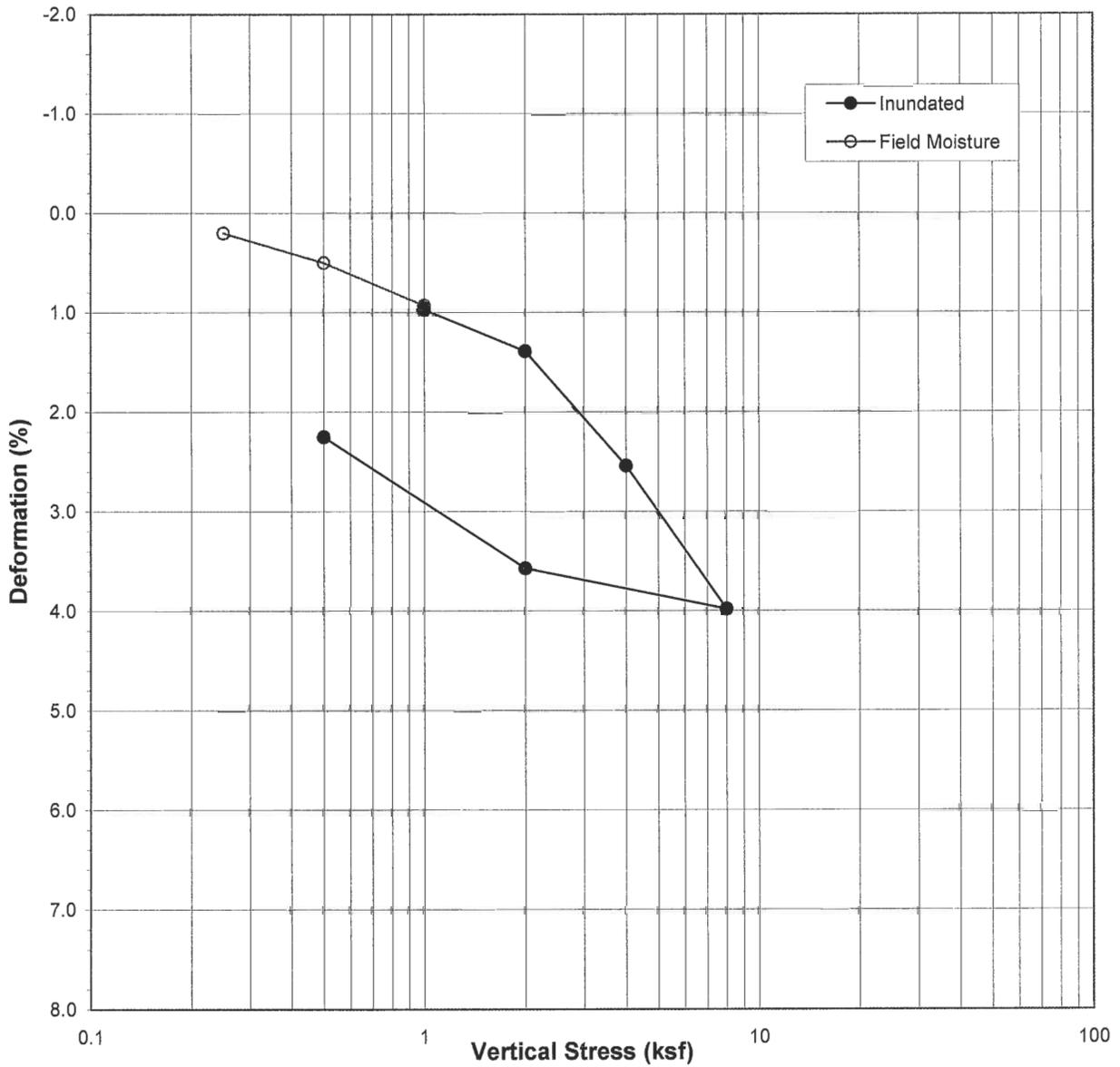
Location:	Sample No.:	Depth (ft)	Sample Description	Maximum Dry Density (pcf)	Optimum Moisture Content (%)
TP-3	B-1	1	Brown Silty Sand	128.5	9.5

LGC

LABORATORY COMPACTION
(ASTM D 1557)

Project Number: 071068-01
Date: Jun-07

Perris / Rider Center



Location:	Sample No.:	Depth (ft)	Dry Density (pcf)	Initial Moisture Content (%)	Final Moisture Content (%)
LGC-HS-2	R-2	10	110.8	16.3	20.5

Sample Description: Silty Sand

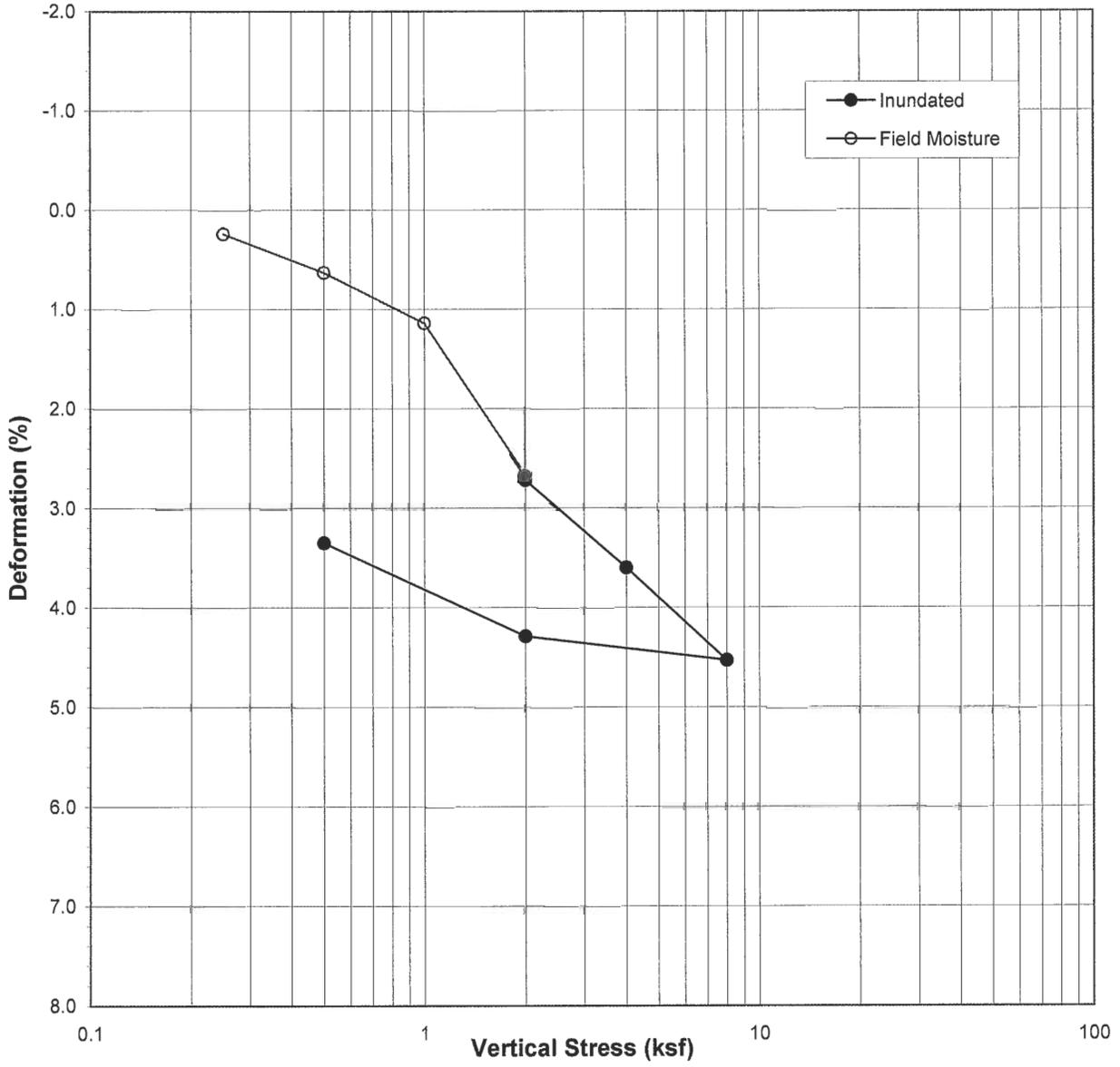
LGC

ONE-DIMENSIONAL CONSOLIDATION

Project Number: 071068-01

Date: Jun-07

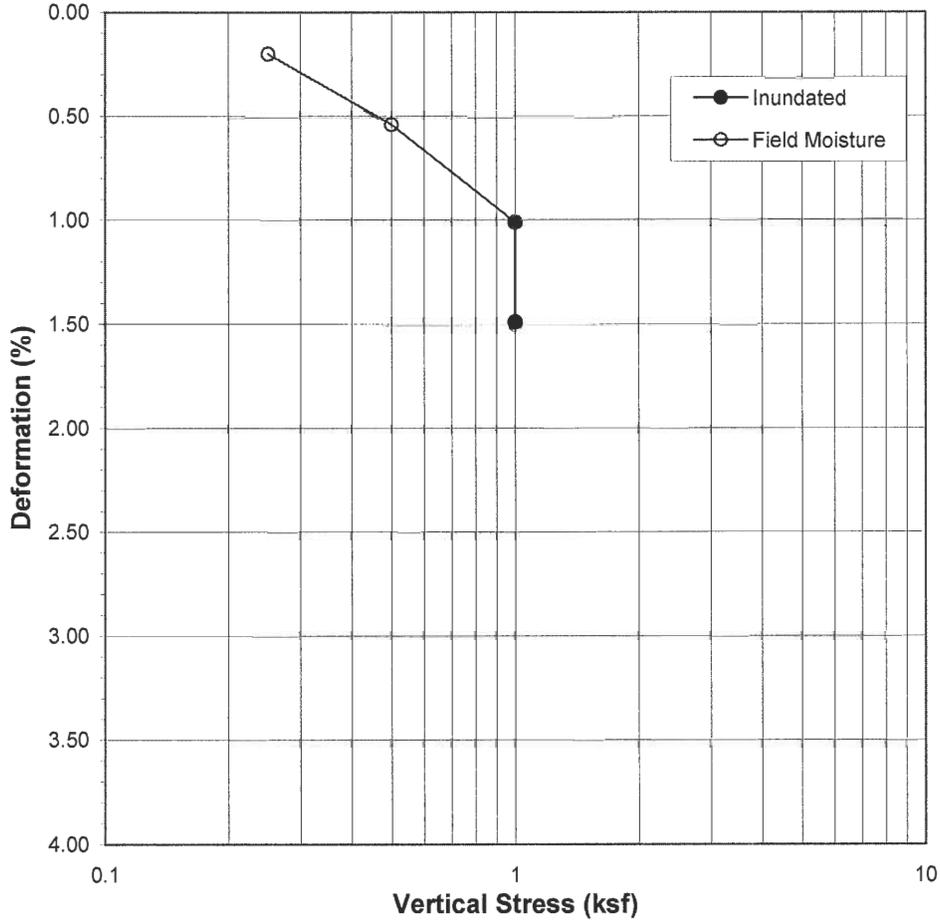
Perris Rider Center



Location:	Sample No.:	Depth (ft)	Dry Density (pcf)	Initial Moisture Content (%)	Final Moisture Content (%)
LGC-HS-2	R-3	20	115.8	14.5	16.5

Sample Description: Clayey Silty Sand

LGC	ONE-DIMENSIONAL CONSOLIDATION	Project Number: 071068-01 Date: Jul-07
		Perris Rider Center



Percent Swell / Settlement After Inundation = 0.48

Location:	Sample No.:	Depth (ft)	Degree of Saturation (%)	Dry Density (pcf)	Initial Moisture Content (%)	Final Moisture Content (%)
LGC-HS-1	R-2	7.5	61	124.7	7.9	11.0

Sample Description: Silty Sand

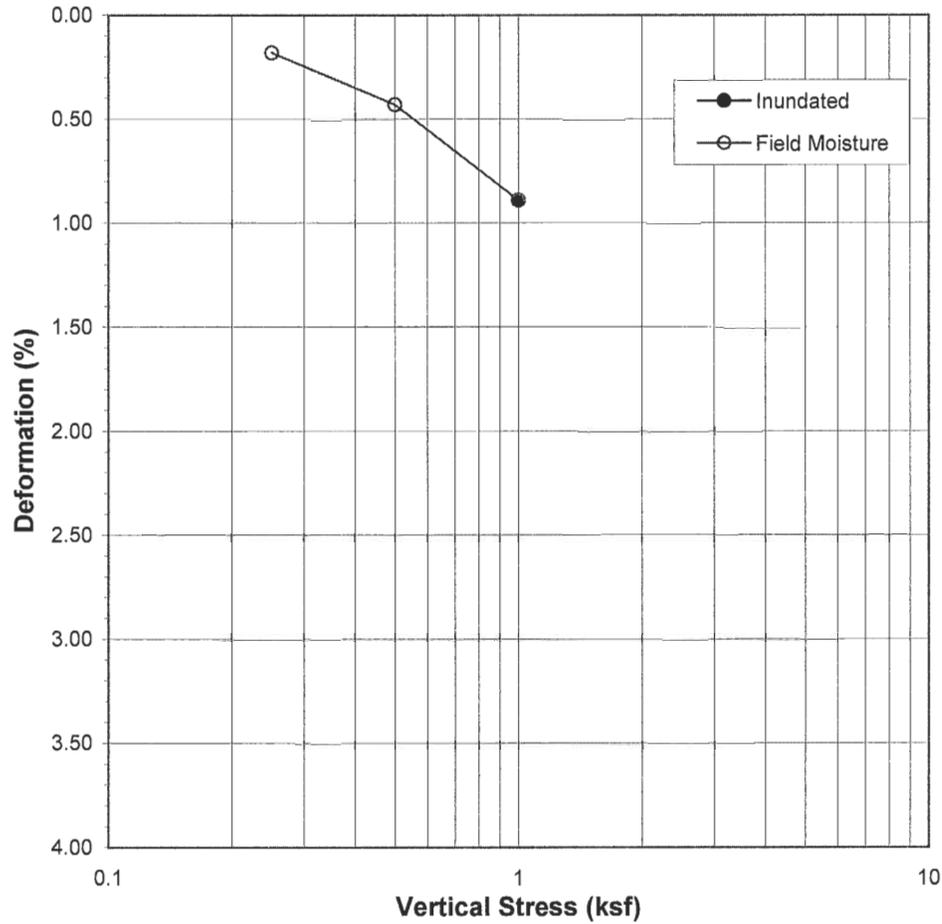
LGC

**ONE-DIMENSIONAL SETTLEMENT
/ SWELL**

Project Number: 071068-01

Date: Jun-07

Perris Rider Center



Percent Swell / Settlement After Inundation =

Location:	Sample No.:	Depth (ft)	Degree of Saturation (%)	Dry Density (pcf)	Initial Moisture Content (%)	Final Moisture Content (%)
LGC-HS-3	R-2	7.5	54	129.3	6.1	13.2

Sample Description: Silty Sand

LGC

**ONE-DIMENSIONAL SETTLEMENT
/ SWELL**

Project Number: 071068-01

Date: Jun-07

Perris Rider Center

LGC ELECTROCHEMICALS

(CTM 643, 422, 417)

071068-01
PERRIS-RIDER CENTER

Sample No.	Lot / Boring No(s)	Depth	Description	Minimum Resistivity (Ω cm)	pH	Chloride (ppm)	Sulfate (mg/kg)	Specific Gravity
B-1	TP-2	0-1	SM	1590	7.0	128	0.012	

NAVFAC / UBC	Seidom/Negligible:	$\Omega > 10,000$			mg/kg < 0.1	
	Mild:	5,000 - 10,000	pH > 6.5			
	Moderate:	2,000 - 5,000	6.0 - 6.5	ppm < 500	0.1 - 0.2	
	High/Severe:	1,000 - 2,000	4.5 - 6.0	ppm > 500	0.2 - 2.0	
Potentials	Very High/Severe:	$\Omega < 1,000$	pH < 4.5		mg/kg > 2.0	

R-VALUE TEST RESULTS

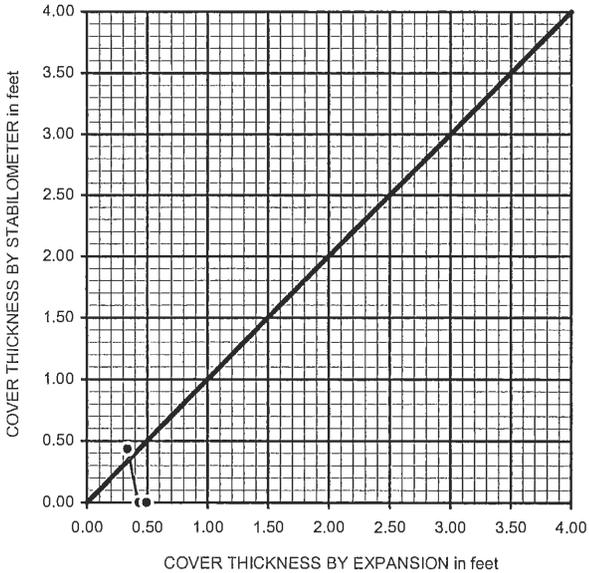
PROJECT NAME: Perris / Rider Center
 SAMPLE NUMBER: TP-1, B-1 @ 10 & TP-3, B-1 @ 0-1
 SAMPLE DESCRIPTION: SM/(SP-SM)

PROJECT NUMBER: 071068-01
 SAMPLE LOCATION: Combined sample
 TECHNICIAN: SCF
 DATE COMPLETED 6/25/2007

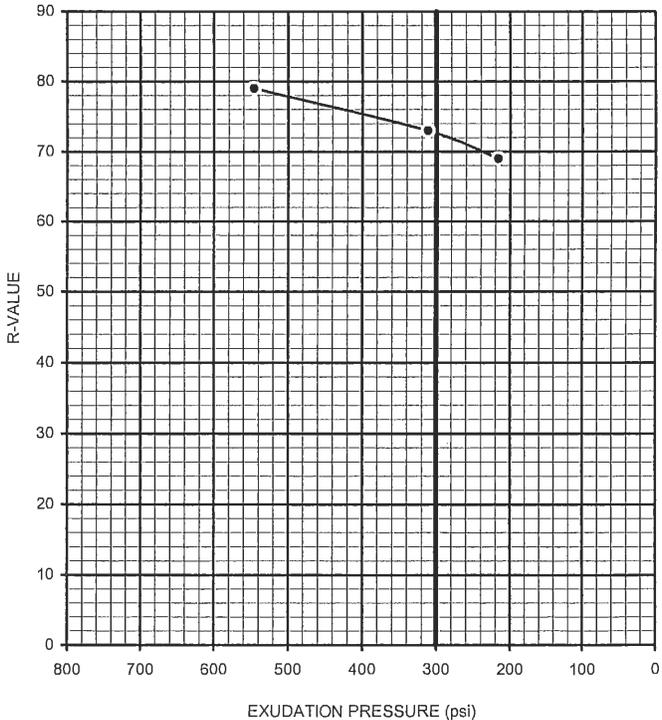
TEST SPECIMEN	a	b	c
MOISTURE AT COMPACTION %	8.7	9.0	9.1
HEIGHT OF SAMPLE, Inches	2.50	2.54	2.51
DRY DENSITY, pcf	127.4	127.8	127.2
COMPACTOR PRESSURE, psi	300	250	175
EXUDATION PRESSURE, psi	546	312	216
EXPANSION, Inches x 10exp-4	13	0	0
STABILITY Ph 2,000 lbs (160 psi)	18	23	27
TURNS DISPLACEMENT	5.30	5.48	5.56
R-VALUE UNCORRECTED	79	73	69
R-VALUE CORRECTED	79	73	69

DESIGN CALCULATION DATA	a	b	c
GRAVEL EQUIVALENT FACTOR	1.0	1.0	1.0
TRAFFIC INDEX	5.0	5.0	5.0
STABILOMETER THICKNESS, ft.	0.34	0.43	0.50
EXPANSION PRESSURE THICKNESS, ft.	0.43	0.00	0.00

EXPANSION PRESSURE CHART



EXUDATION PRESSURE CHART



R-VALUE BY EXPANSION: 76
 R-VALUE BY EXUDATION: 73
 EQUILIBRIUM R-VALUE: 73

From Lawson, 2007

Appendix D
General Earthwork and Grading Specifications

General Earthwork and Grading Specifications for Rough Grading

1.0 General

1.1 Intent

These General Earthwork and Grading Specifications are for the grading and earthwork shown on the approved grading plan(s) and/or indicated in the geotechnical report(s). These Specifications are a part of the recommendations contained in the geotechnical report(s). In case of conflict, the specific recommendations in the geotechnical report shall supersede these more general Specifications. Observations of the earthwork by the project Geotechnical Consultant during the course of grading may result in new or revised recommendations that could supersede these specifications or the recommendations in the geotechnical report(s).

1.2 The Geotechnical Consultant of Record

Prior to commencement of work, the owner shall employ a qualified Geotechnical Consultant of Record (Geotechnical Consultant). The Geotechnical Consultant shall be responsible for reviewing the approved geotechnical report(s) and accepting the adequacy of the preliminary geotechnical findings, conclusions, and recommendations prior to the commencement of the grading.

Prior to commencement of grading, the Geotechnical Consultant shall review the "work plan" prepared by the Earthwork Contractor (Contractor) and schedule sufficient personnel to perform the appropriate level of observation, mapping, and compaction testing.

During the grading and earthwork operations, the Geotechnical Consultant shall observe, map, and document the subsurface exposures to verify the geotechnical design assumptions. If the observed conditions are found to be significantly different than the interpreted assumptions during the design phase, the Geotechnical Consultant shall inform the owner, recommend appropriate changes in design to accommodate the observed conditions, and notify the review agency where required.

The Geotechnical Consultant shall observe the moisture-conditioning and processing of the subgrade and fill materials and perform relative compaction testing of fill to confirm that the attained level of compaction is being accomplished as specified. The Geotechnical Consultant shall provide the test results to the owner and the Contractor on a routine and frequent basis.

1.3 The Earthwork Contractor

The Earthwork Contractor (Contractor) shall be qualified, experienced, and knowledgeable in earthwork logistics, preparation and processing of ground to receive fill, moisture-conditioning and processing of fill, and compacting fill. The Contractor shall review and accept the plans, geotechnical report(s), and these Specifications prior to commencement of grading. The Contractor shall be solely responsible for performing the grading in accordance with the project plans and specifications. The Contractor shall prepare and submit to the owner and the Geotechnical Consultant a work plan that indicates the sequence of earthwork grading, the number of "equipment" of work and the estimated quantities of daily earthwork

contemplated for the site prior to commencement of grading. The Contractor shall inform the owner and the Geotechnical Consultant of changes in work schedules and updates to the work plan at least 24 hours in advance of such changes so that appropriate personnel will be available for observation and testing. The Contractor shall not assume that the Geotechnical Consultant is aware of all grading operations.

The Contractor shall have the sole responsibility to provide adequate equipment and methods to accomplish the earthwork in accordance with the applicable grading codes and agency ordinances, these Specifications, and the recommendations in the approved geotechnical report(s) and grading plan(s). If, in the opinion of the Geotechnical Consultant, unsatisfactory conditions, such as unsuitable soil, improper moisture condition, inadequate compaction, insufficient buttress key size, adverse weather, etc., are resulting in a quality of work less than required in these specifications, the Geotechnical Consultant shall reject the work and may recommend to the owner that construction be stopped until the conditions are rectified. It is the contractor's sole responsibility to provide proper fill compaction.

2.0 Preparation of Areas to be Filled

2.1 Clearing and Grubbing

Vegetation, such as brush, grass, roots, and other deleterious material shall be sufficiently removed and properly disposed of in a method acceptable to the owner, governing agencies, and the Geotechnical Consultant.

The Geotechnical Consultant shall evaluate the extent of these removals depending on specific site conditions. Earth fill material shall not contain more than 1 percent of organic materials (by volume). Nesting of the organic materials shall not be allowed.

If potentially hazardous materials are encountered, the Contractor shall stop work in the affected area, and a hazardous material specialist shall be informed immediately for proper evaluation and handling of these materials prior to continuing to work in that area.

As presently defined by the State of California, most refined petroleum products (gasoline, diesel fuel, motor oil, grease, coolant, etc.) have chemical constituents that are considered to be hazardous waste. As such, the indiscriminate dumping or spillage of these fluids onto the ground may constitute a misdemeanor, punishable by fines and/or imprisonment, and shall not be allowed. The contractor is responsible for all hazardous waste relating to his work. The Geotechnical Consultant does not have expertise in this area. If hazardous waste is a concern, then the Client should acquire the services of a qualified environmental assessor.

2.2 Processing

Existing ground that has been declared satisfactory for support of fill by the Geotechnical Consultant shall be scarified to a minimum depth of 6 inches. Existing ground that is not satisfactory shall be over-excavated as specified in the following section. Scarification shall continue until soils are broken down and free of oversize material and the working surface is reasonably uniform, flat, and free of uneven features that would inhibit uniform compaction.

2.3 Over-excavation

In addition to removals and over-excavations recommended in the approved geotechnical report(s) and the grading plan, soft, loose, dry, saturated, spongy, organic-rich, highly fractured or otherwise unsuitable ground shall be over-excavated to competent ground as evaluated by the Geotechnical Consultant during grading.

2.4 Benching

Where fills are to be placed on ground with slopes steeper than 5:1 (horizontal to vertical units), the ground shall be stepped or benched. Please see the Standard Details for a graphic illustration. The lowest bench or key shall be a minimum of 15 feet wide and at least 2 feet deep, into competent material as evaluated by the Geotechnical Consultant. Other benches shall be excavated a minimum height of 4 feet into competent material or as otherwise recommended by the Geotechnical Consultant. Fill placed on ground sloping flatter than 5:1 shall also be benched or otherwise over-excavated to provide a flat subgrade for the fill.

2.5 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 the survey control for determining elevations of processed areas, keys, and benches.

3.0 Fill Material

3.1 General

Material to be used as fill shall be essentially free of organic matter and other deleterious substances evaluated and accepted by the Geotechnical Consultant prior to placement. 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.

3.2 Oversize

Oversize material defined as rock, or other irreducible material with a maximum dimension greater than 8 inches, shall not be buried or placed in fill unless location, materials, and placement methods are specifically accepted by the Geotechnical Consultant. Placement operations shall be such that nesting of oversized material does not occur and such that oversize material is completely surrounded by compacted or densified fill. Oversize material shall not be placed within 10 vertical feet of finish grade or within 2 feet of future utilities or underground construction.

3.3 Import

If importing of fill material is required for grading, proposed import material shall meet the requirements of the geotechnical consultant. The potential import source shall be given to the Geotechnical Consultant at least 48 hours (2 working days) before importing begins so that its suitability can be determined and appropriate tests performed.

4.0 Fill Placement and Compaction

4.1 Fill Layers

Approved fill material shall be placed in areas prepared to receive fill (per Section 3.0) in near-horizontal layers not exceeding 8 inches in loose thickness. The Geotechnical Consultant may accept thicker layers if testing indicates the grading procedures can adequately compact the thicker layers. Each layer shall be spread evenly and mixed thoroughly to attain relative uniformity of material and moisture throughout.

4.2 Fill 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 over optimum. Maximum density and optimum soil moisture content tests shall be performed in accordance with the American Society of Testing and Materials (ASTM Test Method D1557).

4.3 Compaction of Fill

After each layer has been moisture-conditioned, mixed, and evenly spread, it shall be uniformly compacted to not less than 90 percent of maximum dry density (ASTM Test Method D1557). Compaction equipment shall be adequately sized and be either specifically designed for soil compaction or of proven reliability to efficiently achieve the specified level of compaction with uniformity.

4.4 Compaction of Fill Slopes

In addition to normal compaction procedures specified above, compaction of slopes shall be accomplished by backrolling of slopes with sheepfoot rollers at increments of 3 to 4 feet in fill elevation, or by other methods producing satisfactory results acceptable to the Geotechnical Consultant. Upon completion of grading, relative compaction of the fill, out to the slope face, shall be at least 90 percent of maximum density per ASTM Test Method D1557.

4.5 Compaction Testing

Field tests for moisture content and relative compaction of the fill soils shall be performed by the Geotechnical Consultant. Location and frequency of tests shall be at the Consultant's discretion based on field conditions encountered. Compaction test locations will not necessarily be selected on a random basis. Test locations shall be selected to verify adequacy of compaction levels in areas that are judged to be prone to inadequate compaction (such as close to slope faces and at the fill/bedrock benches).

4.6 Frequency of Compaction Testing

Tests shall be taken at intervals not exceeding 2 feet in vertical rise and/or 1,000 cubic yards of compacted fill soils embankment. In addition, as a guideline, at least one test shall be taken on slope faces for each 5,000 square feet of slope face and/or each 10 feet of vertical height of slope. The Contractor shall assure that fill construction is such that the testing schedule can be accomplished by the Geotechnical Consultant. The Contractor shall stop or slow down the earthwork construction if these minimum standards are not met.

4.7 Compaction Test Locations

The Geotechnical Consultant shall document the approximate elevation and horizontal coordinates of each test location. The Contractor shall coordinate with the project surveyor to assure that sufficient grade stakes are established so that the Geotechnical Consultant can determine the test locations with sufficient accuracy. At a minimum, two grade stakes within a horizontal distance of 100 feet and vertically less than 5 feet apart from potential test locations shall be provided.

5.0 Subdrain Installation

Subdrain systems shall be installed in accordance with the approved geotechnical report(s), the grading plan, and the Standard Details. The Geotechnical Consultant may recommend additional subdrains and/or changes in subdrain extent, location, grade, or material depending on conditions encountered during grading. All subdrains shall be surveyed by a land surveyor/civil engineer for line and grade after installation and prior to burial. Sufficient time should be allowed by the Contractor for these surveys.

6.0 Excavation

Excavations, as well as over-excavation for remedial purposes, shall be evaluated by the Geotechnical Consultant during grading. Remedial removal depths shown on geotechnical plans are estimates only. The actual extent of removal shall be determined by the Geotechnical Consultant based on the field evaluation of exposed conditions during grading. Where fill-over-cut slopes are to be graded, the cut portion of the slope shall be made, evaluated, and accepted by the Geotechnical Consultant prior to placement of materials for construction of the fill portion of the slope, unless otherwise recommended by the Geotechnical Consultant.

7.0 Trench Backfills

7.1 The Contractor shall follow all OSHA and Cal/OSHA requirements for safety of trench excavations.

7.2 All bedding and backfill of utility trenches shall be done in accordance with the applicable provisions of Standard Specifications of Public Works Construction. Bedding material shall have a Sand Equivalent greater than 30 (SE>30). The bedding shall be placed to 1 foot over

the top of the conduit and densified by jetting. Backfill shall be placed and densified to a minimum of 90 percent of maximum from 1 foot above the top of the conduit to the surface.

- 7.3 The jetting of the bedding around the conduits shall be observed by the Geotechnical Consultant.
- 7.4 The Geotechnical Consultant shall test the trench backfill for relative compaction. At least one test should be made for every 300 feet of trench and 2 feet of fill.
- 7.5 Lift thickness of trench backfill shall not exceed those allowed in the Standard Specifications of Public Works Construction unless the Contractor can demonstrate to the Geotechnical Consultant that the fill lift can be compacted to the minimum relative compaction by his alternative equipment and method.

Appendix 4: Historical Site Conditions

N/A

Appendix 5: LID Infeasibility

N/A

Appendix 6: BMP Design Details

Infiltration Trench - Design Procedure		BMP ID	Legend:	Required Entries
		1		Calculated Cells
Company Name:	TAIT & Associates		Date:	2/2/2021
Designed by:	Alex Gonzalez		County/City Case No.:	P19-05281
Design Volume				
Enter the area tributary to this feature, Max = 10 acres			$A_t =$	2 acres
Enter V_{BMP} determined from Section 2.1 of this Handbook			$V_{BMP} =$	3,074 ft ³
Calculate Maximum Depth of the Reservoir Layer				
Enter Infiltration rate			$I =$	2.4 in/hr
Enter Factor of Safety, FS (unitless)			$FS =$	3
<i>Obtain from Table 1, Appendix A: "Infiltration Testing" of this BMP Handbook</i>				
Calculate D_1 .			$D_1 =$	12.00 ft
$D_1 = \frac{I \text{ (in/hr)} \times 72 \text{ hrs}}{12 \text{ (in/ft)} \times (n/100) \times FS}$			$n =$	40 %
Enter depth to historic high groundwater mark (measured from finished grade)				70 ft
Enter depth to top of bedrock or impermeable layer (measured from finished grade)				40 ft
D_2 is the smaller of:				
Depth to groundwater - 11 ft; & Depth to impermeable layer - 6 ft			$D_2 =$	34.0 ft
D_{MAX} is the smaller value of D_1 and D_2 , must be less than or equal to 8 feet.			$D_{MAX} =$	8.0 ft
Trench Sizing				
Enter proposed reservoir layer depth D_R , must be $\leq D_{MAX}$			$D_R =$	6.75 ft
Calculate the design depth of water, d_w				
Design $d_w = (D_R) \times (n/100)$			Design $d_w =$	2.70 ft
Minimum Surface Area, A_S			$A_S =$	1,139 ft ²
			$A_S = \frac{V_{BMP}}{d_w}$	
Proposed Design Surface Area			$A_D =$	14,451 ft ²
Minimum Width = $D_R + 1$ foot pea gravel				7.75 ft
Sediment Control Provided? (Use pulldown)		Yes		
Geotechnical report attached? (Use pulldown)		Yes		
If the trench has been designed correctly, there should be no error messages on the spreadsheet.				

Table 1 - Infiltration Testing Requirements							
Infiltration BMP	Testing Options	Ring Infiltrometer Tests ⁽¹⁾	Percolation Test ⁽²⁾	Test Pits or Boring Logs ⁽³⁾	Final Report ⁽⁴⁾	Hydrology Manual ⁽⁵⁾	Factor of Safety
Infiltration Trench	Option 1▶	2 tests min. with at least 1 per trench	not used	1 boring or test pit per trench	Required	not used	FS = 3
	Option 2▶	not used	4 tests min. with at least two per trench	1 boring or test pit per trench	Required	not used	FS = 3
	Option 3 ⁽⁷⁾ ▶	not used	not used	1 boring or test pit per trench	Required	not used	FS = 6
	Option 4▶	not used	not used	1 boring or test pit per site	not used	only	FS = 10
Infiltration Basin	Option 1▶	2 tests min. with at least 1 per basin ⁽⁶⁾	not used	1 boring or test pit per basin	Required	not used	FS = 3
	Option 2▶	not used	4 tests min. with at least 2 per basin ⁽⁶⁾	1 boring or test pit per trench	Required	not used	FS = 3
	Option 3 ⁽⁷⁾ ▶	not used	not used	1 boring or test pit per basin	Required	not used	FS = 6
	Option 4▶	not used	not used	1 boring or test pit per site	not used	only	FS = 10
Permeable Pavement	Option 1▶	2 tests min. with at least 1 every 10,000 ft ²	not used	1 boring or test pit every 10,000 ft ²	Required	not used	FS = 3
	Option 2▶	not used	4 tests min. with at least 2 every 10,000 ft ²	1 boring or test pit every 10,000 ft ²	Required	not used	FS = 3

Table Footnotes:

- (1) Ring Infiltrometer tests per Section 2.2
- (2) Percolation tests per Section 2.3 and Well Permeameter Test per Section 2.4
- (3) Test pits or boring logs per Section 2.5
- (4) Final Report per Section 1.7
- (5) See Plate E-6.2 of the District's Hydrology Manual
- (6) For basins in excess of 10,000 ft², provide one (1) ring infiltrometer test or two (2) percolation tests for each additional 10,000 ft²
- (7) This option may be used for projects with a maximum tributary area of 5 acres only.

PROJECT INFORMATION	
ENGINEERED PRODUCT MANAGER	
ADS SALES REP	
PROJECT NO.	



ADVANCED DRAINAGE SYSTEMS, INC.

SE1167
PERRIS, CA

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MC-4500 STORMTECH CHAMBER SPECIFICATIONS

1. CHAMBERS SHALL BE STORMTECH MC-4500.
2. CHAMBERS SHALL BE ARCH-SHAPED AND SHALL BE MANUFACTURED FROM VIRGIN, IMPACT-MODIFIED POLYPROPYLENE COPOLYMERS.
3. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418-16a, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS" CHAMBER CLASSIFICATION 60x101.
4. CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORTS THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION.
5. THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL, AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCES.
6. CHAMBERS SHALL BE DESIGNED, TESTED AND ALLOWABLE LOAD CONFIGURATIONS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS". LOAD CONFIGURATIONS SHALL INCLUDE: 1) INSTANTANEOUS (<1 MIN) AASHTO DESIGN TRUCK LIVE LOAD ON MINIMUM COVER 2) MAXIMUM PERMANENT (75-YR) COVER LOAD AND 3) ALLOWABLE COVER WITH PARKED (1-WEEK) AASHTO DESIGN TRUCK.
7. REQUIREMENTS FOR HANDLING AND INSTALLATION:
 - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
 - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 3".
 - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2418 SHALL BE GREATER THAN OR EQUAL TO 500 LBS/IN/IN. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.
8. ONLY CHAMBERS THAT ARE APPROVED BY THE SITE DESIGN ENGINEER WILL BE ALLOWED. UPON REQUEST BY THE SITE DESIGN ENGINEER OR OWNER, THE CHAMBER MANUFACTURER SHALL SUBMIT A STRUCTURAL EVALUATION FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE AS FOLLOWS:
 - THE STRUCTURAL EVALUATION SHALL BE SEALED BY A REGISTERED PROFESSIONAL ENGINEER.
 - THE STRUCTURAL EVALUATION SHALL DEMONSTRATE THAT THE SAFETY FACTORS ARE GREATER THAN OR EQUAL TO 1.95 FOR DEAD LOAD AND 1.75 FOR LIVE LOAD, THE MINIMUM REQUIRED BY ASTM F2787 AND BY SECTIONS 3 AND 12.12 OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR THERMOPLASTIC PIPE.
 - THE TEST DERIVED CREEP MODULUS AS SPECIFIED IN ASTM F2418 SHALL BE USED FOR PERMANENT DEAD LOAD DESIGN EXCEPT THAT IT SHALL BE THE 75-YEAR MODULUS USED FOR DESIGN.
9. CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.

IMPORTANT - NOTES FOR THE BIDDING AND INSTALLATION OF MC-4500 CHAMBER SYSTEM

1. STORMTECH MC-4500 CHAMBERS SHALL NOT BE INSTALLED UNTIL THE MANUFACTURER'S REPRESENTATIVE HAS COMPLETED A PRE-CONSTRUCTION MEETING WITH THE INSTALLERS.
2. STORMTECH MC-4500 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
3. CHAMBERS ARE NOT TO BE BACKFILLED WITH A DOZER OR EXCAVATOR SITUATED OVER THE CHAMBERS. STORMTECH RECOMMENDS 3 BACKFILL METHODS:
 - STONESHOOTER LOCATED OFF THE CHAMBER BED.
 - BACKFILL AS ROWS ARE BUILT USING AN EXCAVATOR ON THE FOUNDATION STONE OR SUBGRADE.
 - BACKFILL FROM OUTSIDE THE EXCAVATION USING A LONG BOOM HOE OR EXCAVATOR.
4. THE FOUNDATION STONE SHALL BE LEVELED AND COMPACTED PRIOR TO PLACING CHAMBERS.
5. JOINTS BETWEEN CHAMBERS SHALL BE PROPERLY SEATED PRIOR TO PLACING STONE.
6. MAINTAIN MINIMUM 9" (230 mm) SPACING BETWEEN THE CHAMBER ROWS.
7. INLET AND OUTLET MANIFOLDS MUST BE INSERTED A MINIMUM OF 12" (300 mm) INTO CHAMBER END CAPS.
8. EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE A CLEAN, CRUSHED, ANGULAR STONE MEETING THE AASHTO M43 DESIGNATION OF #3 OR #4.
9. STONE SHALL BE BROUGHT UP EVENLY AROUND CHAMBERS SO AS NOT TO DISTORT THE CHAMBER SHAPE. STONE DEPTHS SHOULD NEVER DIFFER BY MORE THAN 12" (300 mm) BETWEEN ADJACENT CHAMBER ROWS.
10. STONE MUST BE PLACED ON THE TOP CENTER OF THE CHAMBER TO ANCHOR THE CHAMBERS IN PLACE AND PRESERVE ROW SPACING.
11. THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIAL BEARING CAPACITIES TO THE SITE DESIGN ENGINEER.
12. ADS RECOMMENDS THE USE OF "FLEXSTORM CATCH IT" INSERTS DURING CONSTRUCTION FOR ALL INLETS TO PROTECT THE SUBSURFACE STORMWATER MANAGEMENT SYSTEM FROM CONSTRUCTION SITE RUNOFF.

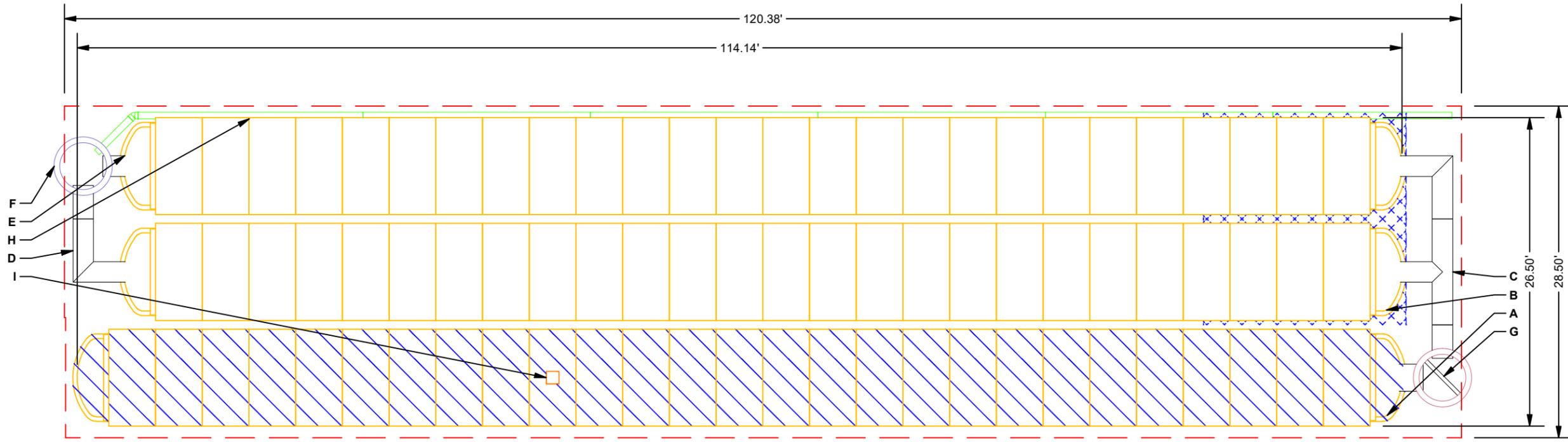
NOTES FOR CONSTRUCTION EQUIPMENT

1. STORMTECH MC-4500 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
2. THE USE OF EQUIPMENT OVER MC-4500 CHAMBERS IS LIMITED:
 - NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS.
 - NO RUBBER Tired LOADER, DUMP TRUCK, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
 - WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
3. FULL 36" (900 mm) OF STABILIZED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED FOR DUMP TRUCK TRAVEL OR DUMPING.

USE OF A DOZER TO PUSH EMBEDMENT STONE BETWEEN THE ROWS OF CHAMBERS MAY CAUSE DAMAGE TO CHAMBERS AND IS NOT AN ACCEPTABLE BACKFILL METHOD. ANY CHAMBERS DAMAGED BY USING THE "DUMP AND PUSH" METHOD ARE NOT COVERED UNDER THE STORMTECH STANDARD WARRANTY.

CONTACT STORMTECH AT 1-888-892-2694 WITH ANY QUESTIONS ON INSTALLATION REQUIREMENTS OR WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT.

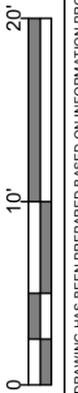
PROPOSED LAYOUT		CONCEPTUAL ELEVATIONS		*INVERT ABOVE BASE OF CHAMBER			
			PART TYPE	ITEM ON LAYOUT	DESCRIPTION	INVERT*	MAX FLOW
79	STORMTECH MC-4500 CHAMBERS	MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED):					
6	STORMTECH MC-4500 END CAPS	MINIMUM ALLOWABLE GRADE (UNPAVED WITH TRAFFIC):					
12	STONE ABOVE (in)	MINIMUM ALLOWABLE GRADE (UNPAVED NO TRAFFIC):					
9	STONE BELOW (in)	MINIMUM ALLOWABLE GRADE (TOP OF RIGID CONCRETE PAVEMENT):					
40	STONE VOID	MINIMUM ALLOWABLE GRADE (BASE OF FLEXIBLE PAVEMENT):					
14451	INSTALLED SYSTEM VOLUME (CF) (PERIMETER STONE INCLUDED) (COVER STONE INCLUDED) (BASE STONE INCLUDED)	TOP OF STONE:					
		TOP OF MC-4500 CHAMBER:					
		24" ISOLATOR ROW INVERT:					
		18" x 18" BOTTOM MANIFOLD INVERT:					
		18" x 18" BOTTOM MANIFOLD INVERT:					
3430	SYSTEM AREA (SF)	18" x 18" BOTTOM CONNECTION INVERT:					
297.8	SYSTEM PERIMETER (ft)	18" BOTTOM CONNECTION INVERT:					
		BOTTOM OF MC-4500 CHAMBER:					
		UNDERDRAIN INVERT:					
		BOTTOM OF STONE:					



-  ISOLATOR ROW (SEE DETAIL)
-  PLACE MINIMUM 17.50' OF ADS GEOSYNTHETICS 315WTM WOVEN GEOTEXTILE OVER BEDDING STONE AND UNDERNEATH CHAMBER FEET FOR SCOUR PROTECTION AT ALL CHAMBER INLET ROWS
-  BED LIMITS

NOTES

- MANIFOLD SIZE TO BE DETERMINED BY SITE DESIGN ENGINEER. SEE TECH NOTE #6.32 FOR MANIFOLD SIZING GUIDANCE.
- DUE TO THE ADAPTATION OF THIS CHAMBER SYSTEM TO SPECIFIC SITE AND DESIGN CONSTRAINTS, IT MAY BE NECESSARY TO CUT AND COUPLE ADDITIONAL PIPE TO STANDARD MANIFOLD COMPONENTS IN THE FIELD.
- THE SITE DESIGN ENGINEER MUST REVIEW ELEVATIONS AND IF NECESSARY ADJUST GRADING TO ENSURE THE CHAMBER COVER REQUIREMENTS ARE MET.
- THIS CHAMBER SYSTEM WAS DESIGNED WITHOUT SITE-SPECIFIC INFORMATION ON SOIL CONDITIONS OR BEARING CAPACITY. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR DETERMINING THE SUITABILITY OF THE SOIL AND PROVIDING THE BEARING CAPACITY OF THE INSITU SOILS. THE BASE STONE DEPTH MAY BE INCREASED OR DECREASED ONCE THIS INFORMATION IS PROVIDED.
- **NOT FOR CONSTRUCTION:** THIS LAYOUT IS FOR DIMENSIONAL PURPOSES ONLY TO PROVE CONCEPT & THE REQUIRED STORAGE VOLUME CAN BE ACHIEVED ON SITE.

SE1167	PERRIS, CA	DRAWN: AG	CHECKED: N/A
DATE:	PROJECT #:		
DESCRIPTION	CHK	DRW	REV
 <small>520 CROMWELL AVENUE ROCKY HILL CT 06067 860-528-8188 1888-892-2694 www.stormtech.com</small>			
 <small>4840 TRUEMAN BLVD HILLIARD, OH 43026 1-800-733-7473 ADVANCED DRAINAGE SYSTEMS, INC.</small>			
			
SHEET			
2 OF 5			

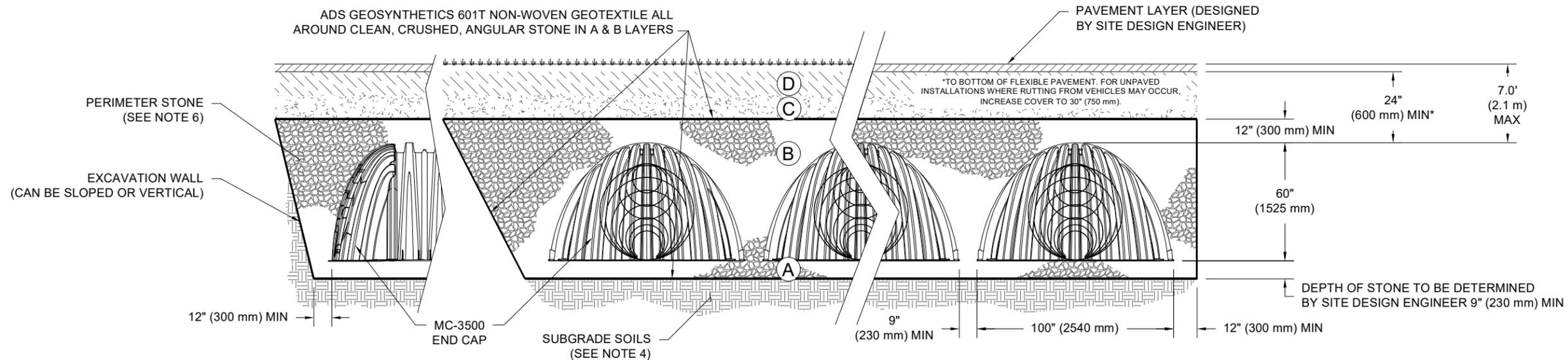
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ACCEPTABLE FILL MATERIALS: STORMTECH MC-4500 CHAMBER SYSTEMS

MATERIAL LOCATION		DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	FINAL FILL: FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	INITIAL FILL: FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 24" (600 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145 ¹ A-1, A-2-4, A-3 OR AASHTO M43 ¹ 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 24" (600 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 12" (300 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS.
B	EMBEDMENT STONE: FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43 ¹ 3, 4	NO COMPACTION REQUIRED.
A	FOUNDATION STONE: FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43 ¹ 3, 4	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE. ^{2,3}

PLEASE NOTE:

- THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
- STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 9" (230 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
- WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.
- ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.



NOTES:

- CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418-16a, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS" CHAMBER CLASSIFICATION 60x101
- MC-4500 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
- THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
- PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
- REQUIREMENTS FOR HANDLING AND INSTALLATION:
 - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
 - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 3".
 - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2418 SHALL BE GREATER THAN OR EQUAL TO 500 LBS/IN/IN. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.

SE1167
PERRIS, CA

DATE:
PROJECT #:

DESCRIPTION

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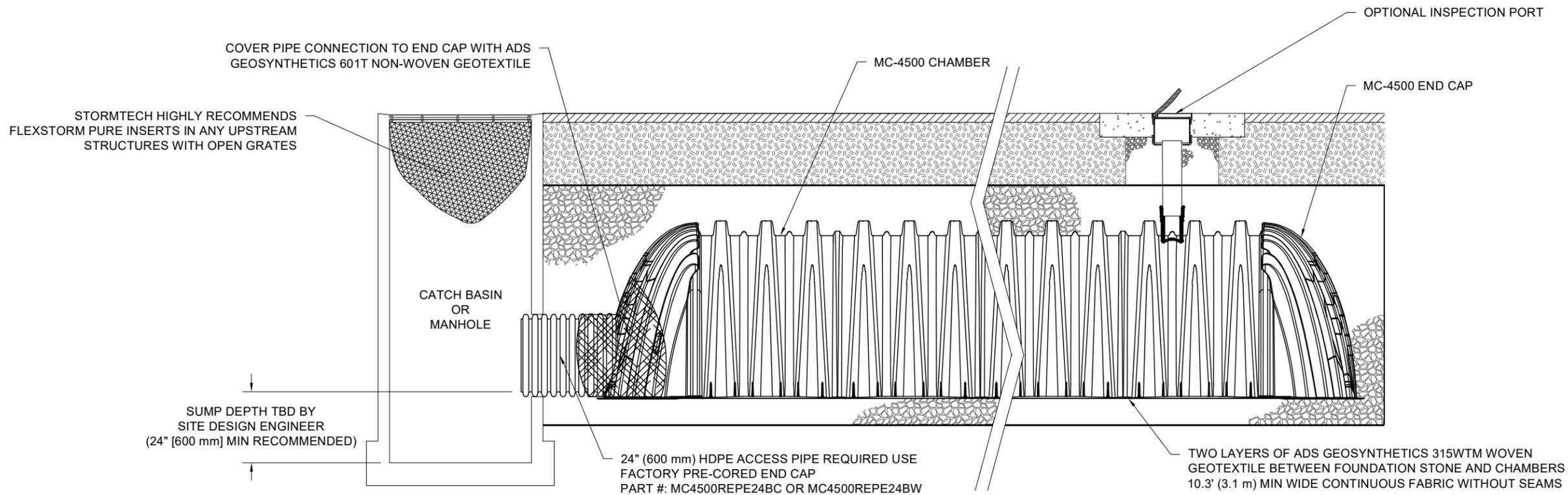
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4840 TRUEMAN BLVD
HILLIARD, OH 43026
1-800-733-7473



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MC-4500 ISOLATOR ROW DETAIL

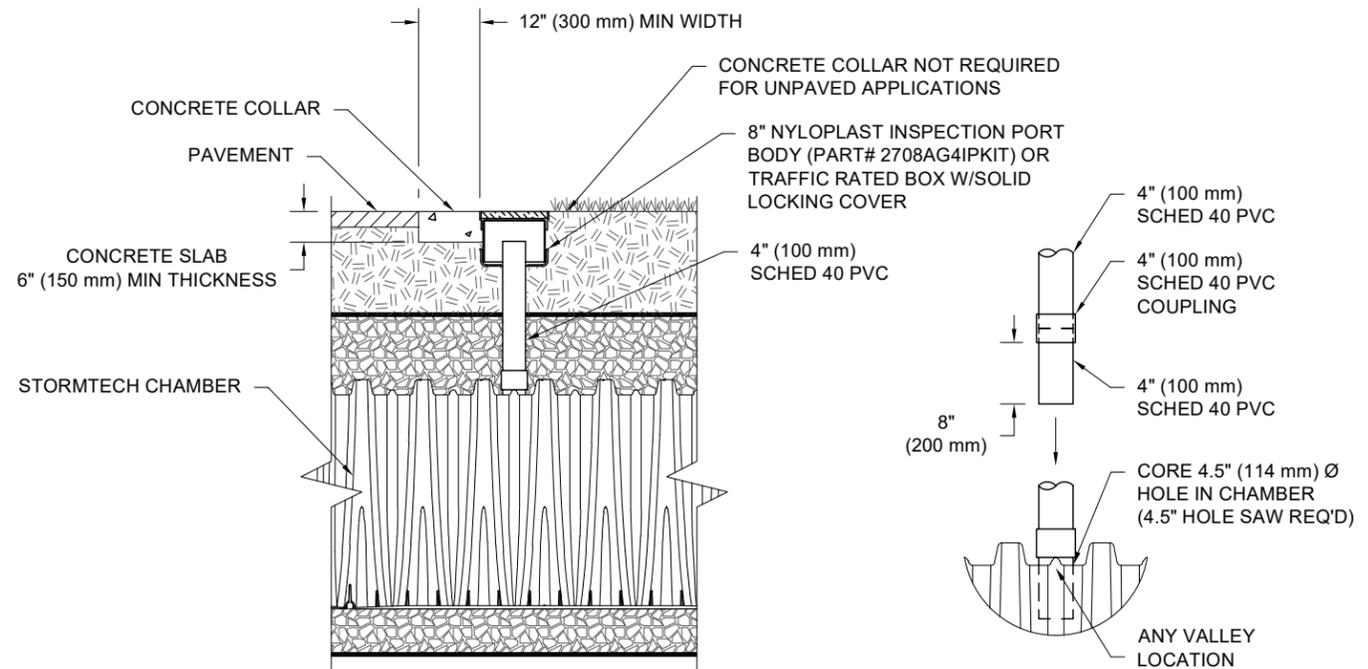
NTS

INSPECTION & MAINTENANCE

- STEP 1) INSPECT ISOLATOR ROW FOR SEDIMENT
- A. INSPECTION PORTS (IF PRESENT)
 - A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
 - A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
 - A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
 - A.4. LOWER A CAMERA INTO ISOLATOR ROW FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
 - A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
 - B. ALL ISOLATOR ROWS
 - B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW
 - B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW THROUGH OUTLET PIPE
 - i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
 - ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
 - B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- STEP 2) CLEAN OUT ISOLATOR ROW USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45" (1.1 m) OR MORE IS PREFERRED
 - B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
 - C. VACUUM STRUCTURE SUMP AS REQUIRED
- STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.
- STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES

1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.



CONNECTION DETAIL

NTS

- NOTES:
1. INSPECTION PORTS MAY BE CONNECTED THROUGH ANY CHAMBER CORRUGATION VALLEY.
 2. ALL SCHEDULE 40 FITTINGS TO BE SOLVENT CEMENTED (4" PVC NOT PROVIDED BY ADS).

4\"/>

NTS

SE1167	DESCRIPTION	CHK	DRW	REV
PERRIS, CA				
DATE:				
DRAWN: AG				
CHECKED: N/A				
PROJECT #:				

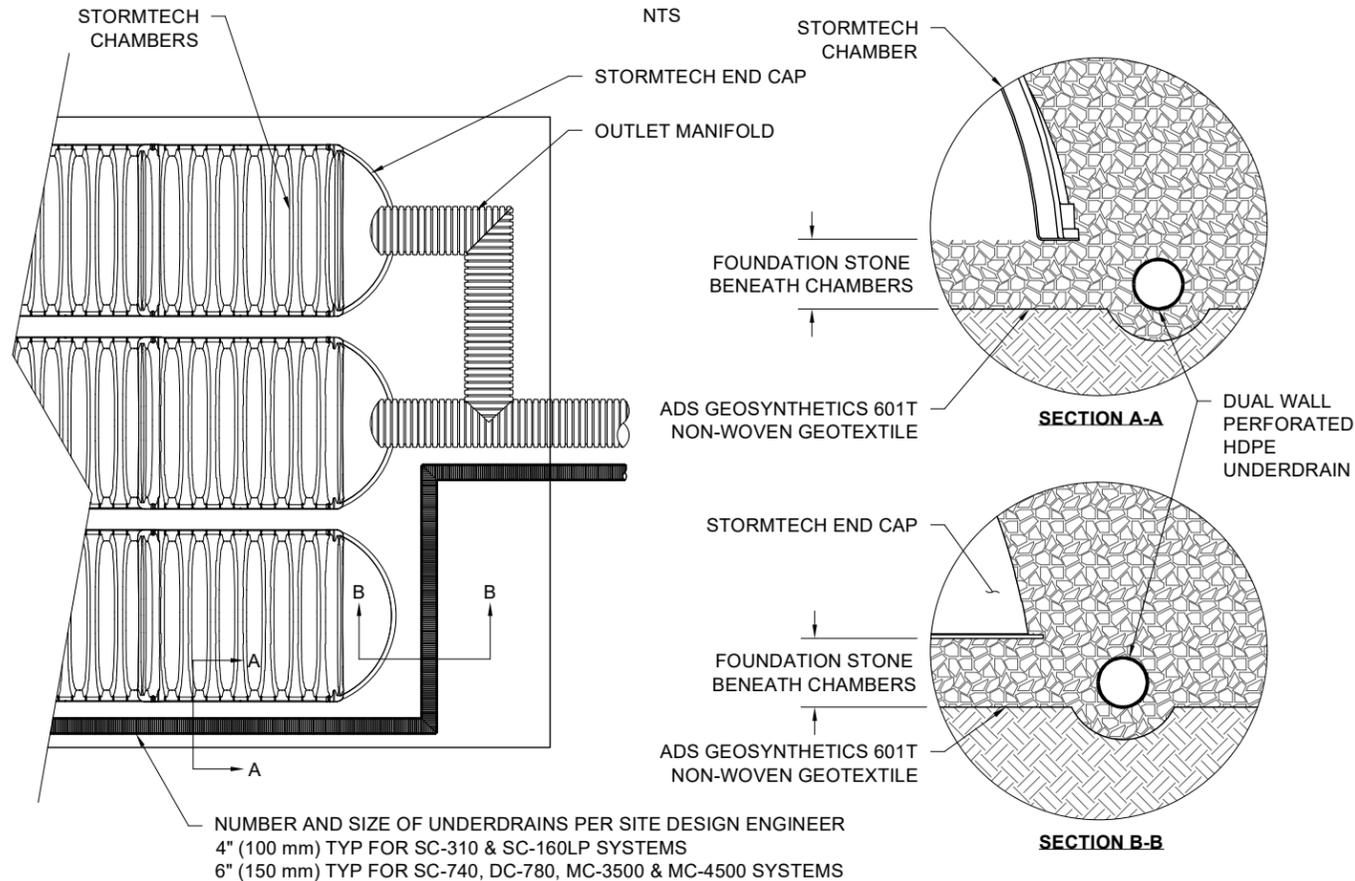
StormTech
 Prevention - Retention - Water Quality
 520 CROMWELL AVENUE | ROCKY HILL | CT | 06067
 860-525-8188 | 1888-892-2694 | www.stormtech.com

ADS
 ADVANCED DRAINAGE SYSTEMS, INC.
 4840 TRUEMAN BLVD
 HILLIARD, OH 43026
 1-800-733-7473

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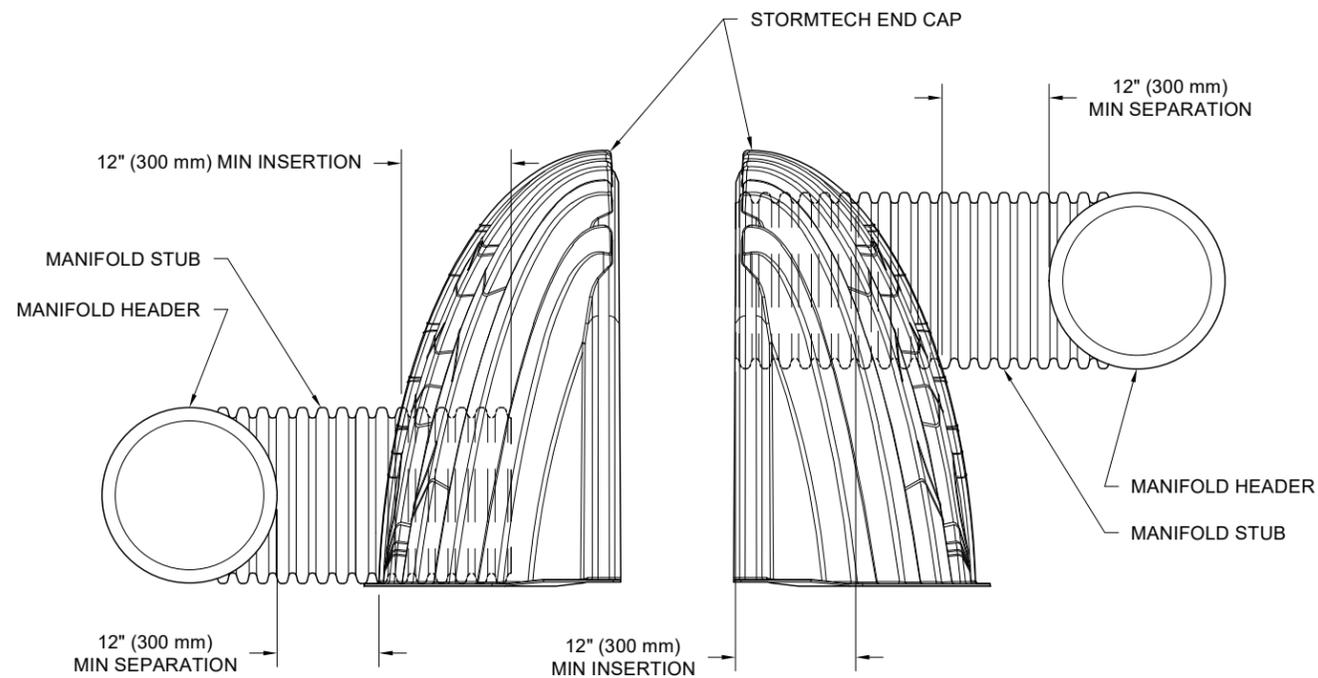
UNDERDRAIN DETAIL

NTS



MC-SERIES END CAP INSERTION DETAIL

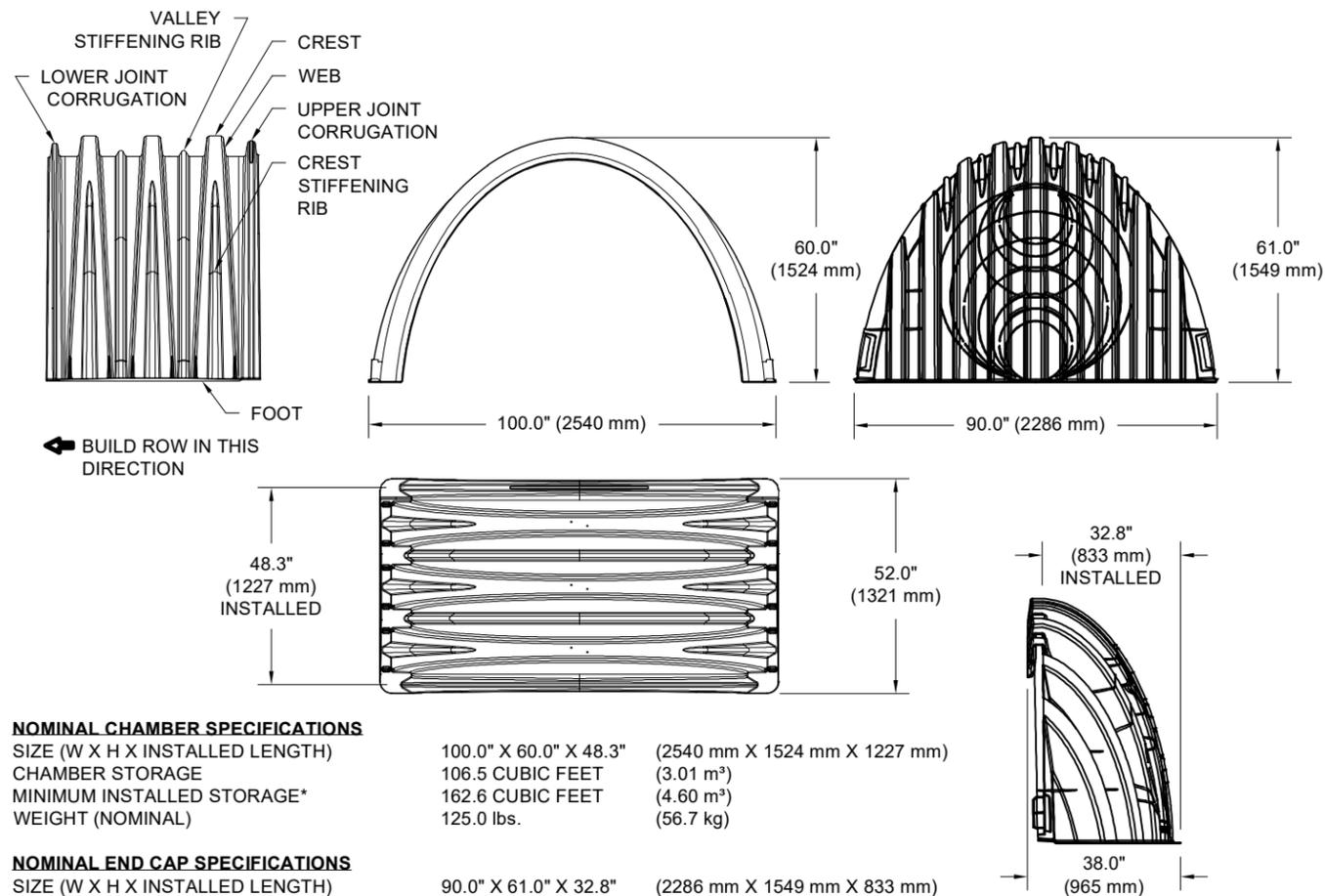
NTS



NOTE: MANIFOLD STUB MUST BE LAID HORIZONTAL FOR A PROPER FIT IN END CAP OPENING.

MC-4500 TECHNICAL SPECIFICATION

NTS



NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	100.0" X 60.0" X 48.3"	(2540 mm X 1524 mm X 1227 mm)
CHAMBER STORAGE	106.5 CUBIC FEET	(3.01 m ³)
MINIMUM INSTALLED STORAGE*	162.6 CUBIC FEET	(4.60 m ³)
WEIGHT (NOMINAL)	125.0 lbs.	(56.7 kg)

NOMINAL END CAP SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	90.0" X 61.0" X 32.8"	(2286 mm X 1549 mm X 833 mm)
END CAP STORAGE	39.5 CUBIC FEET	(1.12 m ³)
MINIMUM INSTALLED STORAGE*	115.3 CUBIC FEET	(3.26 m ³)
WEIGHT (NOMINAL)	90 lbs.	(40.8 kg)

*ASSUMES 12" (305 mm) STONE ABOVE, 9" (229 mm) STONE FOUNDATION AND BETWEEN CHAMBERS, 12" (305 mm) STONE PERIMETER IN FRONT OF END CAPS AND 40% STONE POROSITY.

PARTIAL CUT HOLES AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"
 PARTIAL CUT HOLES AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"
 END CAPS WITH A PREFABRICATED WELDED STUB END WITH "W"

PART #	STUB	B	C
MC4500IEPP06T	6" (150 mm)	42.54" (1081 mm)	---
MC4500IEPP06B	---	---	0.86" (22 mm)
MC4500IEPP08T	8" (200 mm)	40.50" (1029 mm)	---
MC4500IEPP08B	---	---	1.01" (26 mm)
MC4500IEPP10T	10" (250 mm)	38.37" (975 mm)	---
MC4500IEPP10B	---	---	1.33" (34 mm)
MC4500IEPP12T	12" (300 mm)	35.69" (907 mm)	---
MC4500IEPP12B	---	---	1.55" (39 mm)
MC4500IEPP15T	15" (375 mm)	32.72" (831 mm)	---
MC4500IEPP15B	---	---	1.70" (43 mm)
MC4500IEPP18T	---	29.36" (746 mm)	---
MC4500IEPP18TW	18" (450 mm)	---	---
MC4500IEPP18B	---	---	1.97" (50 mm)
MC4500IEPP18BW	---	---	---
MC4500IEPP24T	---	23.05" (585 mm)	---
MC4500IEPP24TW	24" (600 mm)	---	---
MC4500IEPP24B	---	---	2.26" (57 mm)
MC4500IEPP24BW	---	---	---
MC4500IEPP30BW	30" (750 mm)	---	2.95" (75 mm)
MC4500IEPP36BW	36" (900 mm)	---	3.25" (83 mm)
MC4500IEPP42BW	42" (1050 mm)	---	3.55" (90 mm)

NOTE: ALL DIMENSIONS ARE NOMINAL

CUSTOM PARTIAL CUT INVERTS ARE AVAILABLE UPON REQUEST. INVENTORIED MANIFOLDS INCLUDE 12-24" (300-600 mm) SIZE ON SIZE AND 15-48" (375-1200 mm) ECCENTRIC MANIFOLDS. CUSTOM INVERT LOCATIONS ON THE MC-4500 END CAP CUT IN THE FIELD ARE NOT RECOMMENDED FOR PIPE SIZES GREATER THAN 10" (250 mm). THE INVERT LOCATION IN COLUMN 'B' ARE THE HIGHEST POSSIBLE FOR THE PIPE SIZE.

SE1167
PERRIS, CA

DATE: PROJECT #:
DRAWN: AG
CHECKED: N/A

DESCRIPTION

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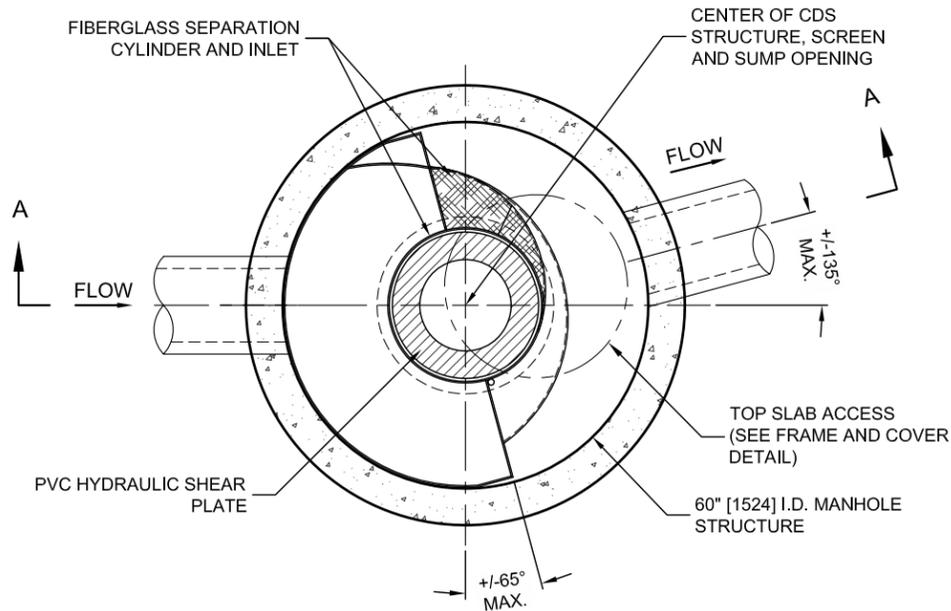


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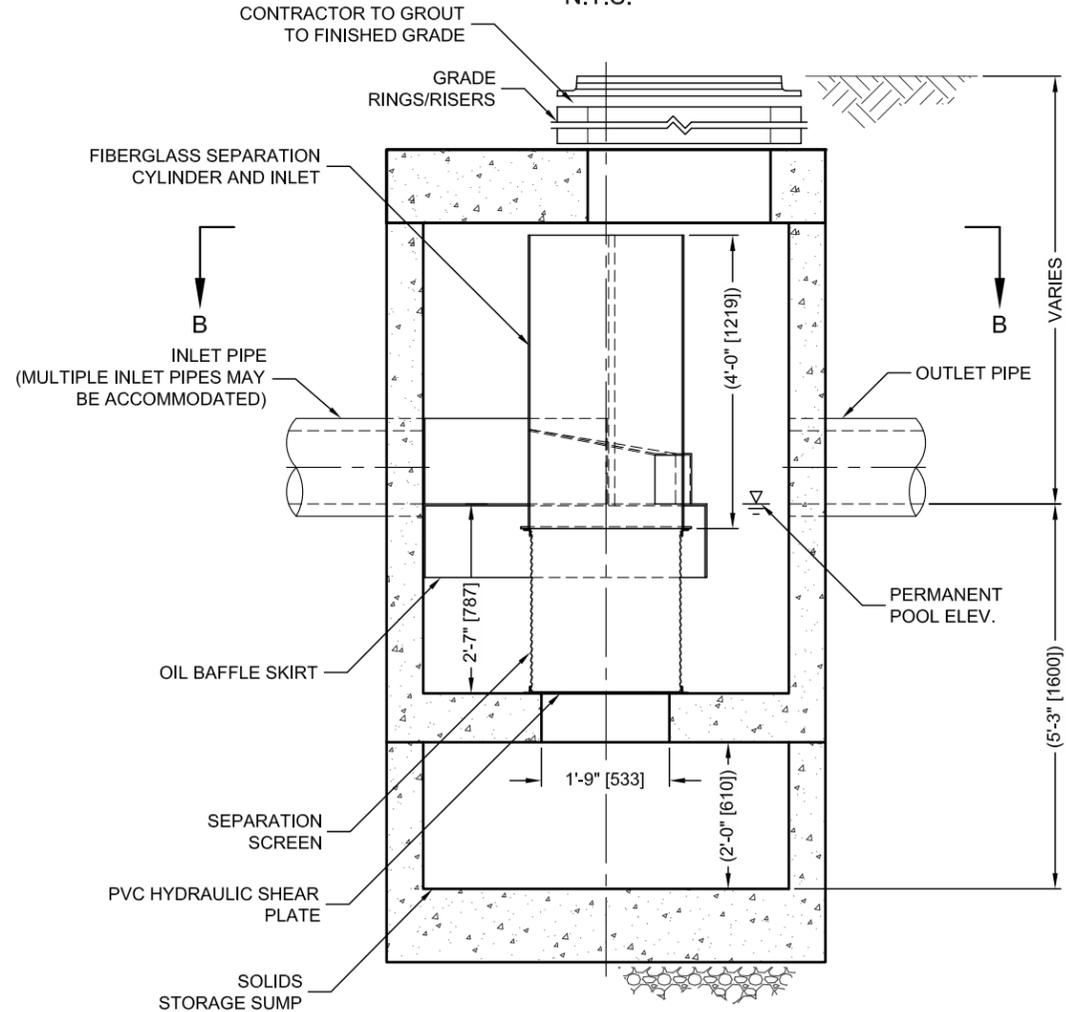


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C:\USERS\SCHLACHER\DESKTOP\CDS DETAILS 180 MICRON SIZING\CAD\CDS2020-5-C-DTL.DWG 5/19/2014 5:19 PM



PLAN VIEW B-B
N.T.S.



ELEVATION A-A
N.T.S.



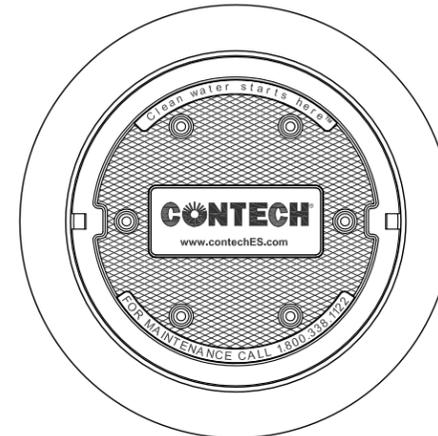
THIS PRODUCT MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING U.S. PATENTS: 6,788,848; 6,841,720; 6,911,585; 6,981,762. RELATED FOREIGN PATENTS, OR OTHER PATENTS PENDING.

CDS2020-5-C DESIGN NOTES

THE STANDARD CDS2020-5-C CONFIGURATION IS SHOWN. ALTERNATE CONFIGURATIONS ARE AVAILABLE AND ARE LISTED BELOW. SOME CONFIGURATIONS MAY BE COMBINED TO SUIT SITE REQUIREMENTS.

CONFIGURATION DESCRIPTION

- GRATED INLET ONLY (NO INLET PIPE)
- GRATED INLET WITH INLET PIPE OR PIPES
- CURB INLET ONLY (NO INLET PIPE)
- CURB INLET WITH INLET PIPE OR PIPES
- SEPARATE OIL BAFFLE (SINGLE INLET PIPE REQUIRED FOR THIS CONFIGURATION)
- SEDIMENT WEIR FOR NJDEP / NJCAT CONFORMING UNITS



FRAME AND COVER
(DIAMETER VARIES)
N.T.S.

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID				
WATER QUALITY FLOW RATE (CFS OR L/s)				*
PEAK FLOW RATE (CFS OR L/s)				*
RETURN PERIOD OF PEAK FLOW (YRS)				*
SCREEN APERTURE (2400 OR 4700)				*
PIPE DATA:	I.E.	MATERIAL	DIAMETER	
INLET PIPE 1	*	*	*	
INLET PIPE 2	*	*	*	
OUTLET PIPE	*	*	*	
RIM ELEVATION				*
ANTI-FLOTATION BALLAST	WIDTH	HEIGHT		
	*	*		
NOTES/SPECIAL REQUIREMENTS:				
* PER ENGINEER OF RECORD				

GENERAL NOTES

1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. DIMENSIONS MARKED WITH () ARE REFERENCE DIMENSIONS. ACTUAL DIMENSIONS MAY VARY.
3. FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHTS, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.contechES.com
4. CDS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
5. STRUCTURE SHALL MEET AASHTO HS20 AND CASTINGS SHALL MEET HS20 (AASHTO M 306) LOAD RATING, ASSUMING GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION.
6. PVC HYDRAULIC SHEAR PLATE IS PLACED ON SHELF AT BOTTOM OF SCREEN CYLINDER. REMOVE AND REPLACE AS NECESSARY DURING MAINTENANCE CLEANING.

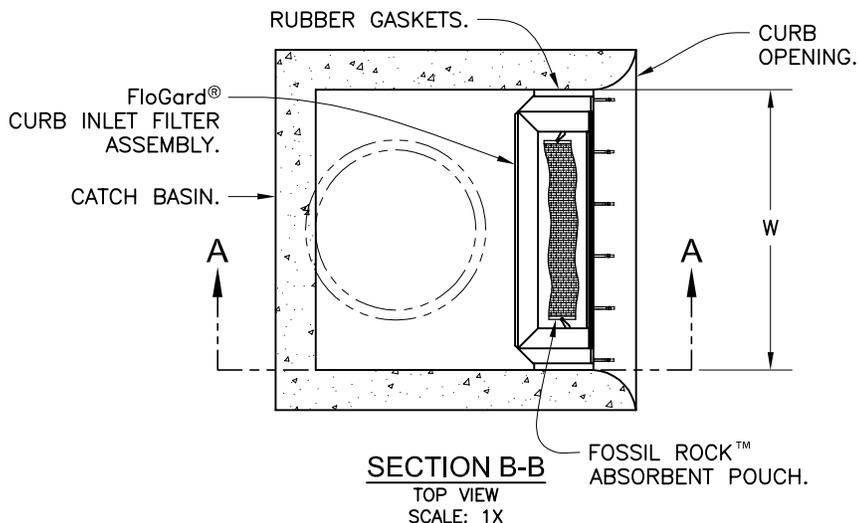
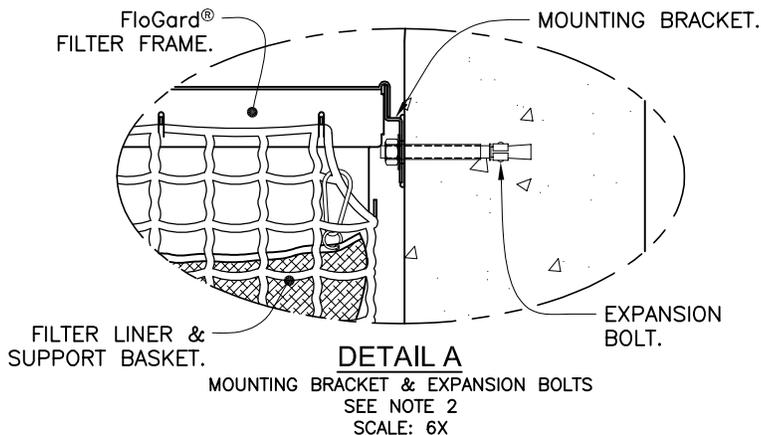
INSTALLATION NOTES

- A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
- B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CDS MANHOLE STRUCTURE (LIFTING CLUTCHES PROVIDED).
- C. CONTRACTOR TO ADD JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS, AND ASSEMBLE STRUCTURE.
- D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT PIPES. MATCH PIPE INVERTS WITH ELEVATIONS SHOWN.
- E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.



9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

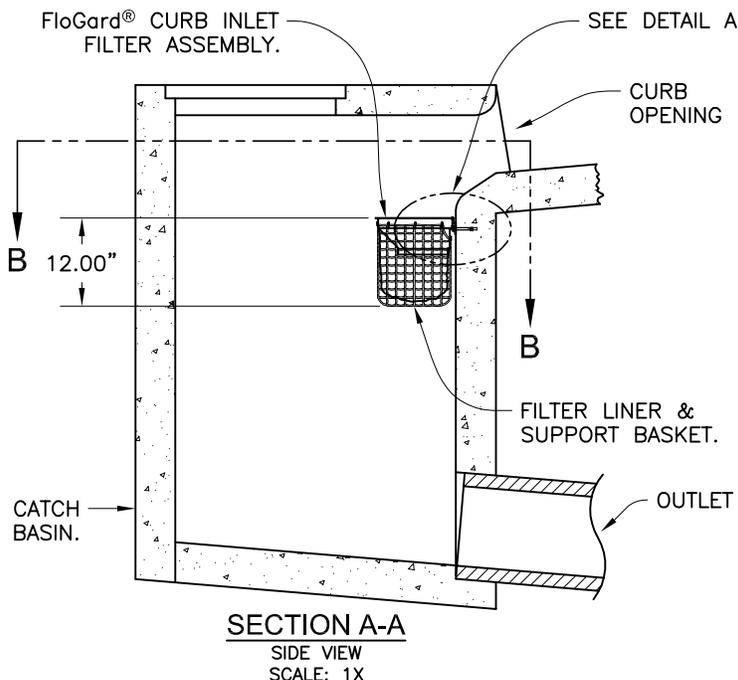
**CDS2020-5-C
INLINE CDS
STANDARD DETAIL**



SPECIFIER CHART				
MODEL NO.	Curb Opening Width - W -	Storage Capacity - Cu. Ft. -	Filtered Flow Rate - GPM/CFS -	Bypass Flow Rate - GPM/CFS -
FGP-24CI	2.0' (24")	.95	338 / .75	2,513 / 5.6
FGP-30CI	2.5' (30")	1.20	450 / 1.00	3,008 / 6.7
FGP-36CI	3.0' (36")	1.50	563 / 1.25	3,547 / 7.9
FGP-42CI	3.5' (42")	1.80	675 / 1.50	3,951 / 8.8
FGP-48CI	4.0' (48")	2.10	768 / 1.76	4,445 / 9.9
FGP-5.0CI	5.0' (60")	2.40	900 / 2.00	5,208 / 11.6
FGP-6.0CI	6.0' (72")	3.05	1,126 / 2.51	6,196 / 13.8
FGP-7.0CI	7.0' (84")	3.65	1,350 / 3.01	7,139 / 15.9
FGP-8.0CI	8.0' (96")	4.25	1,576 / 3.51	8,082 / 18.0
FGP-10.0CI	10.0' (120")	4.85	1,800 / 4.01	9,833 / 21.9
FGP-12.0CI	12.0' (144")	6.10	2,252 / 5.02	11,764 / 26.2
FGP-14.0CI	14.0' (168")	7.30	2,700 / 6.02	13,515 / 30.1
FGP-16.0CI	16.0' (192")	8.55	3,152 / 7.02	15,446 / 34.4
FGP-18.0CI	18.0' (216")	9.45	3,490 / 7.78	17,152 / 38.2
FGP-21.0CI	21.0' (252")	10.95	4,050 / 9.02	19,891 / 44.3
FGP-28.0CI	28.0' (336")	14.60	5,400 / 12.03	26,311 / 58.6

NOTES:

1. Filter insert shall have a high flow bypass feature.
2. Filter support frame shall be constructed from stainless steel Type 304.
3. Filter medium shall be *Fossil Rock™*, installed and maintained in accordance with manufacturer specifications.
4. Storage capacity reflects 80% of maximum solids collection prior to impeding filtering bypass.



FloGard®
 Catch Basin Insert Filter
 Curb Inlet Style



Oldcastle®
 Stormwater Solutions

7921 Southpark Plaza, Suite 200 | Littleton, CO | 80120 | Ph: 800.579.8819 | oldcastlestormwater.com
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DRAWING NO. FGP-0002	REV E	ECO ECO-0127 JPR 5/18/15	DATE JPR 1/3/06	SHEET 1 OF 1
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Appendix 7: Hydromodification



Riverside County

SWCT²

Stormwater & Water Conservation Tracking Tool

TOC

Choose search item from list

Enter Value

Locate

Clear

Clear All Metadata

Base Maps

- Topo Map
- Street Map
- Aerial Photo
- USGS Maps

Base Data

Stormwater Data

- Hydromodification Susceptibility Mapping
- 2010 - 303d/TMDL
- Hydromodification Exemption Areas

- Potentially Not Exempt
- Potentially Exempt

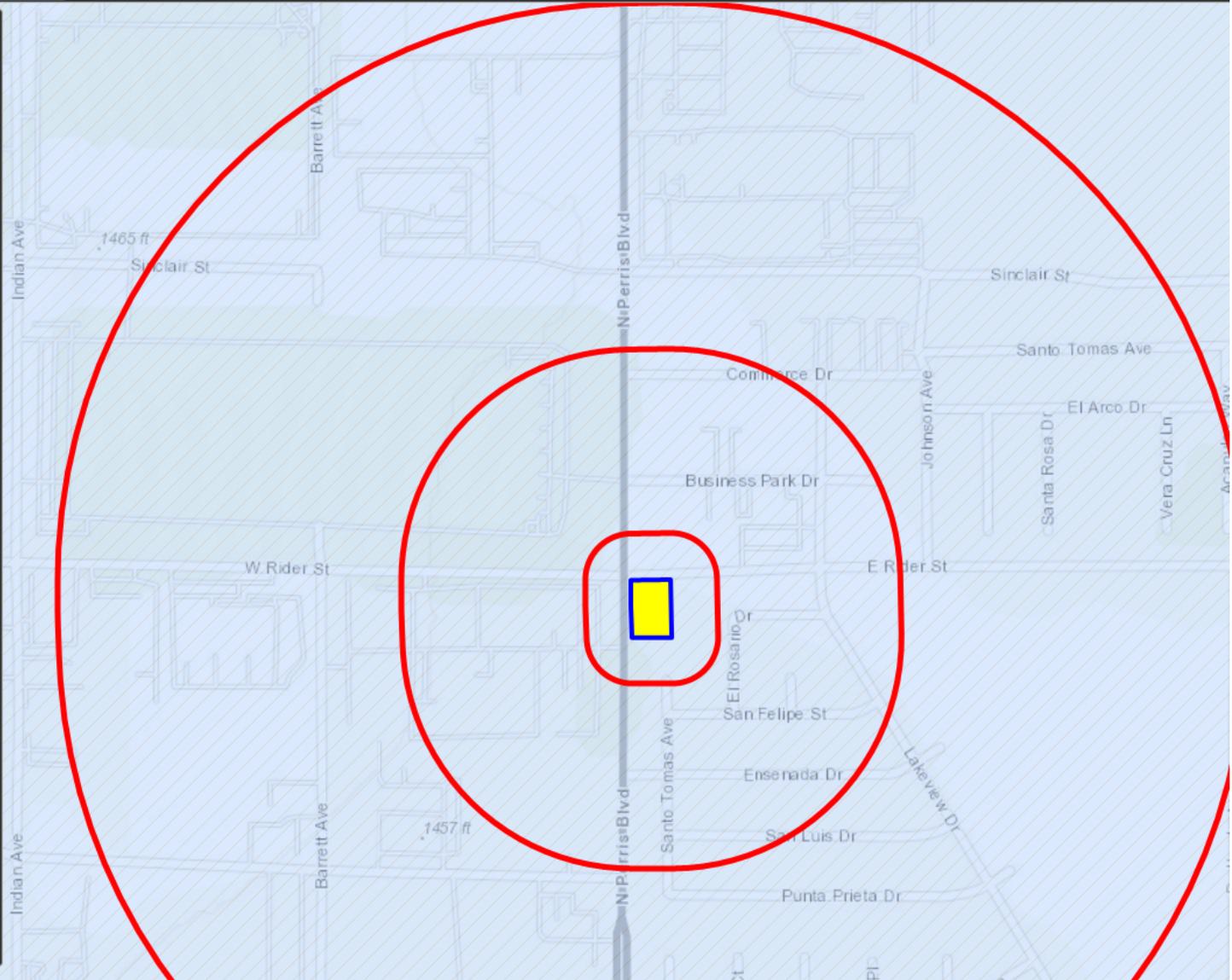
District Facilities

- Permit Areas
- Hydrologic Unit Codes (HUC)
- Topographic Drainage Boundary
- Drainage Area Boundaries
- City Storm Drains
- WQMP 85% Design Isohyetal Map
- CRP (Control Release Point)
- FEMA Flood Plain
- Flood Plain - Other Special Studies
- As-Built Plans

Groundwater Data

- U.S. Fish and Wildlife Critical Habitat
- WRMSHCP Potential Survey Areas
- SKRHCP

700ft



Appendix 8: Source Control

To be provided at Final WQMP submittal

Appendix 9: O&M

To be provided at Final WQMP submittal

Appendix 10: Educational Materials

For Information:

LOCAL SEWERING AGENCIES IN RIVERSIDE COUNTY:

City of Beaumont	(909) 769-8520
Belair Homeowners Association	(909) 277-1414
City of Banning	(909) 922-3130
City of Blythe	(760) 922-6161
City of Coachella	(760) 391-5008
Coachella Valley Water District	(760) 398-2651
City of Corona	(909) 736-2259
Desert Center, CSA #51	(760) 227-3203
Eastern Municipal Water District	(909) 928-3777
Elsinore Valley MWD	(909) 674-3146
Farm Mutual Water Company	(909) 244-4198
Ilylwild Water District	(909) 659-2143
Jurupa Community Services Dist.	(909) 685-7434
Lake Hemet MWD	(909) 658-3241
Lee Lake Water District	(909) 277-1414
March Air Force Base	(909) 656-7000
Mission Springs Water District	(760) 329-6448
City of Palm Springs	(760) 323-8242
Rancho Caballero	(909) 780-9272
Rancho California Water Dist.	(909) 676-4101
Ripley, CSA #62	(760) 922-4909
Rubidoux Community Services Dist.	(909) 684-7580
City of Riverside	(909) 782-5341
Silent Valley Club, Inc	(909) 849-4501
Valley Sanitary District	(760) 347-2356
Western Municipal Water District	(909) 780-4170

SPILL RESPONSE AGENCY:

HAZ-MAT: (909) 358-5055

HAZARDOUS WASTE DISPOSAL: (909) 358-5055
TO REPORT ILLEGAL DUMPING OR A CLOGGED

STORM DRAIN: 1-800-506-2555



Storm Water Clean Water PROTECTION PROGRAM

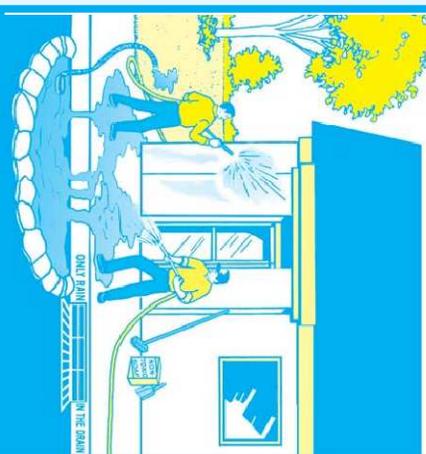
Riverside County gratefully acknowledges the Bay Area Stormwater Management Agencies Association and the Cleaning Equipment Trade Association for information provided in this brochure.

Stormwater Pollution

What you should know for...

OUTDOOR CLEANING ACTIVITIES

NON-STORMWATER DISCHARGES



GUIDELINES

for disposal of washwater
from:

- Sidewalk, plaza or parking lot cleaning
- Vehicle washing or detailing
- Building exterior cleaning
- Waterproofing
- Equipment cleaning or degreasing

Do you know . . . where the water should go?



Riverside County has two drainage systems - sanitary sewers and storm drains. The storm drain system is designed to prevent flooding by carrying excess rainwater away from streets... it's not designed to be a waste disposal system. Since the storm drain system does not provide for water treatment, it often serves the unintended function of transporting pollutants directly to our waterways.

Unlike sanitary sewers, storm drains are not connected to a treatment plant - they flow directly to our local streams, rivers and lakes.

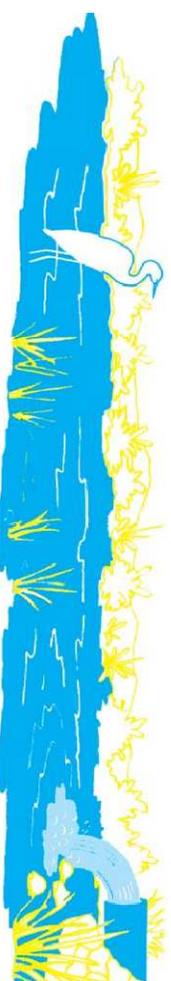
Non-stormwater discharges such as washwater generated from outdoor cleaning projects often transport harmful pollutants into storm drains and our local waterways. Polluted runoff contaminates local waterways and poses a threat to groundwater resources.

Soaps, degreasers, automotive fluids, litter, and a host of other materials washed off buildings, sidewalks, plazas, parking areas, vehicles, and equipment can all pollute our waterways.

The Cities and County of Riverside Stormwater/CleanWater Protection Program

Since preventing pollution is much easier, and less costly than cleaning up "after the fact," the Cities and County of Riverside Stormwater/CleanWater Protection Program informs residents and businesses of pollution prevention activities such as those described in this pamphlet.

The Cities and County of Riverside have adopted ordinances for stormwater management and discharge control. In accordance with state and federal law, these local stormwater ordinances **prohibit** the discharge of wastes into the storm drain system or local surface waters. This includes non-stormwater discharges containing oil, grease, detergents, degreasers, trash, or other waste materials.



PLEASE NOTE: The discharge of pollutants into the street, gutters, storm drain system, or waterways - without a Regional Water Quality Control Board permit or waiver - is **strictly prohibited** by local ordinances and state and federal law.

Help Protect Our Waterways!

Use These Guidelines For Outdoor Cleaning Activities and Washwater Disposal

DO Dispose of small amounts of washwater from cleaning building exteriors, sidewalks, or plazas onto landscaped or unpaved surfaces provided you have the owner's permission and the discharge will not cause flooding or nuisance problems, or flow into a storm drain.

DO NOT Discharge large amounts of these types of washwater onto landscaped areas or soil where water may run to a street or storm drain. Wastewater from exterior cleaning may be pumped to a sewer line with specific permission from the local sewer agency.

DO Check with your local sewer agency's policies and requirements concerning waste water disposal. Water from many outdoor cleaning activities may be acceptable for disposal to the sewer system. See the list on the back of this flyer for phone numbers of the sewer agencies in your area.

DO NOT Pour hazardous wastes or toxic materials into the storm drain or sewer system . . . properly dispose of it instead. When in doubt, contact the local sewer agency! The agency will tell you what types of liquid wastes can be accepted.

DO Understand that water (without soap) used to remove dust from clean vehicles may be discharged to a street or storm drain. Washwater from sidewalk, plaza, and building surface cleaning may go into a street or storm drain if ALL of the following conditions are met:

- 1) The surface being washed is free of residual oil stains, debris and similar pollutants by using dry cleanup methods (sweeping, and cleaning any oil or chemical spills with rags or other absorbent materials before using water).
- 2) Washing is done with water only - no soap or other cleaning materials.
- 3) You have not used the water to remove paint from surfaces during cleaning.

DO NOT Dispose of water containing soap or any other type of cleaning agent into a storm drain or water body. This is a direct violation of state and/or local regulations. Because wastewater from cleaning parking areas or roadways normally contains metallic brake pad dust, oil and other automotive fluids, it should never be discharged to a street, gutter, or storm drain.

DO Understand that mobile auto detailers should divert washwater to landscaped or dirt areas. Note: Be aware that soapy washwater may adversely affect landscaping; consult with the property owner. Residual washwater may remain on paved surfaces to evaporate; sweep up any remaining residue. If there is sufficient water volume to reach the storm drain, collect the runoff and obtain permission to pump it into the sanitary sewer. Follow local sewer agency's requirements for disposal.

DO NOT Dispose of left over cleaning agents into the gutter, storm drain or sanitary sewer.

Regarding Cleaning Agents:

If you must use soap, use biodegradable/phosphate free cleaners. Avoid use of petroleum based cleaning products. Although the use of nontoxic cleaning products is strongly encouraged, *do* understand that these products can still degrade water quality and, therefore, the discharge of these products into



the street, gutters, storm drain system, or waterways is prohibited by local ordinances and the State Water Code.

Note: When cleaning surfaces with a high pressure washer or steam cleaning methods, additional precautions should be taken to prevent the discharge of pollutants into the storm drain system. These two methods of surface cleaning, as compared to the use of a low pressure hose, can remove additional materials that can contaminate local waterways.

OTHER TIPS TO HELP PROTECT OUR WATER

SCREENING WASH WATER

A thorough dry cleanup before washing (without soap) surfaces such as building exteriors and decks without loose paint, sidewalks, or plaza areas, *should be sufficient to protect storm drains. However*, if any debris (solids) could enter storm drains or remain in the gutter or street after cleaning, washwater should first pass through a "20 mesh" or finer screen to catch the solid material, which should then be disposed of in the trash.

DRAIN INLET PROTECTION/CONTAINING & COLLECTING

WASH WATER

- Sand bags can be used to create a barrier around storm drain inlets.
- Plugs or rubber mats can be used to temporarily seal storm drain openings.
- You can also use vacuum booms, containment pads, or temporary berms to keep wash water away from the street, gutter, or storm drain.

EQUIPMENT AND SUPPLIES

Special materials such as absorbents, storm drain plugs and seals, small sump pumps, and vacuum booms are available from many vendors. For more information check catalogs such as New Pig (800-468-4647), Lab Safety Supply (800-356-0783), C&H (800-558-9966), and W.W. Grainger (800-994-9174); or call the Cleaning Equipment Trade Association (800-441-0111) or the Power Washers of North America (800-393-PWNA).

For Information:

For more information on the General Industrial Storm Water Permit contact:

State Water Resources Control Board (SWRCB)
(916) 657-1146 or www.swrcb.ca.gov/ or, at your
Regional Water Quality Control Board (RWQCB):

Santa Ana Region (8)
California Tower
3737 Main Street, Ste. 500
Riverside, CA 92501-3339
(909) 782-4130

San Diego Region (9)
9771 Clairmont Mesa Blvd., Ste. A
San Diego, CA 92124
(619) 467-2952

Colorado River Basin Region (7)
73-720 Fred Waring Dr., Ste. 100
Palm Desert, CA 92260
(760) 346-7491

SPILL RESPONSE AGENCY:

HAZ-MAT:

HAZARDOUS WASTE DISPOSAL: (909) 358-5055

RECYCLING INFORMATION: 1-800-366-SAVE

TO REPORT ILLEGAL DUMPING OR A CLOGGED

STORM DRAIN: 1-800-506-2555

To order additional brochures or to obtain information
on other pollution prevention activities, call:
(909) 955-1111.

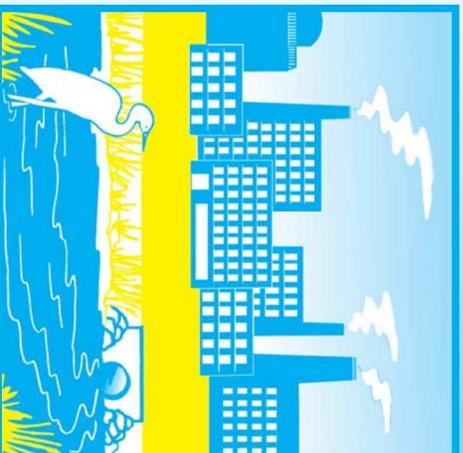


**Storm Water
Clean Water**
PROTECTION PROGRAM

Riverside County gratefully acknowledges the State
Water Quality Control Board and the American Public
Works Association, Storm Water Quality Task Force for
the information provided in this brochure.

DID YOU KNOW . . .

**YOUR FACILITY MAY
NEED A STORM WATER
PERMIT?**



Many industrial facilities
and manufacturing operations
must obtain coverage under the
Industrial Activities Storm Water
General Permit

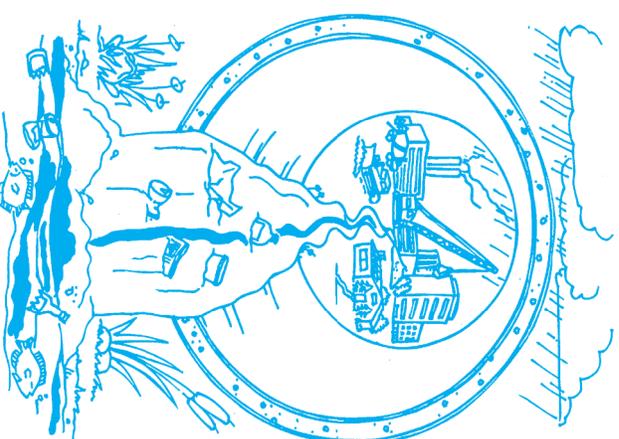
**FIND OUT
IF YOUR FACILITY
MUST OBTAIN A PERMIT**

StormWater Pollution . . . What you should know

Riverside County has two drainage systems - sanitary sewers and storm drains. The storm drain system is designed to help prevent flooding by carrying excess rainwater away from streets. Since the storm drain system does not provide for water treatment, it also serves the unintended function of transporting pollutants directly to our waterways.

Unlike sanitary sewers, storm drains are not connected to a treatment plant - they flow directly to our local streams, rivers and lakes.

In recent years, awareness of the need to protect water quality has increased. As a result, federal, state, and local programs have been established to reduce polluted stormwater discharges to our waterways. The emphasis of these programs is to prevent stormwater pollution since it's much easier, and less costly, than cleaning up "after the fact."



National Pollutant Discharge Elimination System (NPDES)

In 1987, the Federal Clean Water Act was amended to establish a framework for regulating industrial stormwater discharges under the NPDES permit program. In California, NPDES permits are issued by the State Water Resources Control Board (SWRCB) and the nine (9) Regional Water Quality Control Boards (RWQCB). In general, certain industrial facilities and manufacturing operations must obtain coverage under the Industrial Activities Storm Water General Permit if the type of facilities or operations falls into one of the several categories described in this brochure.

How Do I Know If I Need A Permit?

Following are *general descriptions* of the industry categories types that are regulated by the Industrial Activities Storm Water General Permit. Contact your local Region Water Quality Control Board to determine if your facility/operation requires coverage under the Permit.

- Facilities such as cement manufacturing; feedlots; fertilizer manufacturing; petroleum refining; phosphate manufacturing; steam electric power generation; coal mining; mineral mining and processing; ore mining and dressing; and asphalt emulsion;
- Facilities classified as lumber and wood products (except wood kitchen cabinets); pulp, paper, and paperboard mills; chemical producers (except some pharmaceutical and biological products); petroleum and coal products; leather production and products; stone, clay and glass products; primary metal industries; fabricated structural metal; ship and boat building and repairing;
- Active or inactive mining operations and oil and gas exploration, production, processing, or treatment operations;
- Hazardous waste treatment, storage, or disposal facilities;
- Landfills, land application sites and open dumps that receive or have received any industrial waste; unless there is a new overlying land use such as a golf course, park, etc., and there is no discharge associated with the landfill;
- Facilities involved in the recycling of materials, including metal scrap yards, battery reclaimers, salvage yards, and automobile junkyards;
- Steam electric power generating facilities, facilities that generate steam for electric power by combustion;
- Transportation facilities that have vehicle maintenance shops, fueling facilities, equipment cleaning operations, or airport deicing operations. This includes school bus maintenance facilities operated by a school district;
- Sewage treatment facilities;
- Facilities that have areas where material handling equipment or activities, raw materials, intermediate products, final products, waste materials, by-products, or industrial machinery are exposed to storm water.

How do I obtain coverage under the Industrial Activities Storm Water General Permit?

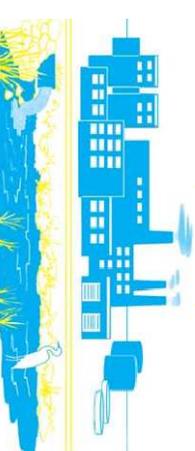
Obtain a permit application package from your local Regional Water Quality Control Board listed on the back of this brochure or the State Water Resources Control Board (SWRCB). Submit a completed Notice of Intent (NOI) form, site map and the appropriate fee (\$250 or \$500) to the SWRCB. Facilities must submit an NOI thirty (30) days prior to beginning operation. Once you submit the NOI, the State Board will send you a letter acknowledging receipt of your NOI and will assign your facility a waste discharge identification number (WDID No.). You will also receive an annual fee billing. These billings should roughly coincide with the date the State Board processed your original NOI submittal.

What are the requirements of the Industrial Activities Storm Water General Permit?

The basic requirements of the Permit are:

1. The facility must eliminate any non-stormwater discharges or obtain a separate permit for such discharges.
2. The facility must develop and implement a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP must identify sources of pollutants that may be exposed to stormwater. Once the sources of pollutants have been identified, the facility operator must develop and implement Best Management Practices (BMPs) to minimize or prevent polluted runoff.
Guidance in preparing a SWPPP is available from a document prepared by the California Storm Water Quality Task Force called the California Storm Water Best Management Practice Handbook.
3. The facility must develop and implement a Monitoring Program that includes conducting visual observations and collecting samples of the facility's storm water discharges associated with industrial activity. The General Permit requires that the analysis be conducted by a laboratory that is certified by the State of California.
4. The facility must submit to the Regional Board, every July 1, an annual report that includes the results of its monitoring program.

A Non-Storm Water Discharge is... any discharge to a storm drain system that is not composed entirely of storm water. The following non-storm water discharges are authorized by the General Permit: fire hydrant flushing; potable water sources, including potable water related to the operation, maintenance, or testing of potable water systems; drinking fountain water; atmospheric condensates including refrigeration, air conditioning, and compressor condensate; irrigation drainage; landscape watering; springs; non-contaminated ground water; foundation or footing drainage; and sea water infiltration where the sea waters are discharged back into the sea water source.



WARNING: There are significant penalties for non-compliance: a minimum fine of \$5,000 for failing to obtain permit coverage, and, up to \$10,000 per day, per violation plus \$10 per gallon of discharge in excess of 1,000 gallons.



A Citizen's Guide to Understanding Stormwater



EPA 833-B-03-002
January 2003
United States Environmental Protection Agency

How to Access: <http://www.epa.gov/npdes/stormwater>
For more information contact: www.epa.gov/npdes/stormwater or visit www.epa.gov/nps



After the Storm

For more information contact:
www.epa.gov/npdes/stormwater
or visit
www.epa.gov/nps



What is stormwater runoff?



Stormwater runoff occurs when precipitation from rain or snowmelt flows over the ground. Impervious surfaces like driveways, sidewalks, and streets prevent stormwater from naturally soaking into the ground.

Why is stormwater runoff a problem?



Stormwater can pick up debris, chemicals, dirt, and other pollutants and flow into a storm sewer system or directly to a lake, stream, river, wetland, or coastal water. Anything that enters a storm sewer system is discharged untreated into the waterbodies we use for swimming, fishing, and providing drinking water.

The effects of pollution

Polluted stormwater runoff can have many adverse effects on plants, fish, animals, and people.

- ◆ Sediment can cloud the water and make it difficult or impossible for aquatic plants to grow. Sediment also can destroy aquatic habitats.
- ◆ Excess nutrients can cause algae blooms. When algae die, they sink to the bottom and decompose in a process that removes oxygen from the water. Fish and other aquatic organisms can't exist in water with low dissolved oxygen levels.
- ◆ Bacteria and other pathogens can wash into swimming areas and create health hazards, often making beach closures necessary.
- ◆ Debris—plastic bags, six-pack rings, bottles, and cigarette butts—washed into waterbodies can choke, suffocate, or disable aquatic life like ducks, fish, turtles, and birds.
- ◆ Household hazardous wastes like insecticides, pesticides, paint, solvents, used motor oil, and other auto fluids can poison aquatic life. Land animals and people can become sick or die from eating diseased fish and shellfish or ingesting polluted water.



◆ Polluted stormwater often affects drinking water sources. This, in turn, can affect human health and increase drinking water treatment costs.

Stormwater Pollution Solutions

Residential



Recycle or properly dispose of household products that contain chemicals, such as insecticides, pesticides, paint, solvents, and used motor oil and other auto fluids. Don't pour them onto the ground or into storm drains.

Lawn care

Excess fertilizers and pesticides applied to lawns and gardens wash off and pollute streams. In addition, yard clippings and leaves can wash into storm drains and contribute nutrients and organic matter to streams.



- ◆ Don't overwater your lawn. Consider using a soaker hose instead of a sprinkler.
- ◆ Use pesticides and fertilizers sparingly. When use is necessary, use these chemicals in the recommended amounts. Use organic mulch or safer pest control methods whenever possible.
- ◆ Compost or mulch yard waste. Don't leave it in the street or sweep it into storm drains or streams.
- ◆ Cover piles of dirt or mulch being used in landscaping projects.

Septic systems

Leaking and poorly maintained septic systems release nutrients and pathogens (bacteria and viruses) that can be picked up by stormwater and discharged into nearby waterbodies. Pathogens can cause public health problems and environmental concerns.



- ◆ Inspect your system every 3 years and pump your tank as necessary (every 3 to 5 years).
- ◆ Don't dispose of household hazardous waste in sinks or toilets.

Auto care

Washing your car and degreasing auto parts at home can send detergents and other contaminants through the storm sewer system. Dumping automotive fluids into storm drains has the same result as dumping the materials directly into a waterbody.



- ◆ Use a commercial car wash that treats or recycles its wastewater, or wash your car on your yard so the water infiltrates into the ground.
- ◆ Repair leaks and dispose of used auto fluids and batteries at designated drop-off or recycling locations.

Pet waste

Pet waste can be a major source of bacteria and excess nutrients in local waters.



- ◆ When walking your pet, remember to pick up the waste and dispose of it properly. Flushing pet waste is the best disposal method. Leaving pet waste on the ground increases public health risks by allowing harmful bacteria and nutrients to wash into the storm drain and eventually into local waterbodies.



Education is essential to changing people's behavior. Signs and markers near storm drains warn residents that pollutants entering the drains will be carried untreated into a local waterbody.

Residential landscaping

Permeable Pavement—Traditional concrete and asphalt don't allow water to soak into the ground. Instead these surfaces rely on storm drains to divert unwanted water. Permeable pavement systems allow rain and snowmelt to soak through, decreasing stormwater runoff.

Rain Barrels—You can collect rainwater from rooftops in mosquito-proof containers. The water can be used later on lawn or garden areas.



Rain Gardens and Grassy Swales—Specially designed areas planted with native plants can provide natural places for



rainwater to collect and soak into the ground. Rain from rooftop areas or paved areas can be diverted into these areas rather than into storm drains.

Vegetated Filter Strips—Filter strips are areas of native grass or plants created along roadways or streams. They trap the pollutants stormwater picks up as it flows across driveways and streets.



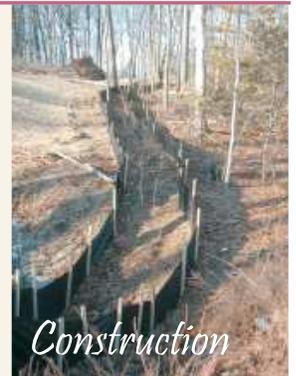
Commercial

Dirt, oil, and debris that collect in parking lots and paved areas can be washed into the storm sewer system and eventually enter local waterbodies.

- ◆ Sweep up litter and debris from sidewalks, driveways and parking lots, especially around storm drains.
- ◆ Cover grease storage and dumpsters and keep them clean to avoid leaks.
- ◆ Report any chemical spill to the local hazardous waste cleanup team. They'll know the best way to keep spills from harming the environment.

Erosion controls that aren't maintained can cause excessive amounts of sediment and debris to be carried into the stormwater system. Construction vehicles can leak fuel, oil, and other harmful fluids that can be picked up by stormwater and deposited into local waterbodies.

- ◆ Divert stormwater away from disturbed or exposed areas of the construction site.
- ◆ Install silt fences, vehicle mud removal areas, vegetative cover, and other sediment and erosion controls and properly maintain them, especially after rainstorms.
- ◆ Prevent soil erosion by minimizing disturbed areas during construction projects, and seed and mulch bare areas as soon as possible.



Construction



Agriculture

Lack of vegetation on streambanks can lead to erosion. Overgrazed pastures can also contribute excessive amounts of sediment to local waterbodies. Excess fertilizers and pesticides can poison aquatic animals and lead to destructive algae blooms. Livestock in streams can contaminate waterways with bacteria, making them unsafe for human contact.



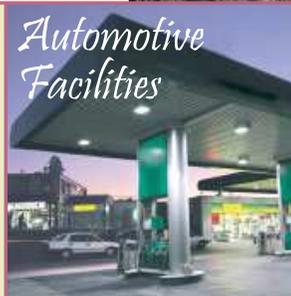
- ◆ Keep livestock away from streambanks and provide them a water source away from waterbodies.
- ◆ Store and apply manure away from waterbodies and in accordance with a nutrient management plan.
- ◆ Vegetate riparian areas along waterways.
- ◆ Rotate animal grazing to prevent soil erosion in fields.
- ◆ Apply fertilizers and pesticides according to label instructions to save money and minimize pollution.



Forestry

Improperly managed logging operations can result in erosion and sedimentation.

- ◆ Conduct preharvest planning to prevent erosion and lower costs.
- ◆ Use logging methods and equipment that minimize soil disturbance.
- ◆ Plan and design skid trails, yard areas, and truck access roads to minimize stream crossings and avoid disturbing the forest floor.
- ◆ Construct stream crossings so that they minimize erosion and physical changes to streams.
- ◆ Expedite revegetation of cleared areas.



Automotive Facilities

Uncovered fueling stations allow spills to be washed into storm drains. Cars waiting to be repaired can leak fuel, oil, and other harmful fluids that can be picked up by stormwater.

- ◆ Clean up spills immediately and properly dispose of cleanup materials.
- ◆ Provide cover over fueling stations and design or retrofit facilities for spill containment.
- ◆ Properly maintain fleet vehicles to prevent oil, gas, and other discharges from being washed into local waterbodies.
- ◆ Install and maintain oil/water separators.



Landscaping and garden maintenance activities can be major contributors to water pollution. Soils, yard wastes, over-watering and garden chemicals become part of the urban runoff mix that winds its way through streets, gutters and storm drains before entering lakes, rivers, streams, etc. Urban runoff pollution contaminates water and harms aquatic life!

In Riverside County, report illegal discharges into the storm drain, call **1-800-506-2555**
“Only Rain Down the Storm Drain”

Important Links:

Riverside County Household Hazardous Waste Collection Information
1-800-304-2226 or www.rivcown.org

Riverside County Backyard Composting Program
1-800-366-SAVE

Integrated Pest Management (IPM) Solutions
www.ipm.ucdavis.edu

California Master Gardener Programs
www.mastergardeners.org
www.camastergardeners.ucdavis.edu

California Native Plant Society
www.cnps.org

The Riverside County “Only Rain Down the Storm Drain” Pollution Prevention Program gratefully acknowledges Orange County’s Storm Water Program for their contribution to this brochure.



...Only Rain Down
...the Storm Drain

*What you should know for...
Landscape and Gardening*

Best Management tips for:

- Professionals
- Novices
- Landscapers
- Gardeners
- Cultivators



Tips for Landscape & Gardening

This brochure will help you to get the most of your lawn and gardening efforts and keep our waterways clean. Clean waterways provide recreation, establish thriving fish habitats, secure safe sanctuaries for wildlife, and add beauty to our communities. NEVER allow gardening products or waste water to enter the street, gutter or storm drain.

General Landscaping Tips

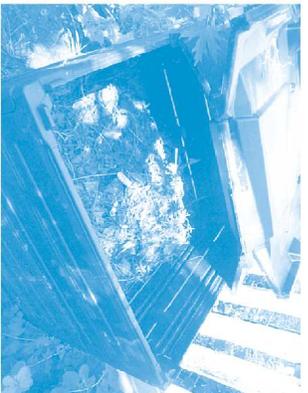
- Protect stockpiles and materials from wind and rain by storing them under tarps or secured plastic sheeting.
- Prevent erosion of slopes by planting fast-growing, dense ground covering plants. These will shield and bind the soil.
- Plant native vegetation to reduce the amount of water, fertilizers and pesticides applied to the landscape.
- Never apply pesticides or fertilizers when rain is predicted within the next 48 hours.



Garden & Lawn Maintenance

- Do not overwater. Use irrigation practices such as drip irrigation, soaker hoses or micro-spray systems. Periodically inspect and fix leaks and misdirected sprinklers.

- Do not rake or blow leaves, clippings or pruning waste into the street, gutter or storm drain. Instead, dispose of green waste by composting, hauling it to a permitted landfill, or recycling it through your city's program.



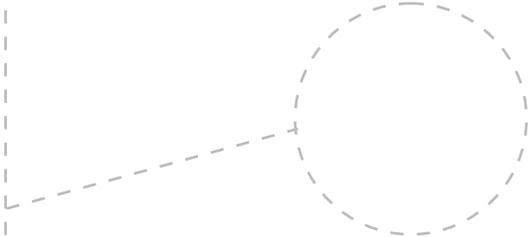
- Consider recycling your green waste and adding "nature's own fertilizer" to your lawn or garden.
- Read labels and use only as directed. Do not over-apply pesticides or fertilizers. Apply to spots as needed, rather than blanketing an entire area.
- Store pesticides, fertilizers and other chemicals in a dry covered area to prevent exposure that may result in the deterioration of containers and packaging.
- Rinse empty pesticide containers and re-use rinse water as you would use the product. Do not dump rinse water down storm drains or sewers. Dispose of empty containers in the trash.
- When available, use non-toxic alternatives to traditional pesticides, and use pesticides specifically designed to control the pest you are targeting.

- Try natural long-term common sense solutions first. Integrated Pest Management (IPM) can provide landscaping guidance and solutions, such as:
 - ◆ **Physical Controls** - Try hand picking, barriers, traps or caulking holes to control weeds and pests.
 - ◆ **Biological Controls** - Use predatory insects to control harmful pests.
 - ◆ **Chemical Controls** - Check out www.ipm.ucdavis.edu before using chemicals. Remember, all chemicals should be used cautiously and in moderation.
- If fertilizer is spilled, sweep up the spill before irrigating. If the spill is liquid, apply an absorbent material such as cat litter, and then sweep it up and dispose of it in the trash.
- Take unwanted pesticides to a Household Waste Collection Center to be recycled.
- *Dumping toxics into the street, gutter or storm drain is illegal!*

www.bewaterwise.com Great water conservation tips and drought tolerant garden designs.

www.ourwaterourworld.com Learn how to safely manage home and garden pests.

Additional information can also be found on the back of this brochure.



Stormwater Pollution Found in Your Area!

This is not a citation.

This is to inform you that our staff found the following pollutants in the storm sewer system in your area. This storm sewer system leads directly to

- Motor oil
- Oil filters
- Antifreeze/
transmission fluid
- Paint
- Solvent/degreaser
- Cooking grease
- Detergent
- Home improvement waste (concrete,
mortar)
- Pet waste
- Yard waste (leaves, grass, mulch)
- Excessive dirt and
gravel
- Trash
- Construction debris
- Pesticides and
fertilizers
- Other

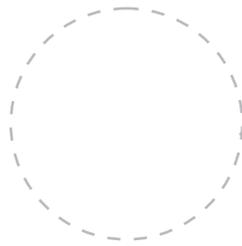


**For more information or to report
an illegal discharge of
pollutants, please call:**



www.epa.gov/npdes/stormwater

EPA 833-F-03-002
April 2003



Stormwater runoff is precipitation from rain or snowmelt that flows over the ground. As it flows, it can pick up debris, chemicals, dirt, and other pollutants and deposit them into a storm sewer system or waterbody.

Anything that enters a storm sewer system is discharged *untreated* into the waterbodies we use for swimming, fishing, and providing drinking water.

Remember:
Only Rain Down the Drain

To keep the stormwater leaving your home or workplace clean, follow these simple guidelines:

- ◆ Use pesticides and fertilizers sparingly.
- ◆ Repair auto leaks.
- ◆ Dispose of household hazardous waste, used auto fluids (antifreeze, oil, etc.), and batteries at designated collection or recycling locations.
- ◆ Clean up after your pet.
- ◆ Use a commercial car wash or wash your car on a lawn or other unpaved surface.
- ◆ Sweep up yard debris rather than hosing down areas. Compost or recycle yard waste when possible.
- ◆ Clean paint brushes in a sink, not outdoors. Properly dispose of excess paints through a household hazardous waste collection program.
- ◆ Sweep up and properly dispose of construction debris like concrete and mortar.



**ACTIVITY
UPDATE****Innovative use of Clean Water State Revolving
Funds for Nonpoint Source Pollution**

*States are
successfully
using linked
deposit and
pass-through
loans to fund
important
nonpoint source
pollution
remediation
projects*

Many states are successfully using the USEPA's Office of Water, Clean Water State Revolving Fund (CWSRF) loan program to fund important nonpoint source pollution remediation projects. Nonpoint source pollution is widely viewed as one of the most serious threats to our nation's water quality. State and local governments, local watershed and agricultural organizations, and many others are working to devise solutions that address nonpoint source pollution. The CWSRF program provides very attractive low-interest loans that spread project costs over a repayment period of up to 20 years. Today, CWSRF programs are funding projects that address agriculture runoff, leaking on-site septic systems, and urban nonpoint source pollution, including stormwater runoff and brownfield contamination.

During the initial operating phase of CWSRF programs, states designed loan

options and implemented administrative procedures that would best serve municipal wastewater system projects. However, when considering how the CWSRF program could be used to address nonpoint source pollution, a number of states recognized that they would need to go beyond the typical municipal borrower and provide loan assistance to farmers, homeowners, and nonprofit organizations. States also recognized that providing loans to small private borrowers could be challenging. The loans would fund a variety of small projects, there would be more of them to service and manage, and there would be a greater risk of loan defaults.

States have taken different approaches to addressing these challenges. In some states, the CWSRF program has called upon internal expertise and the expertise of other state personnel to help manage loans to private borrowers. Other states have used creative lending approaches that pass loan risks and loan servicing responsibilities to financial institutions, local governments, or other state agencies. These lending methods include linked deposit loan programs with local financial institutions and pass-through loan programs with local government or state agencies. This activity update will highlight these loan structures with three case studies of successful state programs.



What is a linked deposit loan?

Under a linked deposit loan approach, a state works with local private lending institutions to provide assistance for nonpoint source pollution control. The state agrees to accept a reduced rate of return on an investment (e.g., a certificate of deposit) and the lending institution agrees to provide a loan to a borrower at a similarly reduced interest rate. For example, if the typical earnings rate for a certificate of deposit (CD) is five percent, a state might agree to purchase a CD that earns two percent interest, and in exchange, the lending institution agrees to provide a loan to a borrower at an interest rate that is three percentage points lower than the market rate for the borrower. In this program, the CWSRF investment (deposit) is linked to a low-interest loan,

thereby earning the description "linked deposit loan."

Linked deposit loan programs provide benefits for CWSRF programs, local financial institutions, and borrowers. The linked-deposit approach benefits CWSRF programs because they support high priority nonpoint source projects and because they place risk and management responsibilities with local financial institutions. Financial institutions earn profits from the linked deposit agreements and add an additional service for their customers. Borrowers find linked deposit programs to be economical and comfortable; they save money with low-interest loans, and they are comfortable working with local financial institutions.

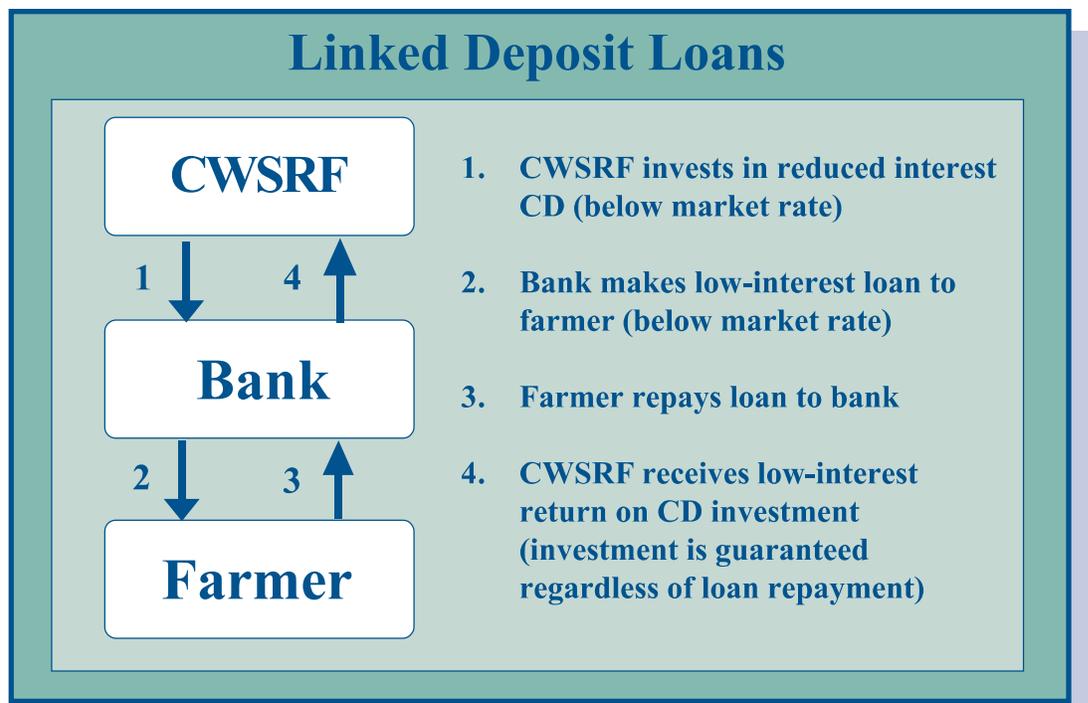


Figure 1. Linked deposit program flow chart

What is a pass-through loan?

In a pass-through loan, a CWSRF program makes a loan to another state or local government agency and that agency then lends the funds to private borrowers to address nonpoint source pollution. The town, county, or state agency reviews the project and the finances of each borrower. CWSRF loan funds are "passed-through" another government agency to private borrowers.

Pass-through loan programs benefit CWSRF programs, pass-through partners (towns, counties, and state agencies), and borrowers. These programs benefit CWSRF programs because they support

high-priority nonpoint source projects and because they place risk and management responsibilities with program partners. Towns, counties, and state agencies benefit from pass-through programs because CWSRF funds support their nonpoint source priorities. Pass-through loans can offer two potential benefits to borrowers. First, pass-through loans are not provided by private lenders and, as a result, are likely to have lower interest rates. Second, local government agencies may have greater flexibility to provide loans to borrowers with relatively weak credit conditions if the borrower's nonpoint source project is a high priority for the state or local government agency.

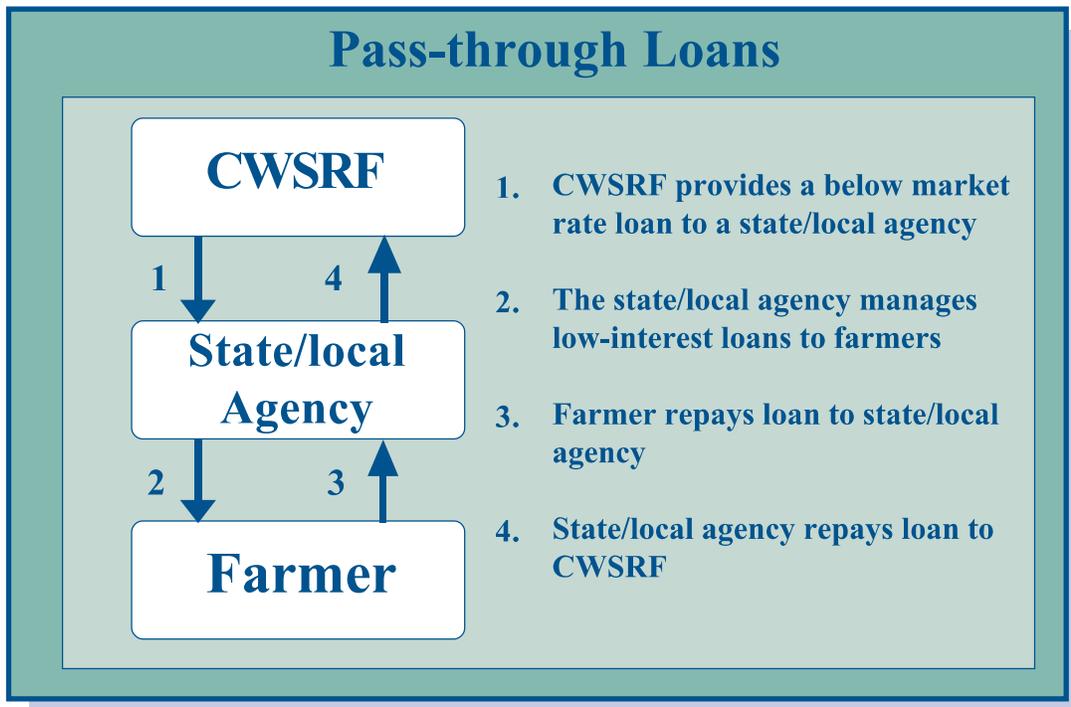


Figure 2. Pass-through program flow chart

Who has benefited from these programs and what have they funded?

CWSRF linked deposit and pass-through loan programs have supported borrowers implementing a variety of nonpoint source projects:

- Homeowners have implemented stormwater runoff best management practices and repaired or replaced failing on-site septic systems.
- Homeowner associations have addressed failing stormwater management facilities.
- Farmers have addressed agricultural runoff with a wide variety of agricultural best management practices including the construction of manure storage facilities, the restoration of filter strips and grassed waterways, and the use of conservation tillage equipment.



Ohio Case Study — Linked Deposit Loan Program

Ohio has used a linked-deposit loan program since 1993 to fund projects that support county watershed management plans. This program has funded more than 300 projects, including the repair of onsite wastewater treatment systems and the implementation of best management practices for agriculture, forestry, stormwater, and land development. The CWSRF program developed this program with the help of county soil and water conservation districts and local banks.

The CWSRF program implements its linked deposit loan program one county at a time. Each county's program is developed with two concurrent steps: the county soil and water conservation district develops a watershed management plan, and the CWSRF program and local financial institutions enter into agreements describing requirements and procedures for linked deposit loans.

Watershed management plans describe a watershed, identify sources of pollution, suggest actions that would address those pollution sources, prioritize water quality problems, identify sources of funding, and establish an implementation schedule. The county soil and water district's draft plan is reviewed by Ohio EPA and by a formal public review process. If Ohio EPA approves a plan after this review, the CWSRF program and the soil and water conservation district sign a memorandum of understanding that describes how these two entities will coordinate their implementation of the management plan.



At the same time that a watershed management plan is developed and reviewed, soil and conservation districts contact local banks to identify institutions that would like to participate in a linked deposit program. Interested banks enter into agreements with the CWSRF program that describe requirements and procedures for linked deposit loans.

Any borrower with a project that helps to implement a watershed management plan is eligible for a linked deposit loan. Participating banks review borrowers' credit using their own credit standards. If a bank approves a linked deposit loan, the CWSRF program purchases a CD of equal value from the bank. The CWSRF program accepts a CD interest rate that is five percentage points lower than the rate of a U.S. Treasury Note or Bond with the same term. The borrower's loan interest

rate is also reduced by five percentage points. The bank makes semiannual payments of principal and interest to repay the CWSRF for its investment in the CD, and it makes these payments even if the borrower defaults on the linked deposit loan.

Massachusetts Case Study — Lending through Local Government

Since 1995, Massachusetts' Community Septic Management Program has used pass-through loans with local municipalities to fund the repair and replacement of failing septic systems. The program has funded more than 3,000 projects across the state. The CWSRF has developed this program with the cooperation of local municipalities.

Communities that participate in Massachusetts' Community Septic Management Program can borrow hundreds of thousands of dollars from the CWSRF program, but communities must first develop a septic management plan and procedures for a local betterment loan program (the community uses betterment assessments to secure the loans).

Massachusetts provides grants of up to \$20,000 to municipalities to support these planning activities and the administration of the program.

Massachusetts law defines a betterment assessment as a charge imposed on real property that receives a benefit from a public improvement. Municipalities have traditionally imposed betterments to pay for improvements such as roads, sidewalks and sewer lines. In the Community Septic Management Program, however, betterment agreements allow individuals to receive community support (a betterment loan) for septic system improvements, and the agreements allow communities to ensure that the loans are repaid as part of a property tax bill. The community can place a municipal lien on property if a homeowner defaults on a betterment loan.

Septic management plans identify and prioritize areas with septic systems that require monitoring, maintaining, and upgrading. As part of the planning process, communities develop maintenance schedules for septic systems, and they develop databases that track the inspection, maintenance, and upgrade of these systems. The Massachusetts Department of Environmental Protection reviews all community septic management plans.

Before a community can receive a CWSRF loan from the state, however, it also develops the framework for a local betterment loan program. Communities create administrative structures to manage the programs, devise a method for selecting priority projects, and work with their tax assessors to ensure that homeowners will repay their betterment loans as part of their local tax assessments.

Communities that develop septic management plans and procedures for a local betterment loan program receive loans from the CWSRF program for 20 years at zero percent interest. Communities

typically borrow \$200,000 from this program. Homeowners typically receive twenty-year loans from communities at two to five percent interest. Communities can use interest accrued on betterment loans to support the administrative costs of the loan programs. Communities must begin to repay the CWSRF within one year after they have finished dispersing the proceeds of each CWSRF loan.

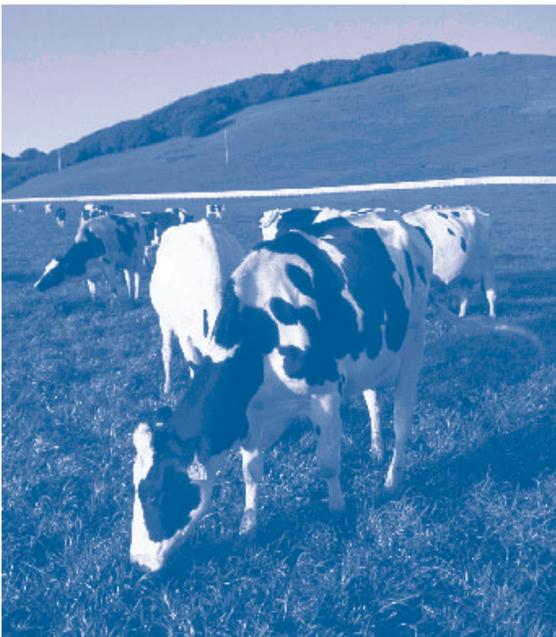
Missouri Case Study — Lending through State Agencies

Missouri's Nonpoint Source Animal Waste Treatment Facility Loan Program is a pass-through loan program that uses a state agency as a loan intermediary. Since 1995, the Missouri Agriculture and Small Business Development Authority (MASBDA) has borrowed \$5 million from the CWSRF program, and MASBDA has used these funds to support the construction of 88 animal waste treatment systems for livestock and poultry producers. The agricultural operation of each borrower in this loan program produces fewer than 1,000 animal units -- concentrated animal feeding operations are ineligible.

Missouri's Nonpoint Source Animal Waste Treatment Facility Loan Program does not require a regional planning effort similar to the soil and water conservation plans required in Ohio's linked deposit program or the septic management plans required in Massachusetts' pass-through loan program. Engineers with Missouri's CWSRF program review each project application to ensure that CWSRF-financed structures and equipment support the goals of the program.



Missouri's CWSRF program provides 10-year loans to MASBDA that have a 1.8 percent interest rate. Individual agricultural producers access these resources by submitting applications to MASBDA. MASBDA reviews the financial component of each application, assessing cash flows and establishing security requirements. Borrowers must provide a dedicated source of repayment and a first or second deed of trust on their property. Agricultural producers typically receive 10-year loans from MASBDA that have interest rates from 5.3-5.8 percent. However, MASBDA does not offer construction financing for animal waste treatment systems. Typically, agricultural producers use loans from the Nonpoint Source Animal Waste Treatment Facility Loan Program to pay off construction loans from a private lender. MASBDA uses the repayments from agricultural producers to repay its loan from the CWSRF.



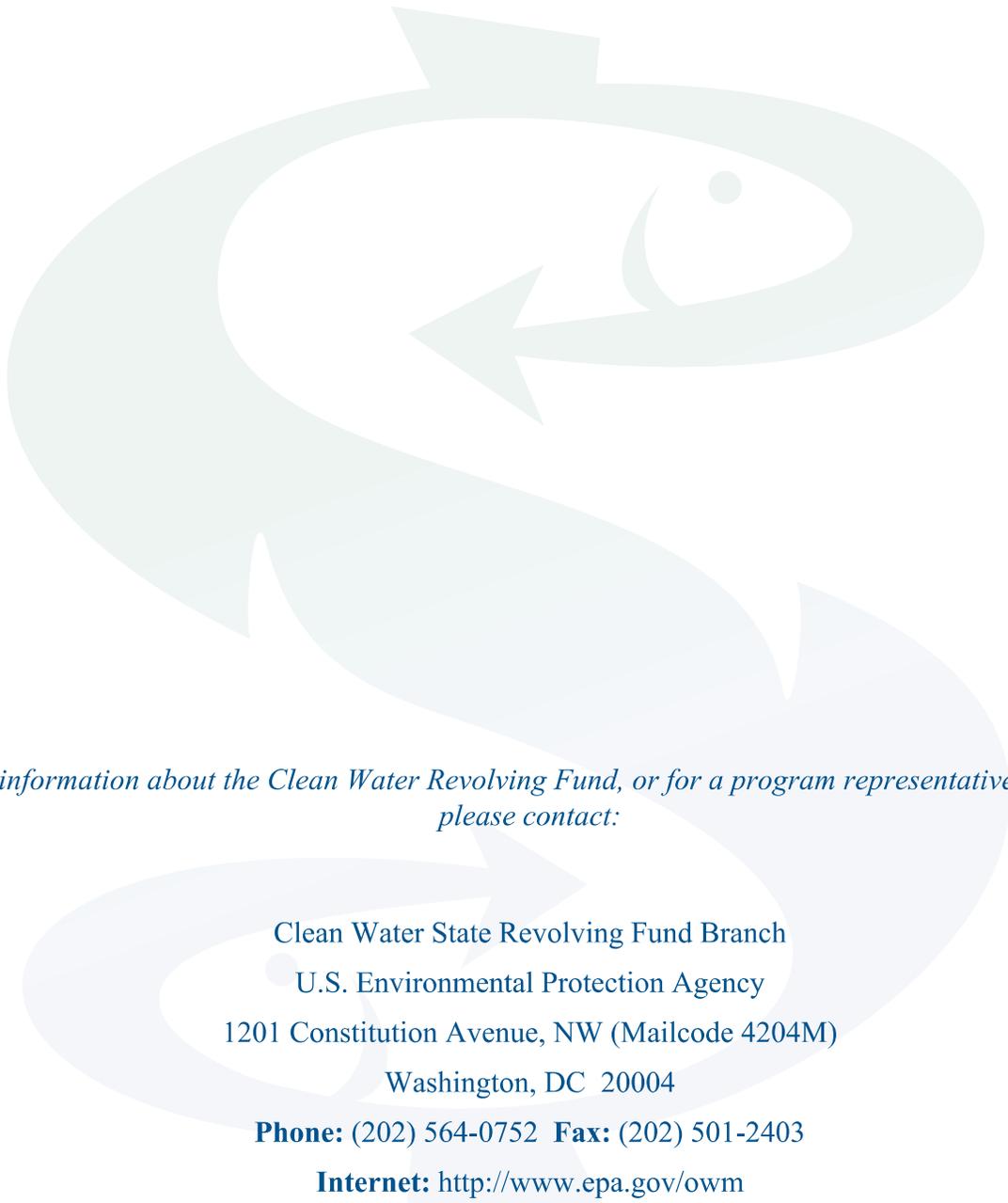
Case Study Contact Information

More information on the programs outlined in this update can be found on the state program web sites or by contacting the programs themselves.

Ohio Environmental Protection Agency
Div. of Environmental & Financial Assistance
Contact: Bob Monsarrat
Phone: 614-644-3655
Web site:
www.epa.state.oh.us/defa/linkdepo.html

Massachusetts Department of Environmental Protection
Massachusetts' Community Septic Management Program
Contact: Joseph McNealy
Phone: 617-556-1068
Web site: www.state.ma.us/dep/brp

Missouri Department of Agriculture
Animal Waste Facility Loan Program
Contact: Steve Townley
Phone: 573-751-1397
Web site: www.mda.state.mo.us/a2c.htm



For more information about the Clean Water Revolving Fund, or for a program representative in your State, please contact:

Clean Water State Revolving Fund Branch
U.S. Environmental Protection Agency
1201 Constitution Avenue, NW (Mailcode 4204M)
Washington, DC 20004

Phone: (202) 564-0752 **Fax:** (202) 501-2403

Internet: <http://www.epa.gov/owm>



Clean Water
State Revolving Fund

Clean Water



*Everybody's
Business*



10 Things You Can Do to Prevent Stormwater Runoff Pollution

- Use fertilizers sparingly and sweep up driveways, sidewalks, and roads
- Never dump anything down storm drains
- Vegetate bare spots in your yard
- Compost your yard waste
- Avoid pesticides; learn about Integrated Pest Management (IPM)
- Direct downspouts away from paved surfaces
- Take your car to the car wash instead of washing it in the driveway
- Check car for leaks, and recycle motor oil
- Pick up after your pet
- Have your septic tank pumped and system inspected regularly



For more information, visit
www.epa.gov/nps or
www.epa.gov/npdes/stormwater

Protecting Water Quality from **URBAN RUNOFF**

Clean Water Is Everybody's Business

In urban and suburban areas, much of the land surface is covered by buildings and pavement, which do not allow rain and snowmelt to soak into the ground. Instead, most developed areas rely on storm drains to carry large amounts of runoff from roofs and paved areas to nearby waterways. The stormwater runoff carries pollutants such as oil, dirt, chemicals, and lawn fertilizers directly to streams and rivers, where they seriously harm water quality. To protect surface water quality and groundwater resources, development should be designed and built to minimize increases in runoff.

How Urbanized Areas Affect Water Quality

Increased Runoff

The porous and varied terrain of natural landscapes like forests, wetlands, and grasslands traps rainwater and snowmelt and allows them to filter slowly into the ground. In contrast, impervious (nonporous) surfaces like roads, parking lots, and rooftops prevent rain and snowmelt from infiltrating, or soaking, into the ground. Most of the rainfall

The most recent National Water Quality Inventory reports that runoff from urbanized areas is the leading source of water quality impairments to surveyed estuaries and the third-largest source of impairments to surveyed lakes.

Did you know that because of impervious surfaces like pavement and rooftops, a typical city block generates more than 5 times more runoff than a woodland area of the same size?

and snowmelt remains above the surface, where it runs off rapidly in unnaturally large amounts.

Storm sewer systems concentrate runoff into smooth, straight conduits. This runoff gathers speed and erosional power as it travels underground. When this runoff leaves the storm drains and empties into a stream, its excessive volume and power blast out streambanks, damaging streamside vegetation and wiping out aquatic habitat. These increased storm flows carry sediment loads from construction sites and other denuded surfaces and eroded streambanks. They often carry higher water temperatures from streets, roof tops, and parking lots, which are harmful to the health and reproduction of aquatic life.

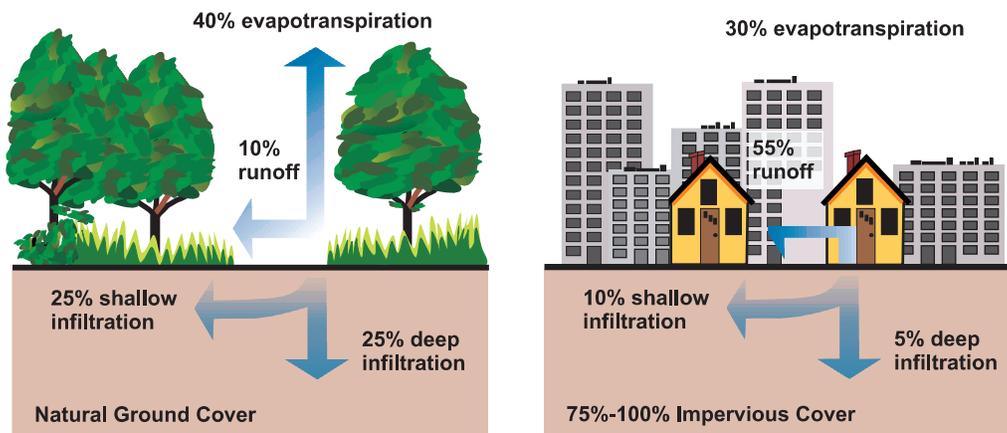
The loss of infiltration from urbanization may also cause profound groundwater changes. Although urbanization leads to great increases in flooding during and immediately after wet weather, in many instances it results in lower stream flows during dry weather. Many native fish and other aquatic life cannot survive when these conditions prevail.

Increased Pollutant Loads

Urbanization increases the variety and amount of pollutants carried into streams, rivers, and lakes. The pollutants include:

- Sediment
- Oil, grease, and toxic chemicals from motor vehicles
- Pesticides and nutrients from lawns and gardens
- Viruses, bacteria, and nutrients from pet waste and failing septic systems
- Road salts
- Heavy metals from roof shingles, motor vehicles, and other sources
- Thermal pollution from dark impervious surfaces such as streets and rooftops

These pollutants can harm fish and wildlife populations, kill native vegetation, foul drinking water supplies, and make recreational areas unsafe and unpleasant.



Relationship between impervious cover and surface runoff. Impervious cover in a watershed results in increased surface runoff. As little as 10 percent impervious cover in a watershed can result in stream degradation.

Managing Urban Runoff

What Homeowners Can Do

To decrease polluted runoff from paved surfaces, households can develop alternatives to areas traditionally covered by impervious surfaces. Porous pavement materials are available for driveways and sidewalks, and native vegetation and mulch can replace high maintenance grass lawns. Homeowners can use fertilizers sparingly and sweep driveways, sidewalks, and roads instead of using a hose. Instead of disposing of yard waste, they can use the materials to start a compost pile. And homeowners can learn to use Integrated Pest Management (IPM) to reduce dependence on harmful pesticides.

In addition, households can prevent polluted runoff by picking up after pets and using, storing, and disposing of chemicals properly. Drivers should check their cars for leaks and recycle their motor oil and antifreeze when these fluids are changed. Drivers can also avoid impacts from car wash runoff (e.g., detergents, grime, etc.) by using car wash facilities that do not generate runoff. Households served by septic systems should have them professionally inspected

and pumped every 3 to 5 years. They should also practice water conservation measures to extend the life of their septic systems.

Controlling Impacts from New Development

Developers and city planners should attempt to control the volume of runoff from new development by using low impact development, structural controls, and pollution prevention strategies. Low impact development includes measures that conserve natural areas (particularly sensitive hydrologic areas like riparian buffers and infiltrable soils); reduce development impacts; and reduce site runoff rates by maximizing surface roughness, infiltration opportunities, and flow paths.

Controlling Impacts from Existing Development

Controlling runoff from existing urban areas is often more costly than controlling runoff from new developments. Economic efficiencies are often realized through approaches that target “hot spots” of runoff pollution or have multiple benefits, such as high-efficiency street sweeping (which addresses aesthetics, road safety,

and water quality). Urban planners and others responsible for managing urban and suburban areas can first identify and implement pollution prevention strategies and examine source control opportunities. They should seek out priority pollutant reduction opportunities, then protect natural areas that help control runoff, and finally begin ecological restoration and retrofit activities to clean up degraded water bodies. Local governments are encouraged to take lead roles in public education efforts through public signage, storm drain marking, pollution prevention outreach campaigns, and partnerships with citizen groups and businesses. Citizens can help prioritize the clean-up strategies, volunteer to become involved in restoration efforts, and mark storm drains with approved “don’t dump” messages.



Related Publications

Turn Your Home into a Stormwater Pollution Solution!

www.epa.gov/nps

This web site links to an EPA homeowner’s guide to healthy habits for clean water that provides tips for better vehicle and garage care, lawn and garden techniques, home improvement, pet care, and more.

National Management Measures to Control Nonpoint Source Pollution from Urban Areas

www.epa.gov/owow/nps/urbanmm

This technical guidance and reference document is useful to local, state, and tribal managers in implementing management programs for polluted runoff. Contains information on the best available, economically achievable means of reducing pollution of surface waters and groundwater from urban areas.

Onsite Wastewater Treatment System Resources

www.epa.gov/owm/onsite

This web site contains the latest brochures and other resources from EPA for managing onsite wastewater treatment systems (OWTS) such as conventional septic systems and alternative decentralized systems. These resources provide basic information to help individual homeowners, as well as detailed, up-to-date technical guidance of interest to local and state health departments.

Low Impact Development Center

www.lowimpactdevelopment.org

This center provides information on protecting the environment and water resources through integrated site design techniques that are intended to replicate preexisting hydrologic site conditions.

Stormwater Manager’s Resource Center (SMRC)

www.stormwatercenter.net

Created and maintained by the Center for Watershed Protection, this resource center is designed specifically for stormwater practitioners, local government officials, and others that need technical assistance on stormwater management issues.

Strategies: Community Responses to Runoff Pollution

www.nrdc.org/water/pollution/storm/stoinx.asp

The Natural Resources Defense Council developed this interactive web document to explore some of the most effective strategies that communities are using around the nation to control urban runoff pollution. The document is also available in print form and as an interactive CD-ROM.

For More Information

U.S. Environmental Protection Agency
Nonpoint Source Control Branch (4503T)
1200 Pennsylvania Avenue, NW
Washington, DC 20460

www.epa.gov/nps

Stormwater Management

A Guide for Auto Recycler Owners and Operators



Stormwater Protection Starts With You

The facility operator's attitude toward stormwater management can make all the difference. It's your responsibility to communicate to your employees that stormwater management is a priority. Make sure your employees understand why stormwater management is important, both to your business and to the environment. Start by having them review the enclosed video and fact sheet.

Protecting stormwater can benefit your business in several important ways:

- **Professionalism and pride in your business** – Both workers and customers appreciate a clean and responsible facility.
- **It's the law** – Not complying with stormwater rules can put your business in jeopardy. Regulators and environmental groups across the country are increasingly targeting auto dismantlers for stormwater violations.
- **Environmental protection** – We all want clean streams, rivers, lakes, bays, and oceans for our families and for our future. Your business can protect the environment by following some straightforward and commonsense practices.



The following practices describe options that your facility can implement to help address its stormwater issues. Although following all of the practices described below may help improve performance with regard to stormwater management, it does not guarantee that your facility will be in compliance with all applicable stormwater rules. Check with your state regulatory agency or EPA for more information.

The Stormwater Permit

All vehicle dismantling facilities in the United States (except those in a combined sewer service area or facilities that do not discharge stormwater from their property) are required by the Clean Water Act to obtain a stormwater permit either from the U.S. Environmental Protection Agency or from an appropriate state agency. You must first file a Notice of Intent (NOI) with the appropriate state agency. You must also prepare a Storm Water Pollution Prevention Plan (SWPPP) to describe how you will address your facility's stormwater issues.

The practices below are organized by facility area or activity. Links and contact information to obtain additional information about stormwater and other environmental issues related to auto dismantling are listed at the end of this document.

Stormwater Management

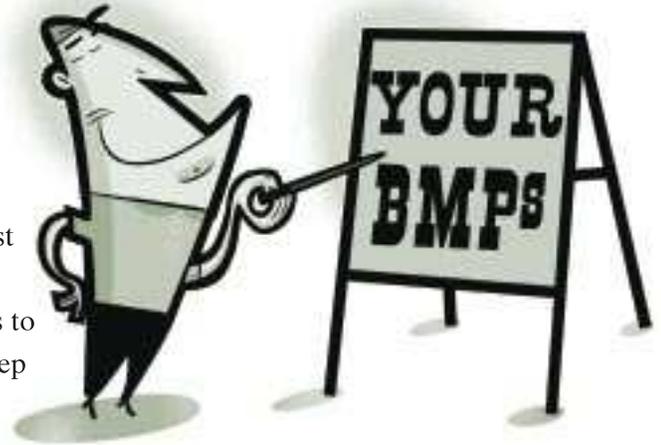
A Guide for Auto Recycler Owners and Operators

What are Best Management Practices (BMPs)?

The term “BMP” is used to describe management practices that many different industries use to address a range of environmental issues. We’ll use BMP to describe the practices that you can implement to address your auto dismantling facility’s stormwater issues.

> Training

Employee training is critical! Train appropriate employees on relevant stormwater management procedures, especially during the wet season and prior to rain or snow events. All employees must be trained upon their initial hire and at least once per year thereafter. Be sure to document employee training. Also, place signs around activity areas as reminders to your workers; for example, “No fluids in the drain” or “Sweep up loose absorbent daily.” Make up your own signs that make sense for your operation.



> Incoming Vehicles

Inspect all incoming vehicles for leaking fluids and unwanted materials as they enter your facility. Promptly contain leaks with drip pans or absorbent materials.

> Fluid Removal

Establish a procedure for processing vehicles and stick to it. First, before any vehicle is placed in the yard for long-term storage or crushed, and before fluid-containing parts are dismantled, drain the following fluids from the vehicle in the order that best fits your operation:

- Fuel
- Brake fluid
- Motor oil
- Antifreeze
- Transmission fluid
- Freon

Draining these fluids before placing the vehicle in the yard reduces **1)** the possibility of spills when parts are removed later, and **2)** time and cost to your business of cleaning up leaks and spills.



> Fluid Draining and Vehicle Dismantling Area

Ideally, these activities should be conducted in the same area, which should be covered with a roof. Your fluid draining and vehicle dismantling areas have more potential to contaminate stormwater than any other areas of your facility. Properly covering this area can eliminate contact with rainfall and is a great way to get a big bang for your buck in preventing stormwater pollution. Rain or snow can carry harmful materials like oil or gasoline into the soil and nearby streams, rivers, and lakes. Roofs not only keep out rain and snow, but also make the work area more comfortable for your workers.

If you don't currently dismantle fluid-containing parts and drain fluids under cover, you don't necessarily have to put up an entirely new and expensive building. One low-cost roofing option available is the "VersaTube" offered by Tuff Shed. (See <http://www.tuffshed.com/versatube.htm> or call (800) BUY-TUFF for more information.)

Another option includes building your own temporary cover using low-cost materials. Plans and materials for such temporary roofs can be obtained from vendors like South Bay Canopy (408) 998-8280.

You should also have a concrete pad in the draining and dismantling area, and you should drain all vehicles on this surface. Draining over concrete makes spills and leaks easier to clean up and minimizes the chance of environmental harm. Use appropriate fluid removal and handling equipment, such as suction systems, drain racks, and funnels for the containers.



Prevent stormwater pollution by minimizing the exposure of dismantling and fluid removal activities to stormwater. In addition to overhead cover, possible options include installing intercept trenches, berming the perimeter of the area, or using channels, swales, or grade breaks to divert the flow of stormwater around these areas.

> Fluid Storage

Storing fluids properly helps cut down on the amount of contaminants that end up in stormwater. When you remove fluids, transfer them to the proper container. Confine fluid storage to designated areas that are covered and have adequate secondary containment. Keep drums containing fluids away from storm drains; consider storing fluids near the location where fluids are drained. Maintain good integrity of all storage containers. Do not leave open drain pans that contain fluids around the shop.

You are responsible for ensuring that your fluids are handled by an authorized processor, transporter, and treatment/disposal facility.

> Spill Cleanup

Clean up spills promptly and thoroughly. Keep appropriately sized and stocked "spill kits" available in the areas where you conduct the following activities:

- Dismantling and fluid removal
- Fueling
- Fluid storage
- Equipment maintenance
- Battery and parts storage

For smaller spills, use shop rags and oil dry. Used absorbents should be placed in a designated container for proper disposal.

What should be in your spill kit?

- Absorbent socks or booms
- Disposal bags or other containers
- Absorbent pillows and pads
- Safety goggles
- Oil dry
- Plastic gloves
- Broom and shovel

- **Never use vehicle fluids for dust control!**
- **Don't mix your used oil with solvents, brake cleaner, or antifreeze.** This creates a hazardous waste, which can't be recycled and is very expensive to get rid of.
- **Don't pour fluids into your septic system, sanitary sewer, dry well, on the ground, or in the trash.**

Stormwater Management

A Guide for Auto Recycler Owners and Operators

> Parts Storage

Store engines, transmissions, and other oily parts (resale, core, or scrap) in a way that avoids exposure to rain or snowfall. This can include:

- 1) Storing parts indoors
- 2) Storing parts under a permanent roof on impervious surface
- 3) Storing parts in weather-proof, leak-proof, covered containers
- 4) Placing parts in vehicle bodies
- 5) Providing temporary cover (like tarps) for these parts as an interim measure

Lead acid battery components are toxic and corrosive and can contaminate the soil and water if handled improperly. Store batteries inside a building or outside in covered, non-leaking containers. Separate batteries from other wastes like paper, rags, garbage and flammable or hazardous chemicals. Monitor your battery storage area for leaks or deterioration, and take quick action to address any spills or leaks. Lime can be used to neutralize spilled battery acid. *Never pour battery acid on the ground or into a storm drain!*

Radiators removed from vehicles should be stored under a roof, tarp, or other cover, and raised up off the ground such that there is no contact with rainfall and surface drainage.



> Crushing

Never crush a vehicle without draining all the fluids and removing gas tanks, tires, and batteries. Capture and properly dispose of residual fluids released during crushing. You're responsible for ensuring fluids are captured and don't run off your property, even if you use a contractor to crush your vehicles.

> Vehicle Storage

If engines or fluid-containing parts remain in the vehicle when it is placed in the yard, place a hood or other cover, such as a well-secured tarp, over the vehicle engine. Use drip pans under stored vehicles with leaks.

Don't place vehicles on the ground where there is a heavy stormwater flow or close to a storm drain.

After vehicles are moved, scrape up dirt or gravel that was stained from leaks and drips. Manage the contaminated material in accordance with applicable regulations.

- **Never wash spills into storm drains!**

- **Sweep up absorbent material and properly dispose at least daily.**

> Equipment Maintenance

Schedule and perform periodic inspections of equipment. Regular maintenance of equipment such as forklifts reduces risk of breakdown and fluid release. Check for leaks and spills and for malfunctioning, worn, or corroded parts. Equipment maintenance should be done indoors or, where practical, on an impervious surface. If maintenance can't be done under cover, take adequate spill control and/or cleanup measures.

> Fueling

Pave refueling areas with concrete to prevent contamination of the soil and to enable cleanup. Don't leave vehicles unattended while fueling.

> Housekeeping

Sweep and clean paved surfaces daily to reduce sediment and contaminant buildup. Routine housekeeping is important. Catchments, inlets, oil-water separators, oil booms, waddles, tarps, and other pollutant-collecting materials need to be maintained regularly or they can become ineffective. Clean out drain inlets periodically, especially before the wet season, during the wet season, and after the wet season ends.

> Erosion Control

Tackle TSS! You may have heard of TSS or total suspended solids – in other words, dirt. Controlling the amount of dirt that runs off your property is important because metals and other harmful pollutants can attach themselves to the dirt particles and end up flowing off the property with stormwater. Eroded soil can also smother aquatic life.

Implement appropriate vegetative, structural, or stabilization measures such as basins, sediment traps, geotextiles, buffer strips, or filter berms in areas without much vegetation where soil erosion is evident.

> Non-Stormwater Discharges

Wash water from equipment, work areas, or shop floors cannot come into contact or mix with rainfall or surface drainage, or drain offsite. Vehicle and hand wash water is OK to be discharged to the sanitary sewer where allowed (be sure to check with your local sanitary sewer district). Most states prohibit all non-stormwater discharges from your property, including, but not limited to, discharges of wash water, rinse water and spilled fluids. If you are permitted to use sewers, make sure your drain is connected to the sanitary sewer. If this is not possible in your area, the wash water must be managed on-site. Management options include recycling, re-use, or off-site disposal. If you let the water soak into the ground (infiltration), take appropriate steps to prevent groundwater contamination and infestation by mosquitoes or other pests. For additional information consult your local regulatory agency.



Stormwater Management

A Guide for Auto Recycler Owners and Operators

- Residues from dried wash water cannot come into contact with rainfall or surface drainage.
- **Know where your drains go. Plug any floor drains that would let a spill run into septic systems or storm drains.**
Automotive fluids and solvents can contaminate drinking water if they end up in drains that discharge to soil.
- Following washing, collect and clean up any accumulated sediments, oil deposits, debris, and paint particles.
 - Do not steam clean or pressure wash parts without proper wash water management.
 - Do not hose down the shop floor if water will run into a storm drain or off the property.

> Stormwater Filter Systems

Inexpensive filter systems or absorbents can provide an extra level of defense against stormwater pollution. Examples include: absorbent socks or booms, silt fences, straw bales, rock filters, and inlet filters. Regular maintenance of these products is essential – if they're not maintained, they won't work. Further, these measures are not a substitute for good stormwater management practices.

> Inspection

Inspect your site regularly to ensure all appropriate BMPs are being implemented. Increase inspections during periods of rainy weather. Based on permit or management needs, maintain a record of visual inspections.

Inspect oil containers, fresh water systems, irrigation lines, fueling areas, and other piping systems for leaks. If evidence of leaks is found, promptly repair or replace damaged parts to prevent polluted runoff and non-stormwater discharges.

> Customer Education

Inform customers who remove parts to do so properly and to appropriately dispose of fluids. For example, make fluid receptacles readily available, post signs that require the use of drip pans for parts removal, and prohibit waste generating activities like vehicle maintenance in parking lots.

Mercury Switches

Mercury switches are an important issue. Many older vehicles contain mercury, which is highly toxic and can cause learning disabilities and mental retardation in newborn children. When vehicles are crushed and mercury remains inside, it can get onto the ground and into waterways. Also, mercury can be released into the air and water bodies after scrapped vehicles go to the shredder.

What to do about mercury

Mercury switches are commonly found under vehicle hoods and trunks and less frequently in automatic braking systems (ABS). These switches can easily be removed to prevent contamination of the environment and human health problems.

Some states require mercury switches to be removed before vehicles are crushed. Some auto dismantlers remove the switches even if they are not required to do so. If you choose to address this important environmental issue and remove mercury switches before your vehicles are crushed, store the switches in a leak-proof, clearly marked, closed container. Also take care to ensure that the switches do not break during handling or storage. A licensed metals recycler that reclaims mercury can dispose of the switches. Contact your state environmental agency for more information.

Information on removing mercury from vehicles is available online at:

epa.gov/glnpo/bnsdocs/hgsbook/auto.pdf

epa.gov/region5/air/mercury/autoswitch.htm
switchout.ca

You
>> **CAN** <<
Make a Difference!

Auto recyclers do their part to conserve natural resources by recycling valuable materials. Build on this good work and protect the environment from polluted runoff by implementing the BMPs described in this fact sheet. Make sure that your employees understand that stormwater management is important and are trained to implement your BMPs.

Remember,
stormwater protection
starts with **YOU!**

"It's critical for owners to set an example and be actively involved in implementing BMPs."

— Brian Werth, Select Auto & Truck Recyclers

Stormwater Management

A Guide for Auto Recycler Owners and Operators

Where to find more information

Check out the following sources for additional information on BMPs for auto recyclers:

Manuals

- An Environmental Compliance Workbook for Automotive Recyclers, Florida DEP
www.dep.state.fl.us/central/home/ps/asyc/fl_gyb.pdf
- Environmental Compliance Guide for Motor Vehicle Salvage Yards, OH Small Bus. Assistance Office
www.epa.state.oh.us/other/sbao/salvageguide.pdf
- Vehicle Recycling Manual: A Guide for Vehicle Recyclers, Washington State Department of Ecology
www.ecy.wa.gov/pubs/97433.pdf
- Automotive Recyclers Guide to a Cleaner Environment, New York DEC
www.dec.state.ny.us/website/reg8/press/autorec/autorec0.pdf
- Certified Auto Recycler (CAR) Guidance Manual, Automotive Recyclers Association
www.autorecyc.org (Available to members only)

Other Sources

- The National Compliance Assistance Clearinghouse is your guide to compliance information on the Internet. It provides quick access to compliance tools and contacts from EPA and other compliance assistance providers. The clearinghouse has an entire section devoted to the auto salvage industry.
cfpub.epa.gov/clearinghouse
- A list of state and local environmental contacts can be found on the internet at:
www.epa.gov/epapages/statelocal/envrolst.htm
- The EPA Small Business Ombudsman can help you understand environmental regulations, or refer you to local contacts. Their toll-free small business hotline provides regulatory and technical assistance information: (800) 368-5888

Vendors

Call for catalogs or more information

Low-Cost Roofs:

Tuff Shed (800) BUY-TUFF
South Bay Canopy (408) 998-8280

Fluid Removal and Storage Equipment:

Hy-Tec Environmental (800) 336-4499
Spill Cleanup Direct (800) 356-0783

Spill Kits and Absorbent Materials:

Stormtech (888) 549-5374
New Pig (800) 468-4647

Note: Sustainable Conservation and U.S. EPA do not endorse any of these products.

This list is not complete: other vendors may provide similar or identical products and services.

Developed by



Sustainable Conservation

www.suscon.org

Supervisión de la Precipitación Pluvial

Una Guía para los Dueños y Operadores de Recicladoras de Autos



La Protección de la Precipitación Pluvial Comienza Con Usted

La actitud del operador de la compañía hacia la supervisión de la precipitación pluvial puede hacer la diferencia. Es su responsabilidad comunicar a sus empleados que la supervisión de la precipitación pluvial es una prioridad. Asegúrese que sus empleados entiendan por qué es importante la supervisión de la precipitación pluvial tanto para su negocio como para el medio ambiente. Comience mostrándoles el video y hoja informativa que aquí se adjuntan.

Proteger la precipitación pluvial puede beneficiar a su negocio de varias maneras importantes:

- **Profesionalismo y orgullo en su negocio** - Tanto los trabajadores como sus clientes aprecian una compañía limpia y responsable.
- **Es la ley** - El no cumplir con las normas de precipitación pluvial puede poner su negocio en juego. Los grupos reguladores y ambientalistas en todo el país están enfocándose cada vez más en las desmanteladoras de autos por violaciones en cuanto a la precipitación pluvial.
- **Protección ambiental** - Todos queremos arroyos, ríos, lagos, bahías, y océanos limpios para nuestras familias y nuestro futuro. Su compañía puede proteger el medio ambiente siguiendo algunas prácticas directas y de sentido común.



Las siguientes prácticas describen opciones que su compañía puede aplicar para ayudarse a administrar lo relativo a la precipitación pluvial. Aunque el seguir todas las prácticas descritas abajo puede ayudar a mejorar el desempeño respecto a la supervisión de la precipitación pluvial, ello no garantiza que su compañía estará en cumplimiento con todas las normas aplicables de la precipitación pluvial. Comuníquese con una agencia reguladora del estado o la EPA si desea más información.

El Permiso de precipitación pluvial

Todas las instalaciones desmanteladoras de vehículos en los Estados Unidos (excepto aquellas en una área de servicio de desagüe combinado o instalaciones que no desechen precipitación pluvial de su propiedad) están obligadas por la Ley de Agua Limpia (Clean Water Act) a obtener un permiso de precipitación pluvial, ya sea de la Agencia de Protección del Medio Ambiente de los EE.UU. o de una agencia estatal correspondiente. Usted primero debe archivar un Aviso de Intención (Notice of Intent, o N.O.I.) ante la agencia estatal correspondiente. También debe preparar un Plan de Prevención de Contaminación de la precipitación pluvial (SWPPP) para describir cómo es que su compañía administrará lo referente a la precipitación pluvial.

Las siguientes prácticas están organizadas por área o actividad de la compañía. Para referencias y contactos para obtener información adicional acerca de la precipitación pluvial y otros asuntos ambientales relacionados la desmantelación de vehículos, vea el final de este documento.

¿Cuáles son las prácticas de mejor manejo (BMPs)?

El término “BMP” es utilizado para describir prácticas de manejo que muchas diferentes industrias usan para dirigir un gran número de asuntos ambientales. Nosotros utilizaremos BMP para describir las prácticas que usted puede aplicar para administrar lo referente a la precipitación pluvial en su desmanteladora de autos.

Supervisión de la Precipitación Pluvial

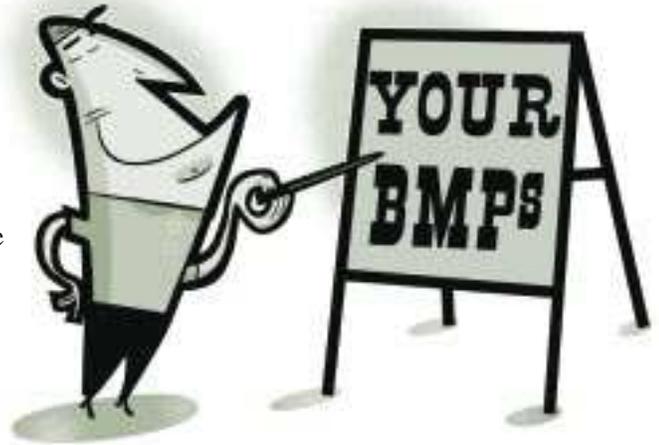
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> La capacitación

¡La capacitación de los empleados es fundamental! Capacite a sus empleados en procedimientos referentes al manejo de la precipitación pluvial, especialmente durante la temporada de lluvia y nieve y antes de que éstas lleguen. Todos los empleados deben ser capacitados al inicio de su contratación y al menos una vez al año después de ella. Asegúrese de documentar la capacitación de sus empleados. También debe colocar letreros alrededor de las áreas de actividad con recordatorios para sus trabajadores. Por ejemplo, “Evite los fluidos en el drenaje” o “Barra diariamente el absorbente.” Diseñe sus propios letreros que den sentido a su operación.



> Ingreso de vehículos

Inspeccione todos los vehículos de reciente ingreso por posibles fugas de fluidos y materiales no deseados, cuando vayan entrando a las instalaciones. Contenga rápidamente las fugas con charolas o materiales absorbentes.

> Extracción de fluidos

Establezca un procedimiento para procesar vehículos y apéguese a él. Primero, antes de que cualquier vehículo sea colocado en la yarda por un término largo de almacenamiento o para compactarse, y antes de que se desmantelen las partes que contengan fluidos, extraiga los siguientes fluidos del vehículo, en el orden que mejor funcione para su operación:

- Combustible
- Líquido de frenos
- Aceite de motor
- Anticongelante
- Líquido de transmisión
- Gas freón



Extraer estos fluidos antes de colocar el vehículo en la yarda disminuye **1)** la posibilidad de derrames cuando las partes son removidas posteriormente, y **2)** el tiempo y costo requerido en su negocio para limpiar fugas y derrames.

> Área de extracción de fluidos y de desmantelamiento de vehículos

Lo ideal es que estas actividades se realicen en la misma área, la cual debe estar cubierta con un techo. Sus áreas de extracción de fluidos y de desmantelación de vehículos tienen mayor potencial de contaminar la precipitación pluvial que cualquier otra área de su compañía. El cubrir apropiadamente esta área puede eliminar el contacto con la caída de la lluvia y es una gran forma de economizar, al prevenir la contaminación de la precipitación pluvial. La lluvia y la nieve pueden acarrear materiales dañinos como aceite o gasolina al suelo y cerca de arroyos, ríos, y lagos. Los techos no solo

detienen la lluvia y la nieve, sino que también hacen el área de trabajo más cómoda para sus trabajadores.

Si usted no desmantela actualmente partes que contengan fluidos y extrae fluidos debajo de un techo, usted no necesariamente tiene que construir un edificio nuevo y costoso. Una opción disponible es el techo de bajo costo “Versa Tube” ofrecido por Tuff Shed. (Vea <http://www.tuffshed.com/versatube.htm> o llame (800) BUY TUFF para más información.) Otra opción incluye construir su propio techo temporal utilizando materiales de bajo costo. Puede obtener planos y materiales de dichos techos temporales de vendedores como South Bay Canopy (408) 998-8280.

Usted también debe tener una plataforma de concreto en el área de extracción y desmantelamiento, y debe drenar todos los vehículos sobre la superficie. El drenar sobre concreto hace que los derrames y fugas sean más fáciles de limpiar y minimiza la posibilidad de daño ambiental. Utilice equipo apropiado para la extracción y manejo de fluidos, tales como sistemas de succión, racas de drenaje y embudos para contenedores.



Prevenga la contaminación de la precipitación pluvial minimizando la exposición de las actividades de desmantelamiento y de extracción de fluidos a la precipitación pluvial. Además de un techo, otras opciones posibles incluyen instalar zanjas interceptoras, bordear el perímetro del área, o utilizar canales, o cortes para desviar el flujo de la precipitación pluvial fuera del alcance de estas áreas.

> Almacenamiento de fluidos

El almacenar los fluidos apropiadamente ayuda a reducir la cantidad de contaminantes que terminan en la precipitación pluvial. Cuando extraiga fluidos, colóque-

los en el contenedor apropiado. Destine el almacenamiento de fluidos a áreas designadas que estén cubiertas y que tengan un adecuado contenimiento secundario. Mantenga los barriles que contengan fluidos alejados de los drenajes de agua; considere almacenar los fluidos cerca del área donde los fluidos son extraídos. Mantenga en buenas condiciones todos los contenedores de almacenamiento. No deje charolas abiertas que contengan fluidos alrededor del taller.

Usted es responsable de asegurarse que sus fluidos sean manejados por procesadores, transportistas, y compañías de tratamiento/desechos autorizados.

> Limpieza de derrames

Limpie los derrames rápida y completamente. Guarde kits para derrames, del tamaño apropiado, en todas las áreas donde realice las siguientes actividades:

- Desmantelamiento y extracción de fluidos
- Abastecimiento de combustible
- Almacenamiento de fluidos
- Mantenimiento de equipo
- Almacenamiento de baterías y partes

Para derrames menores utilice trapos y “oil dry”. Los materiales absorbentes usados deberán colocarse en un contenedor designado para su desecho.

¿Qué debería haber en su kit para derrames?

- Tubos (“socks”) absorbentes
- Lentes de seguridad
- Cojines y almohadas absorbentes
- Guantes de plástico
- “Oil dry”
- Bolsas para desecho y otros contenedores
- Escoba y pala

- **iNunca utilice fluidos de vehículo para controlar el polvo!**
- **No mezcle su aceite usado con solventes, limpiador de frenos, ni anticongelante.** Esto crea un desperdicio peligroso el cual no puede ser reciclado y es muy costoso deshacerse de él.
- **No vierta fluidos dentro del sistema séptico, el drenaje sanitario, los pozos, en la tierra, ni en la basura.**

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> Almacenamiento de partes

Almacene motores, transmisiones, y otras partes grasosas (reventa, core, o chatarra) de forma que se evite la exposición a la lluvia o caída de nieve. Esto puede incluir:

- 1) Almacenar partes a puerta cerrada
- 2) Almacenar partes bajo un techo permanente sobre una superficie impenetrable
- 3) Almacenar partes en contenedores cubiertos a prueba del clima y de fugas
- 4) Colocar partes en las carrocerías de los vehículos
- 5) Proveer cobertura temporal (como lonas) para estas partes como medida alterna

Los componentes de la batería de ácido de plomo son tóxicos y corrosivos y pueden contaminar el suelo y agua si son manejados incorrectamente.

Almacene las baterías dentro o fuera de un edificio en contenedores cubiertos y sin fugas. Separe las baterías de otros desperdicios como el papel, trapos, basura y químicos inflamables o peligrosos. Monitoree su área de almacenamiento de baterías por posibles fugas o deterioraciones, y tome acción rápida para evitar cualquier derrame o fuga. La cal puede utilizarse para neutralizar el ácido de batería derramado. *¡Nunca vierta ácido de batería en la tierra o dentro del drenaje de agua!*

Los radiadores extraídos de los vehículos deben almacenarse bajo techo, lona, u otro cobertizo, y a cierta altura del suelo de tal manera que no haya contacto con la lluvia o el drenaje de la superficie.

> Compactación

Nunca compacte un vehículo sin haber extraído todos los fluidos y quitado los tanques de gasolina, las llantas y las baterías. Contenga y deseche apropiadamente los residuos de fluidos que escurran mientras se está compactando. Usted es responsable de asegurarse que se contengan todos los fluidos y que no escurran fuera de su propiedad, aún si compacta sus vehículos a través de un contratista.

> Almacenamiento de vehículos

En caso de que haya motores o partes que contengan fluidos dentro del vehículo cuando éste se coloque en la yarda, coloque un cofre u otro cobertor tal como una lona bien asegurada sobre el motor del vehículo. Coloque charolas debajo de los vehículos que tengan fugas. No ponga vehículos en la tierra donde haya una corriente fuerte de precipitación pluvial o cerca de un drenaje. Después de que los vehículos sean retirados, levante la tierra o grava que ha sido manchada por fugas y goteos. Maneje el material contaminado de acuerdo con las regulaciones correspondientes.



- **¡Nunca dirija derrames hacia los drenajes!**
- **Barra el material absorbente y deséchelo apropiadamente al menos una vez al día.**

> Mantenimiento del equipo

Programe y realice inspecciones periódicas del equipo. El mantenimiento regular del equipo, tal como los montacargas, reduce el riesgo de que se descomponga y que tire fluidos. Revise por posibles fugas y derrames, el mal funcionamiento, desgaste, o partes corroídas. El mantenimiento del equipo debe hacerse en un lugar cerrado o, cuando sea práctico, en una superficie impenetrable. Si el mantenimiento no puede hacerse bajo techo, tome medidas adecuadas de control de derrames y/o limpieza.

> Abastecimiento de combustible

Pavimente las áreas de abastecimiento de combustible con concreto para prevenir la contaminación del suelo y facilitar la limpieza. No deje los vehículos sin atender mientras se estén cargando de combustible.

> Mantenimiento

Barra y limpie las superficies pavimentadas diariamente para reducir la sedimentación y acumulación de contaminantes. El mantenimiento como rutina es importante. Recipientes, zanjas, separadores de agua/aceite, repelentes de aceite, lonas, y demas materiales para retener contaminantes deben recibir mantenimiento regular o pueden llegar a ser ineficaces. Limpie las zanjas de drenaje periódicamente, antes, durante y después de la temporada de lluvias.

> Control de la erosión

¡Elimine los TSS! Quizás haya oído hablar de los TSS o sólidos totalmente suspendidos: en otras palabras, la tierra. Controlar la cantidad de tierra que se escurre fuera de su propiedad es importante porque los metales y otros contaminantes dañinos pueden adherirse a las partículas de tierra y terminar escurriéndose fuera de la propiedad hacia la precipitación pluvial. El suelo erosionado puede también extinguir la vida acuática.

Tome medidas adecuadas en cuanto a la vegetación, estructuración o estabilización, tales como desagües, retenedores de sedimentación, geotextiles, o bordos de filtración en áreas sin mucha vegetación, donde la erosión del suelo es evidente.

> Los escurrimientos que no provienen de la precipitación pluvial

El agua para lavar equipo, áreas de trabajo, o pisos del taller no puede entrar en contacto o mezclarse con la lluvia o el drenaje superficial ni el drenaje común. El agua para lavarse las manos o lavar vehículos puede descargarse en el drenaje sanitario donde sea permitido (asegúrese de contactar a su distrito local de drenaje sanitario). La mayoría de los estados prohíben los escurrimientos de su propiedad que no provengan de la precipitación pluvial, incluyendo, pero sin limitarse a, los escurrimientos de agua para lavar, para enjuagar y de fluidos derramados. Si usted tiene permiso para usar drenajes, asegúrese que su drenaje esté conectado al drenaje sanitario. Si esto no es posible en su área, el agua para lavar debe ser manejada dentro de su propiedad. Las opciones de manejo incluyen el reciclaje, el reuso o su desecho fuera de la propiedad. Si usted deja que el agua se acumule en la tierra (filtración), tome los pasos adecuados para prevenir contaminación en la tierra o que se infeste con mosquitos u otras plagas. Para información adicional consulte su agencia reguladora local.



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- Los residuos secos del agua para lavar no pueden entrar en contacto con la lluvia o drenaje de la superficie.
- **Usted debe saber hacia dónde están dirigidos sus drenajes. Tape cualquier drenaje en el suelo que pudiera dejar escurrir un derrame hacia un sistema séptico o drenaje de agua.**
Los fluidos y solventes de los automóviles pueden contaminar el agua potable si caen en drenajes que se descargan sobre el suelo.
- Después de lavar, recoja y limpie cualquier sedimentación acumulada, depósitos de aceite, chatarra, y partículas de pintura.
- No lave partes a vapor o a presión sin el manejo apropiado del agua para lavar.
- No lave el piso del taller con manguera si el agua va a escurrir hacia el drenaje o fuera de la propiedad.

> Sistemas de filtración de la precipitación pluvial

Los sistemas de filtración no costosos o absorbentes pueden ofrecer un nivel de defensa adicional contra la contaminación de la precipitación pluvial. Algunos ejemplos incluyen: tubos absorbentes, cercos, pacas de paja, filtros de roca, y zanjas para filtrar. El mantenimiento regular de estos productos es esencial: si no reciben mantenimiento, no van a funcionar. Además, estas medidas no sustituyen a las prácticas del buen manejo de la precipitación pluvial.

> Inspección

Inspeccione sus instalaciones con regularidad para asegurarse que se estén aplicando todas las BMPs correctas. Aumente las inspecciones durante los periodos de clima lluvioso. Basándose en el permiso o necesidades de supervisión, mantenga un registro de las inspecciones visuales. Inspeccione los contenedores de aceite, los sistemas de agua fresca, las líneas de irrigación, las áreas de abastecimiento de combustible, y demás sistemas de tuberías por posibles fugas. Si existe evidencia de alguna fuga, repárela rápidamente o reemplace las partes dañadas para prevenir escurrimientos contaminados y descargas de agua que no provengan de la precipitación pluvial.

> Educación de los clientes

Notifique a sus clientes que sustraen partes que lo hagan correctamente y que desechen los fluidos debidamente. Por ejemplo, coloque recipientes para fluidos a disposición de los clientes, coloque letreros que requieran el uso de charolas para quitar partes, y prohíba actividades que generen desperdicios, como el dar mantenimiento a vehículos en el estacionamiento.

Switches de mercurio

Los switches o interruptores de mercurio son un aspecto importante. Muchos vehículos viejos contienen mercurio, el cual es altamente tóxico y puede causar discapacidades del aprendizaje y el retardo mental en niños recién nacidos. Cuando los vehículos son compactados y el mercurio se mantiene adentro, éste puede caer en el suelo y en las corrientes de agua. El mercurio también puede esparcirse en el aire y en los mantos acuíferos después de que los vehículos compactados van a la cortadora.

Qué hacer acerca del mercurio

Los switches de mercurio se hayan normalmente debajo de los cofres y cajuelas de los vehículos y menos frecuentemente en sistemas de frenado automático (ABS). Estos switches se pueden extraer antes de compactar los vehículos. Algunas desmanteladoras de autos quitan los switches aunque no se les requiera. Si usted decidiera participar en este importante aspecto ambiental y removiera los switches de mercurio antes de compactar sus vehículos, debe almacenar los switches en un contenedor cerrado claramente marcado y a prueba de fugas. También asegúrese de que los switches no se quiebren cuando se manejen o almacenen. Una recicladora de metales con licencia que recolecte mercurio puede desechar los switches. Contacte a su agencia ambiental del estado si desea más información.

Puede obtener información acerca de como remover el mercurio de los vehículos por el internet en:

epa.gov/glnpo/bnsdocs/hgsbook/auto.pdf

epa.gov/region5/air/mercury/autoswitch.htm

switchout.ca

**iUsted
>> PUEDE <<
Hacer la Diferencia!**

Las recicladoras de autos hacen su labor para conservar los recursos naturales al reciclar materiales valiosos. Coopere en esta buena labor y proteja al medio ambiente de los escurrimientos contaminados, aplicando las BMPs descritas en este documento. Asegúrese que sus empleados entiendan que el manejo de la precipitación pluvial es importante y que se les capacite para aplicar las BMPs.

Recuerde, ¡la protección de la precipitación pluvial

Comienza con USTED!

“Es fundamental para los propietarios poner el ejemplo y participar activamente en la aplicación de las BMPs.”

— Brian Werth, Select Auto & Truck Recyclers

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Dónde puede encontrar más información

Consulte las siguientes fuentes si desea más información acerca de las BMPs para recicladoras de autos:

Manuales

- An Environmental Compliance Workbook for Automotive Recyclers, Florida DEP
www.dep.state.fl.us/central/home/ps/asyc/fl_gyb.pdf
- Environmental Compliance Guide for Motor Vehicle Salvage Yards, OH Small Bus. Assistance Office
www.epa.state.oh.us/other/sbao/salvageguide.pdf
- Vehicle Recycling Manual: A Guide for Vehicle Recyclers, Washington State Department of Ecology
www.ecy.wa.gov/pubs/97433.pdf
- Automotive Recyclers Guide to a Cleaner Environment, New York DEC
www.dec.state.ny.us/website/reg8/press/autorec/autorec0.pdf
- Certified Auto Recycler (CAR) Guidance Manual, Automotive Recyclers Association
www.autorecyc.org (Disponible para miembros solamente)

Otras fuentes

- La National Compliance Assistance Clearinghouse es su guía sobre cómo obtener información acerca de los requerimientos por el internet. Ésta le proporciona al rápido acceso a las herramientas requeridas y los contactos de la EPA y de otros proveedores de asistencia en cuanto a los requerimientos. Dicha agencia tiene una sección entera dedicada a la industria del salvamento de autos. <http://cfpub.epa.gov/clearinghouse>
- Puede hallar una lista de contactos ambientalistas del estado y locales por el internet en:
epa.gov/epapages/statelocal/envrolst.htm
- El EPA Small Business Ombudsman le puede ayudar a comprender las regulaciones ambientales, o proporcionarle contactos locales. La línea libre de cobro para pequeños empresarios provee información sobre asistencia regulatoria y técnica: (800) 368 5888.

Información sobre vendedores

Techos de bajo costo:

Tuff Shed (800) BUY-TUFF
South Bay Canopy (408) 998-8280

Extracción de fluidos y equipo de almacenamiento:

Hy-Tec Environmental (800) 336-4499
Spill Cleanup Direct (800) 356-0783

Kits para derrames y materiales absorbentes:

Stormtech (888) 549-5374
New Pig (800) 468-4647

Nota: Sustainable Conservation y U.S. EPA no endosa ninguno de estos productos.

Esta lista no esta completa: otros vendedores pueden proveer productos y servicios similares o idénticos.

Creado por



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FACT SHEET

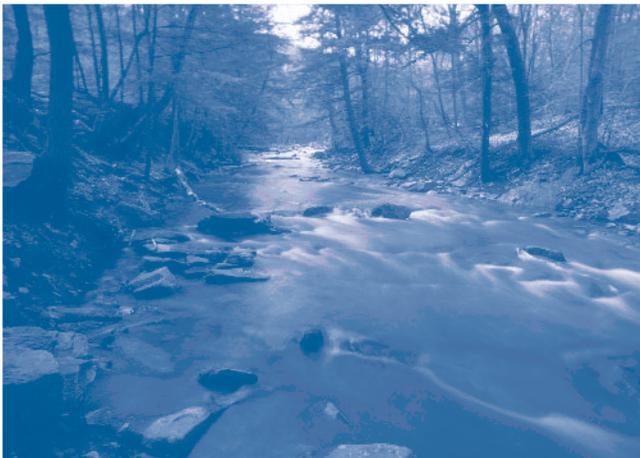
Cleaning Up Polluted Runoff with the Clean Water State Revolving Fund

What's In It For You?

The Clean Water State Revolving Fund (CWSRF) program has become a major source of funding to address polluted runoff. To date, 30 of the 51 CWSRF programs have provided funding for nonpoint source and estuary protection projects. Today annual funding to address polluted runoff exceeds \$200 million. CWSRF loans are issued at below market rates (zero percent to less than market), offering borrowers significant savings over the life of the loan.

History

In creating the CWSRF program, Congress ensured that it would be able to fund most types of water quality projects, including nonpoint source, wetlands, estuary, and other types of watershed projects, as well as more traditional municipal wastewater treatment systems. The CWSRF program provisions in the Clean Water Act give no more preference to one category or type of project than any other.



Capacity of the CWSRF

The 51 CWSRF programs work like banks (each state and Puerto Rico has one). Federal and state contributions are used to capitalize or set-up the programs. These assets are used to make low-interest loans for important water quality projects. Repaid funds are then recycled to fund other important water quality projects.

The CWSRF programs have in excess of \$42 billion in assets and average funding for the past three years exceeds \$4 billion annually. The funding of polluted runoff projects with the CWSRF is gaining momentum. Since 1989, the CWSRF program has funded 3,400 projects, investing more than \$1.6 billion in polluted runoff projects.

Who May Qualify?

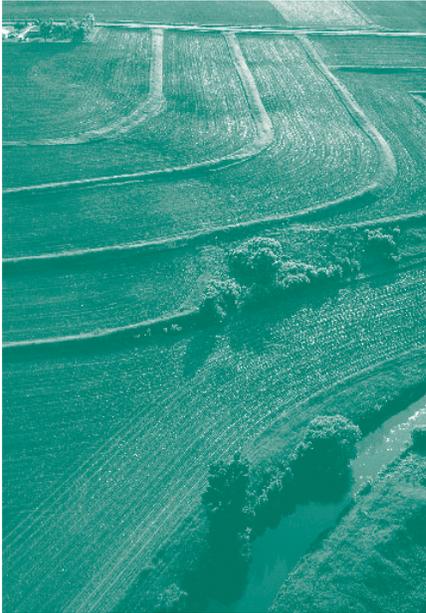
Included in a long list of eligible loan recipients are communities, citizens groups, businesses, farmers, homeowners, watershed groups, and nonprofit organizations. Since the program is managed largely by the states, project eligibility may vary according to the priorities within each state. Contact your state's CWSRF program for details.

Polluted Runoff and the CWSRF

The CWSRF can fund virtually any type or category of polluted runoff that is included in a state approved nonpoint source (NPS) management plan.

Polluted runoff occurs when rainfall, snowmelt, or irrigation runs over land or through the ground, picks up pollutants, and deposits them into surface or ground

water. For instance, polluted runoff from agricultural sources is the leading contributor to water quality impairments in rivers, degrading over 60% of impaired river miles.



Terraces, conservation tillage and conservation buffers save soil and improve water quality

Here are a few actual project examples from states that demonstrate what the CWSRF can do:

- **California** - Stormwater management facilities, including sediment basins and constructed wetlands. Purchasing easements for wetland protection
- **Delaware** - Animal waste management facilities, including manure storage facilities and dead chicken composters
- **Massachusetts** - Septic system improvements and replacement
- **Minnesota** - Agricultural best management practices (BMPs) to prevent and reduce runoff. Purchasing conservation tillage equipment and implementing soil erosion controls
- **New York** - Purchasing land and easements for source water protection projects
- **Washington** - Rehabilitation of streambanks, riparian corridors and buffers

- **Wisconsin** - Water protection and improvement projects on brownfield redevelopment sites
- **Wyoming** - Removal of leaking underground storage tanks and remediation of contaminated ground water and soil



State of the art lagoon animal waste management system

These are just a sample of the projects that have been funded. Contact your state or visit the CWSRF web site for more examples and information (www.epa.gov/owm/cwfinance/index.htm)

Benefits of Loans

First, Funds are Available. CWSRF loans can usually be obtained much faster than grants and each year over \$200 million is spent on nonpoint source projects.

Second, No Cash Up-Front. Most grant programs require significant cost shares (as much as 40 percent or more). A CWSRF loan can cover 100 percent of project costs with no cash up-front.

Third, Significant Cost Savings. CWSRF loans provide significant cost savings over the life of the loan. The total cost of a zero percent CWSRF loan will be approximately 50 percent less than the same project financed by a commercial loan at 7.5 percent.

Fourth, Loans can Complement other Funding Sources. It may be possible to combine a CWSRF loan with grant dollars from other sources. Check with your state.

Sources of Repayment

Many users of the CWSRF program have demonstrated a high level of creativity in developing sources of repayments. The source of repayment need not come from the project itself. Some possible sources include:

- Fees paid by property owner or homeowner
- Fees paid by a developer
- Dedicated portion of local, county, or state taxes or fees
- Recreational fees (fishing license, park entrance fees)
- Stormwater management fees
- Wastewater user charges
- Donations or dues made to nonprofit groups
- Business revenues



Making Funding Accessible - Ohio Examples

The state of Ohio employs several innovative funding methods to ensure a variety of watershed projects receive funding. Two unique funding methods used in Ohio are the Linked-Deposit Loan Program and the Watershed Resource Restoration Sponsorship Program (WRRSP). In both examples the state shows creativity by taking existing institutional arrangements and modifying them to achieve the state’s goals and meet the needs of loan recipients.

Linked Deposit Lending Program

In Ohio's linked-deposit program, the state makes arrangements with local banks to provide loans for agricultural BMPs and on-site wastewater treatment projects. Under a linked-deposit arrangement the state agrees to buy a bank's investment (CD) and receive a lower than market rate of return on the investment. The bank agrees to provide reduced interest rate loans for eligible projects. The linked-deposit loan interest rate reflects the difference between the state's reduced rate of return on the investment and the market rate of return.

The linked-deposit approach benefits CWSRF programs because they support high priority nonpoint source projects and because they place risk and management responsibilities with local financial institutions. Financial institutions earn profits from the linked deposit agreements and add an additional service for their customers. Borrowers find linked deposit programs to be economical and comfortable; they save money with low-interest loans, and they are comfortable working with local financial institutions.

For more information on linked-deposit loans see EPA’s Activity Update *“Innovative Use of Clean Water State Revolving Funds for Nonpoint Source Pollution”* (EPA 832-F-02-004) found on the CWSRF web site.

Watershed Resource Restoration Sponsorship Program (WRRSP)

The WRRSP offers communities very low interest rates on loans for wastewater treatment plant improvements if the communities also sponsor projects that protect or restore water resources. The end payment for the wastewater treatment plant project is the same because of the lower interest rate and the simultaneous funding for the restoration project by the wastewater treatment plant. The benefit of this program is water restoration projects that normally would not receive funding are completed with the help of the wastewater treatment plants.

To date, the WRRSP program has supported projects that have acquired wetlands and riparian lands, acquired conservation easements, restored habitat, and removed dams.

Over the past two years under the WRRSP, communities in Ohio have used \$24 million of CWSRF loan funds to protect and restore 1850 acres of riparian lands and wetlands and 38 miles of Ohio's stream corridors.

For more information on Ohio's WRRSP see EPA's Activity Update "*Ohio's Restoration Sponsor Program Integrates Point Source and Nonpoint Source Projects*" (EPA 832-F-02-001) found on the CWSRF web site.

Challenges Ahead

With increasing emphasis on watershed-based program management and implementation of Total Maximum Daily Loads (TMDLs) in impaired water bodies, it will be even more important to take advantage of the tremendous buying power of the CWSRF program.

How to Get More From the CWSRF

- Share information on polluted runoff priorities with CWSRF managers
- Work to enhance CWSRF programs to include funding of polluted runoff projects
- Become involved in the annual CWSRF planning and priority setting process
- Help market the program and encourage loan applications

The water quality community needs to work together to increase understanding of polluted runoff issues and facilitate the use of the powerful resources of the CWSRF to address these significant problems. EPA has been encouraging the states to open their CWSRFs to the widest variety of water quality projects and to use their CWSRFs to fund the highest priority projects in targeted watersheds. Those interested in cleaning up polluted runoff must seek out their CWSRF programs, gain an understanding of how their state program works, and participate in the annual process that determines which projects are funded.

For more information about the Clean Water Revolving Fund, or for a program representative in your State, please contact:

Clean Water State Revolving Fund Branch
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW (Mailcode 4204M)
Washington, DC 20460
Phone: (202) 564-0752 **Fax:** (202) 501-2403
Internet: www.epa.gov/owm/cwfinance/index.htm



Clean Water
State Revolving Fund



What is WaterSense?

WaterSense is a voluntary public-private partnership program sponsored by the U.S. Environmental Protection Agency. Its mission is to protect the future of our nation's water supply by promoting and enhancing the market for water-efficient products and services.

www.epa.gov/watersense



Simple Ways to Save Water



United States Environmental Protection Agency
(4204M)

EPA-832-F-06-007

May 2006

www.epa.gov/watersense

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Saving water is simple and smart.

1

Be smart when irrigating your lawn or landscape.

- Water the lawn or garden during the coolest part of the day. Early morning is best.
- Water plants according to their water needs; you'll have healthier plants and a lower water bill.
- Set sprinklers to water lawns and gardens only—not the street or sidewalk.
- Use soaker hoses or trickle irrigation systems for trees and shrubs.

2

Use your appliances wisely.

- Wash only full loads or set small loads to the appropriate water level.
- Scrape rather than rinse dishes before loading them into the dishwasher.
- Replace old clothes washers with ENERGY STAR qualified appliances that use less water.

3

Don't flush your money down the drain/Toilets.

- A leaky toilet can waste 200 gallons of water per day. Check your toilet for leaks by adding food coloring to the tank. If the toilet is leaking, color will appear in the bowl within 15 minutes. Look for worn out, corroded or bent parts in the leaky toilet. Most replacement parts are inexpensive, readily available and easily installed. (Flush as soon as test is done, since food coloring may stain the tank.)
- When replacing your toilet, look for high-efficiency models that use less than 1.3 gallons per flush.

4

Conserve around the house.

- Keep drinking water in the refrigerator instead of letting the faucet run until cool. A running tap can use about 2 gallons of water per minute.

5

Stop those leaks.

- Try not to leave the tap running while you brush your teeth or shave.
- Don't pour water down the drain if you can use it for other projects such as watering a plant or cleaning.
- Verify that your home is leak-free. Many homes have hidden water leaks that can waste more than 10 percent, costing both you and the environment. Read your water meter before and after a two-hour period where no water is being used. If the meter does not read exactly the same, you probably have a leak.
- Repair dripping faucets and showers. If your faucet is dripping at the rate of one drop per second, you can expect to waste 2,700 gallons per year. This waste will add to the cost of water and sewer utilities or strain your septic system.

As stormwater flows over driveways, lawns, and sidewalks, it picks up debris, chemicals, dirt, and other pollutants. Stormwater can flow into a storm sewer system or directly to a lake, stream, river, wetland, or coastal water. Anything that enters a storm sewer system is discharged untreated into the waterbodies we use for swimming, fishing, and providing drinking water. Polluted runoff is the nation's greatest threat to clean water.



By practicing healthy household habits, homeowners can keep common pollutants like pesticides, pet waste, grass clippings, and automotive fluids off the ground and out of stormwater. Adopt these healthy household habits and help protect lakes, streams, rivers, wetlands, and coastal waters. Remember to share the habits with your neighbors!

Healthy Household Habits for Clean Water

Vehicle and Garage

- Use a commercial car wash or wash your car on a lawn or other unpaved surface to **minimize** the amount of dirty, soapy water flowing into the storm drain and eventually into your local waterbody.
- Check your car, boat, motorcycle, and other machinery and equipment for leaks and spills. Make repairs as soon as possible. Clean up **spilled fluids** with an absorbent material like kitty litter or sand, and don't rinse the spills into a nearby storm drain. Remember to properly dispose of the absorbent material.
- **Recycle** used oil and other automotive fluids at participating service stations. Don't dump these chemicals down the storm drain or dispose of them in your trash.



Lawn and Garden

- Use pesticides and fertilizers **sparingly**. When use is necessary, use these chemicals in the recommended amounts. Avoid application if the forecast calls for rain; otherwise, chemicals will be washed into your local stream.
- Select **native** plants and grasses that are drought- and pest-resistant. Native plants require less water, fertilizer, and pesticides.
- **Sweep up** yard debris, rather than hosing down areas. Compost or recycle yard waste when possible.
- Don't overwater your lawn. Water during the cool times of the day, and don't let water run off into the storm drain.
- Cover piles of dirt and mulch being used in landscaping projects to prevent these pollutants from blowing or washing off your yard and into local waterbodies. **Vegetate** bare spots in your yard to prevent soil erosion.

Home Repair and Improvement

- Before beginning an outdoor project, locate the nearest storm drains and **protect** them from debris and other materials.
- **Sweep up** and properly dispose of construction debris such as concrete and mortar.
- Use hazardous substances like paints, solvents, and cleaners in the **smallest amounts possible**, and follow the directions on the label. Clean up spills **immediately**, and dispose of the waste safely. Store substances properly to avoid leaks and spills.
- Purchase and use **nontoxic, biodegradable, recycled, and recyclable** products whenever possible.
- **Clean** paint brushes in a sink, not outdoors. Filter and reuse paint thinner when using oil-based paints. Properly dispose of excess paints through a household hazardous waste collection program, or donate unused paint to local organizations.
- **Reduce** the amount of paved area and increase the amount of vegetated area in your yard. Use native plants in your landscaping to reduce the need for watering during dry periods. Consider directing downspouts away from paved surfaces onto lawns and other measures to increase infiltration and reduce polluted runoff.





Make your home
The SOLUTION
SOLUTION TO STORMWATER POLLUTION!
 A homeowner's guide to healthy
 habits for clean water



Remember: Only rain down the drain!

For more information, visit
www.epa.gov/npdes/stormwater
 or
www.epa.gov/nps



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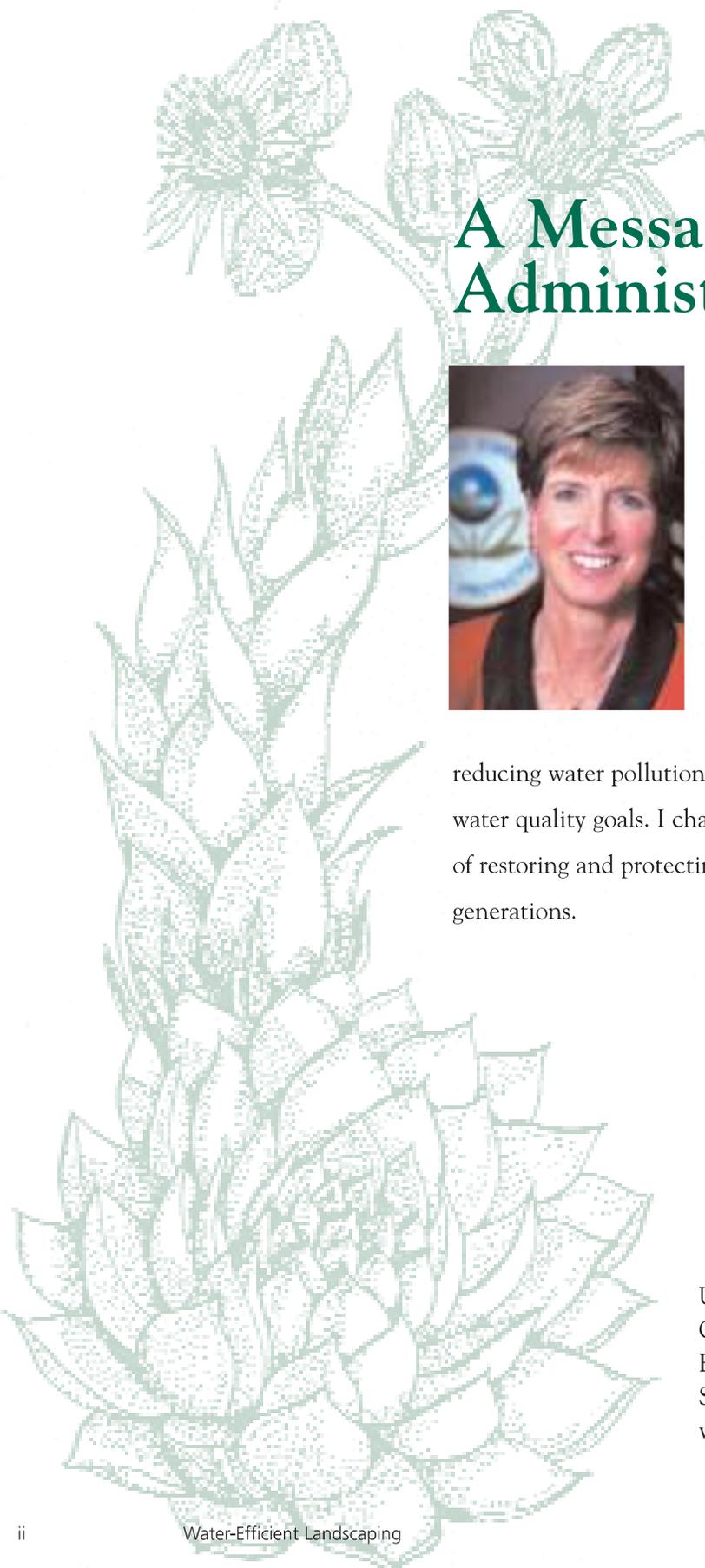
Storm drains connect to waterbodies!

- When walking your pet, remember to **pick up** the waste and dispose of it properly. Flushing pet waste is the best disposal method. Leaving pet waste on the ground increases public health risks by allowing harmful bacteria and nutrients to wash into the storm drain and eventually into local waterbodies.
- **Pet Care**
- **Swimming Pool and Spa**
 - Drain your swimming pool only when a test kit does not detect chlorine levels.
 - Whenever possible, drain your pool or spa into the sanitary sewer system.
 - Properly store pool and spa chemicals to **prevent** leaks and spills, preferably in a covered area to avoid exposure to stormwater.
- **Septic System Use and Maintenance**
 - Have your septic system **inspected** by a professional at least every 3 years, and have the septic tank **pumped** as necessary (usually every 3 to 5 years).
 - Care for the septic system **dramatically** by **not** driving or parking vehicles on it. Plan only grass over and near the drainfield to avoid damage from roots.
 - Flush responsibly. Flushing household chemicals like paint, pesticides, oil, and antifreeze can **destroy** the biological treatment-taking place in the system. Other items, such as diapers, paper towels, and cat litter, can clog the septic system and potentially damage components.

Water-Efficient Landscaping:



Preventing
Pollution &
Using Resources
Wisely



A Message from the Administrator

Christine Todd Whitman



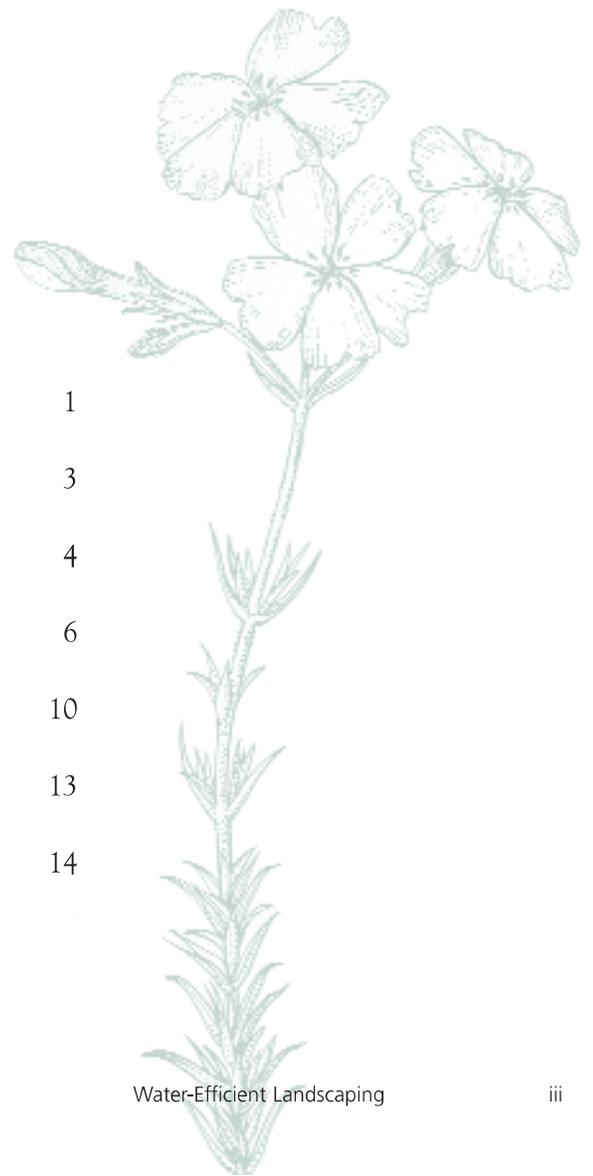
I believe water is the biggest environmental issue we face in the 21st Century in terms of both quality and quantity. In the 30 years since its passage, the Clean Water Act has dramatically increased the number of waterways that are once again safe for fishing and swimming. Despite this great progress in reducing water pollution, many of the nation's waters still do not meet water quality goals. I challenge you to join with me to finish the business of restoring and protecting our nation's waters for present and future generations.

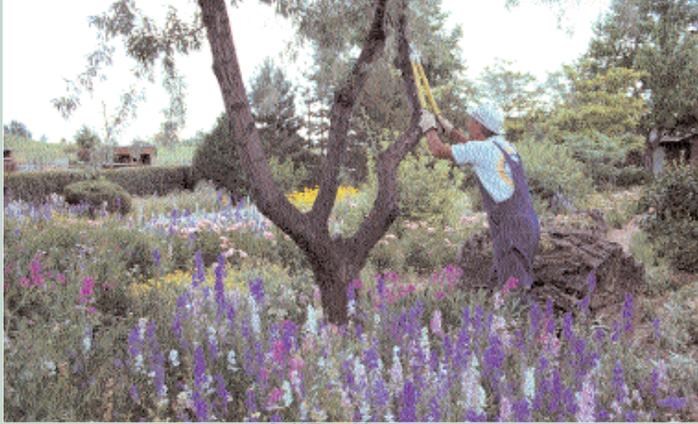
United States Environmental Protection Agency
Office of Water (4204M)
EPA832-F-02-002
September 2002
www.epa.gov/owm/water-efficiency/index.htm



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What is Water-efficient Landscaping?

Water, many agree, is our most precious natural resource; without it, life ceases. Yet judging by our water use and consumption practices, many of us in the United States seem to take it for granted. A typical household uses approximately 260 gallons of water per day. “Water conscious” individuals often install high-efficiency shower heads and toilets and wash only full loads of clothes and dishes to reduce consumption. But in the summer, the amount of water used outdoors by a household can exceed the amount used for all other purposes in the entire year. This is especially true in hot, dry climates.

Gardening and lawn care account for the majority of this seasonal increase, but other outdoor activities, such as washing cars and filling swimming pools, also contribute. According to the U.S. Geological Survey, of the 26 billion gallons of water consumed daily in the United States¹, approximately 7.8 billion gallons, or 30 percent², is devoted to outdoor uses. The majority of this is used for landscaping. In fact, it is estimated that the typical suburban lawn consumes 10,000 gallons of water above and beyond rainwater each year (Vickers, p 140).

Many mistakenly believe that stunning gardens and beautiful lawns are only possible through extensive watering, fertilization, and pesticide application. As this booklet will demonstrate, eye-catching gardens and landscapes that save water, prevent pollution, and

protect the environment are, in fact, easily achieved by employing water-efficient landscaping. Water-efficient landscaping produces attractive landscapes because it utilizes designs and plants suited to local conditions.

This booklet describes the benefits of water-efficient landscaping. It includes several examples of successful projects and programs, as well as contacts, references, and a short bibliography. For specific information about how to best apply water-efficient landscaping principles to your geographical area, consult with your county



Xeriscape garden at Denver Water

extension service and local garden and nursery centers. Local governments and water utilities also possess a wealth of information and suggestions for using water more efficiently in all aspects of your life, including landscaping.

¹ W.B. Solley, R.R. Pierce, and H.A. Perlman. 1998. *Estimated Use of Water in the United States in 1995* (USGS Circular 1200). USGS. Reston, VA. p.27.

² Amy Vickers. 2001. *Handbook of Water Use and Conservation*. WaterPlow Press. Amherst, MA. p. 140.



Xeriscaped front yard in Colorado Springs

Many terms and schools of thought have been used to describe approaches to water-efficient landscaping. Some examples include “water-wise,” “water-smart,” “low-water,” and “natural landscaping.” While each of these terms varies in philosophy and approach, they are all based on the same principles and are commonly used interchangeably. One of the first conceptual approaches developed to formalize these principles is known as “Xeriscape³ landscaping.” Xeriscape landscaping is defined as “quality landscaping that conserves water and protects the environment.” The word “Xeriscape” was coined and copyrighted by

Denver Water Department in 1981 to help make water conserving landscaping an easily recognized concept. The word is a combination of the Greek word “xeros,” which means “dry,” and “landscape.”

The seven principles upon which Xeriscape landscaping is based are:

- Proper planning and design
- Soil analysis and improvement
- Appropriate plant selection
- Practical turf areas
- Efficient irrigation
- Use of mulches
- Appropriate maintenance

The eight fundamentals of water-wise landscaping, below, illustrate the similarities in the underlying concepts and principles of Xeriscape landscaping and other water-efficient approaches.

- Group plants according to their water needs.
- Use native and low-water-use plants.
- Limit turf areas to those needed for practical uses.
- Use efficient irrigation systems.
- Schedule irrigation wisely.
- Make sure soil is healthy.
- Remember to mulch.
- Provide regular maintenance.

In short, plan and maintain your landscape with these principles of water efficiency in mind and it will continue to conserve water and be attractive.

³ Denver Water welcomes the use of the term Xeriscape in books, articles, and speeches promoting water conserving landscape. EPA is using this term with permission from Denver Water. For permission to use “Xeriscape” in your publications, call Denver Water at 303 628-6330.

Why Use Water-efficient Landscaping?

Proper landscaping techniques not only create beautiful landscapes, but also benefit the environment and save water. In addition, attractive, water-efficient, low-maintenance landscapes can increase home values.

Water-efficient landscaping offers many economic and environmental benefits, including:

- Lower water bills from reduced water use.
- Conservation of natural resources and preservation of habitat for plants and wildlife such as fish and waterfowl.
- Decreased energy use (and air pollution associated with its generation) because less pumping and treatment of water is required.
- Reduced home or office heating and cooling costs through the careful placement of trees and plants.

- Reduced runoff of stormwater and irrigation water that carries top soils, fertilizers, and pesticides into lakes, rivers, and streams.
- Fewer yard trimmings to be managed or landfilled.
- Reduced landscaping labor and maintenance costs.
- Extended life for water resources infrastructure (e.g., reservoirs, treatment plants, groundwater aquifers), thus reduced taxpayer costs.



Meadow Sage (Salvia pratensis) is the background for New Mexico Evening Primrose (Oenothera berlandieri 'siskiyou')

How is Water-efficient Landscaping Applied?

Landscaping that conserves water and protects the environment is not limited to arid landscapes with only rocks and cacti.



Dragon's Blood Sedum (*Sedum spurium*) under *Honeylocust Trees* (*Gleditsia triacanthos*)

Through careful planning, landscapes can be designed to be both pleasing to the senses and kind to the environment. One simple approach to achieving this is applying and adopting the basic principles of water-efficient landscaping to suit your climatic region. The seven principles of Xeriscape landscaping are used below to describe these basic concepts in greater detail.

Proper planning and design

Developing a landscape plan is the first and most important step in creating a water-efficient landscape. Your plan

should take into account the regional and micro-climatic conditions of the site, existing vegetation, topography, intended uses of the property, and most importantly, the grouping of plants by their water needs. Also consider the plants' sun or shade requirements and preferred soil conditions. A well-thought-out landscape plan can serve as your roadmap in creating beautiful,

Soil analysis and improvements

water-efficient landscapes and allow you to continually improve your landscape over time. Because soils vary from site to site, test your soil before beginning your landscape improvements. Your county extension service can analyze the pH levels; nutrient levels (e.g., nitrogen, phosphorus, potassium); and the sand, silt, clay, and organic matter content of your soil. It can also suggest ways to improve your soil's ability to support plants and retain water (e.g., through aeration or the addition of soil amendments or fertilizers).

Appropriate plant selection

Your landscape design should take into account your local climate as well as soil conditions. Focus on preserving as many existing trees and shrubs as possible because established plants usually require less water and maintenance. Choose plants native to your region. Native plants, once established, require very little to no additional water beyond normal rainfall. Also, because they are adapted to local soils and climatic conditions, native plants commonly do not require the addition of fertilizers and are more resistant to pests and disease.

When selecting plants, avoid those labeled "hard to establish," "susceptible to disease," or "needs frequent attention," as these types of plants frequently require large amounts of supplemental water, fertilizers, and pesticides. Be careful when selecting non-indigenous species as some of them may become invasive. An invasive plant might be a water guzzler and will surely choke out native species. Your state or county extension service or local nursery can help you select appropriate plants for your area.

The key to successful planting and transplanting is getting the roots to grow into the surrounding soil as quickly as possible. Knowing when and where to plant is crucial to speeding the establishment of new plants. The best time to plant will vary from species to species. Some plants will thrive when planted in a dormant or inactive state. Others succeed when planted during the season when root generation is highest and sufficient moisture is available to support new growth (generally, spring is the best season, but check plant tags or consult with your local nursery for specific species).

Practical turf areas

How and where turf is placed in the landscape can significantly reduce the amount of irrigation water needed to support the landscape. Lawns require a large amount of supplemental water and generally greater maintenance than other vegetation. Use turf where it aesthetically highlights the house or buildings and where it has practical function, such as in play or recreation areas. Grouping turf areas can increase watering efficiency and significantly reduce evaporative and runoff losses. Select a type of grass that can withstand drought periods and become dormant during hot, dry seasons. Reducing or eliminating turf areas altogether further reduces water use.

Efficient irrigation

Efficient irrigation is a very important part of using water efficiently outdoors, and applies in any landscape—whether Xeriscape or conventional. For this reason, an entire section of this booklet addresses efficient irrigation; it can be found on page 6.

Use of mulches

Mulches aid in greater retention of water by minimizing evaporation, reducing weed growth, moderating soil temperatures, and preventing erosion. Organic mulches also improve the condition of your soil as they decompose. Mulches are typically composed of wood bark chips, wood grindings, pine straws, nut shells, small



Wine Cup (Callirhoe involucrata) and Sunset Hyssop (Agastache rupestris) in the Denver Water Xeriscape Garden

gravel, or shredded landscape clippings. Avoid using rock mulches in sunny areas or around non-arid climate plants, as they radiate large amounts of heat and promote water loss that can lead to scorching. Too much mulch can restrict water flow to plant roots and should be avoided.

Appropriate maintenance

Water and fertilize plants only as needed. Too much water promotes weak growth and increases pruning and mowing requirements. Like any landscape, a water-efficient yard will require regular pruning, weeding, fertilization, pest control, and irrigation. As your water-efficient landscape matures, however, it will require less maintenance and less water. Cutting turf grass only when it reaches two to three inches promotes deeper root growth and a more drought-resistant lawn. As a rule of thumb, mow your turf grass before it requires more than one inch to be removed. The proper cutting height varies, however, with the type of grass, so you should contact your county extension service or local nursery to find out the ideal cutting height for your lawn. Avoid shearing plants or giving them high nitrogen fertilizers during dry periods because these practices encourage water-demanding new growth.

Water-efficient Landscape Irrigation Methods

With common watering practices, a large portion of the water applied to lawns and gardens is not absorbed by the plants. It is lost through evaporation, runoff, or being pushed beyond the root zone because it is applied too quickly or in excess of the plants' needs. The goal of efficient irrigation is to reduce these losses by applying only as much water as is needed to keep your plants healthy. This goal is applicable whether you have a Xeriscape or a conventional landscape.

To promote the strong root growth that supports a plant during drought, water deeply and only when the plant needs water. For clay soils, watering less deeply and more often is recommended. Irrigating with consideration to soil

type, the condition of your plants, the season, and weather conditions—rather than on a fixed schedule—significantly increases your watering efficiency. Grouping plants according to similar water needs also makes watering easier and more efficient.

Irrigating lawns, gardens, and landscapes can be accomplished either manually or with an automatic irrigation system. Manual watering with a hand-held hose tends to be the most water-efficient method. According to the AWWA Research Foundation's outdoor end use study, households that manually water with a hose typically use 33 percent less water outdoors than the average household. The study also showed that households with in-ground sprinkler systems used 35 percent more water, those with automatic timers used 47 percent more water, and those with drip irrigation systems used 16 percent more water than households without these types of systems. These results show that in-ground sprinkler and drip irrigation systems must be operated properly to be water-efficient.

You can use a hand-held hose or a sprinkler for manual irrigation. To reduce water losses from evaporation and wind, avoid sprinklers that produce a fine mist or spray high into the air. Soaker hoses can also be very efficient and effective when used properly. Use a hand-held soil moisture probe to determine when irrigation is needed.

To make automatic irrigation systems more efficient, install system controllers such as rain sensors that prevent sprinkler systems from turning on during and immediately after rainfall, or soil moisture sensors that activate sprinklers only when soil moisture levels drop below pre-programmed levels. You can also use a weather-



Purple Fountain Grass (Pennisetum setaceum "Rubrum") and Marigolds (Calendula officinalis) in planter bed

driven programming system. Drip-type irrigation systems are considered the most efficient of the automated irrigation methods because they deliver water directly to the plants' roots. It is also important to revise your watering schedule as the seasons change. Over-watering is most common during the fall when summer irrigation schedules have not been adjusted to the cooler temperatures.

To further reduce your water consumption, consider using alternative sources of irrigation water, such as gray water, reclaimed water, and collected rainwater. According to the AWWA Research Foundation, homes with access to alternative sources of irrigation reduce their water bills by as much as 25 percent.⁴ Graywater is untreated household waste water from bathroom sinks, showers, bathtubs, and clothes washing machines. Graywater systems pipe this used water to a storage tank for later outdoor watering use. State and local graywater laws and policies vary, so you should investigate what qualifies as gray water and if any limitations or restrictions apply. Reclaimed water is waste water that has been treated to levels suitable for nonpotable uses. Check with local water officials to determine if it is available in your area. Collected rainwater is rainwater collected in cisterns, barrels, or storage tanks. Commercial rooftop collection systems are available, but simply diverting your downspout into a covered

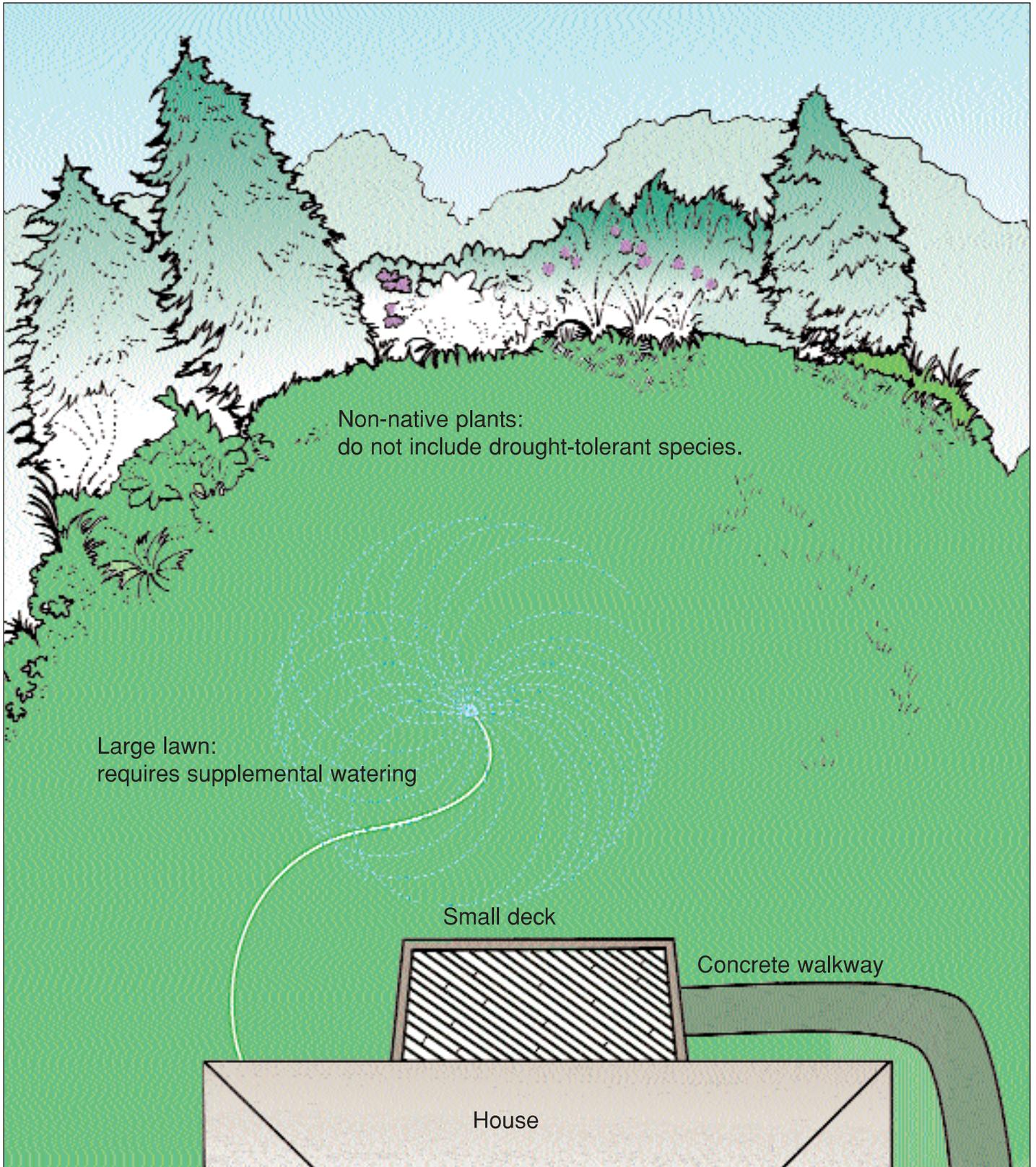


Red Valerian (Centranthus ruber)

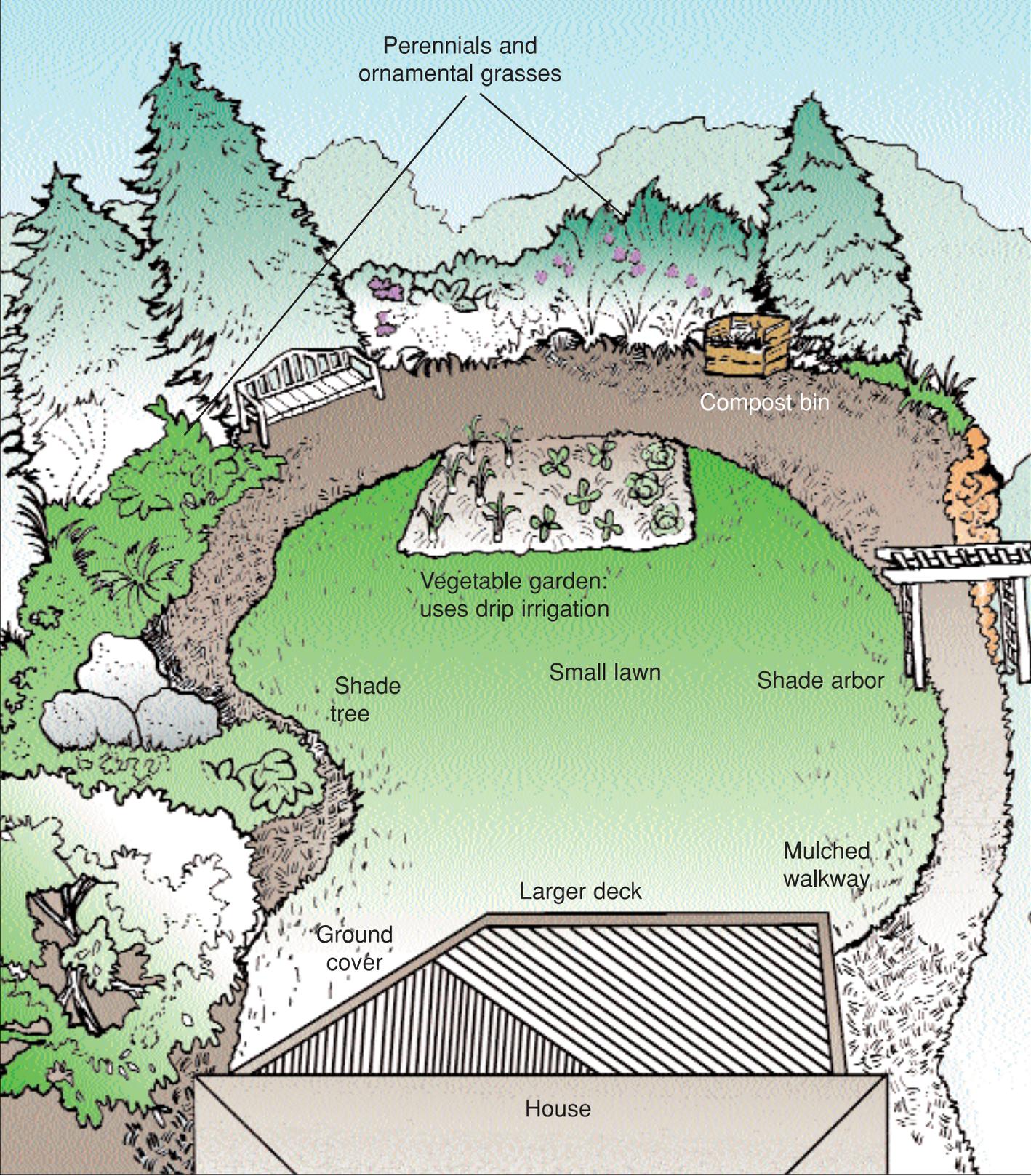
barrel is an easy, low-cost approach. When collecting rainwater, cover all collection vessels to prevent animals and children from entering and to prevent mosquito breeding. Some states might have laws which do not allow collection of rainwater, so be sure to check with your state's water resource agency before implementing a rainwater collection system.

⁴ AWWA Research Foundation. 1999. *Residential End Uses of Water*. <www.waterwiser.org>

Non-xeriscaping



Xeriscaping



Examples of Successful Water-efficient Landscaping Projects

Water-efficient landscaping techniques can be used by individuals, companies, state, tribal, and local governments, and businesses to physically enhance their properties, reduce long-term maintenance costs, and create environmentally conscious landscapes. The following examples illustrate how water-efficient landscapes can be used in various situations.



Oriental Poppies (Papaver orientale)

Homeowner–public/private partnership

- The South Florida Water Management District, the Florida Nurserymen and Growers Association, the Florida Irrigation Society, and local businesses worked together to produce a television video called “Plant It Smart with Xeriscape.” The video shows how a typical Florida residential yard can be retrofitted with Xeriscape landscaping to save energy, time,

and money. The showcase yard (selected from 70 applicants) had a history of heavy water use—more than 90,000 gallons per month. After the retrofit, the yard’s aesthetic value was enhanced; plus it now uses 75 percent less water and relies on yard trimmings for mulch and compost.

- The Southwest Florida Water Management District (SWFWMD), the City of St. Petersburg, and Pinellas County, Florida, produced a video called “Xeriscape It!” It shows a landscape being installed using the seven Xeriscape principles. The SWFWMD also funded several Xeriscape demonstration sites and maintains a Xeriscape demonstration garden at its Brooksville, Florida, headquarters. The garden features a variety of native and non-native plants and is available for public viewing, along with a landscape plant identification guide.
- Residents of Glendale, Arizona, can receive a \$100 cash rebate for installing or converting more than half of their landscapable area to non-grass vegetation. The Glendale Water Conservation Office conducts an inspection of the converted lawn to ensure compliance with rebate requirements and then issues a rebate check to the homeowner. The purpose of the Landscape Rebate Program is to permanently reduce the amount of water used to irrigate grass throughout Glendale.

State government

- Although perceived as a water-rich state, Florida became the first to enact a statewide Xeriscape law. Florida’s legislature recognized that its growing population and vulnerable environment necessitated legal safeguards for its water resources. The Xeriscape law requires Florida’s Departments of Management Ser-

vices and Transportation to use Xeriscape landscaping on all new public properties and to develop a 5-year program to phase in Xeriscape on properties constructed before July 1992. All local governments must also consider requiring the use of Xeriscape and offering incentives to install Xeriscaping.

- Texas also developed legislation requiring Xeriscape landscaping on new construction projects on state property beginning on or after January 1994. Additional legislation, enacted in 1995, requires the Department of Transportation to use Xeriscape practices in the construction and maintenance of roadside parks. All municipalities may consider enacting ordinances requiring Xeriscape to conserve water.

City government

In Las Vegas, Nevada, homeowners can receive up to \$1,000 for converting their lawn to Xeriscape, while commercial landowners can receive up to a \$50,000 credit on their water bill. The city and several other surrounding communities hope these eye-catching figures will help Las Vegas meet its goal of saving 25 percent of the water it would otherwise have used by the year 2010; to date, it has saved 17 percent. Local officials plan to reach the target with the assistance of incentive programs encouraging Xeriscape, a city ordinance limiting turf to no more than 50 percent of new landscapes, grassroots information programs, and a landscape awards program specifically for Xeriscaped properties. Preliminary results of a five-year study show that residents who converted a portion of their lawns to Xeriscape reduced total water consumption by an average of 33 percent. The xeric vegetation required less than a quarter of the water typically used and one-third the maintenance (both in labor and expenditures) compared to traditional turf.



Yellow Ice Plant (Delosperma nubigenum) close-up

Developers

Howard Hughes Properties (HHP), a developer and manager of more than 25,000 acres of residential, commercial, and office development property, has enthusiastically used drought tolerant landscaping on all of its properties since 1990. Most of the company's properties are located in Las Vegas, one of the country's fastest growing metropolitan areas. To conserve resources, the city and county have implemented regulations requiring developers to employ certain Xeriscape principles in new projects. Specifically, a limited percentage of grass can be used on projects, and it must be kept away from streets. As the area's first large-scale developer to recognize the need and value in incorporating drought tolerant landscaping in parks, streetscapes, and open spaces, HHP uses native and desert-adaptive plants that survive and thrive in the Las Vegas climate with minimal to moderate amounts of water.

Drip system irrigation controllers are linked to weather stations that monitor the evapotranspiration rate. This allows HHP to determine the correct amount of water to be applied to plants at any given time. HHP tests the irrigation systems regularly and adds appropriate soil amendments to promote healthy plant growth. The maintenance program also includes pest management, the use of mulching mowers, and the use of rock mulch top dressing on all non-turf planting areas. These measures combine to ensure a beautiful, healthy, and responsible landscape.

Public/private partnerships

Even the most water-conscious homeowners in Southern California are over-watering by 50 to

70 gallons per day. The excess water washes away fertilizers and pesticides, which pollute natural waterways. The quantity of water wasted (and the dollars that pay for it) are even more substantial for large-scale commercial properties and developments.

An innovative partnership in Orange County links landscape water management, green mate-

rial management, and non-point source pollution prevention goals into one program—the Landscape Performance Certification Program. This program emphasizes efficient landscape irrigation and features a “landscape irrigation budget” based on a property’s landscape area, type, and the daily weather. The Municipal Water District monitors actual water use through a system of 12,000 dedicated water meters installed by participating landscape managers.

Participants, including landscapers, property managers, and homeowner associations, can compare the actual cost of water used on their property with the calculated budget. Those staying within budget are awarded certification, a proven marketing tool. This new voluntary program is implemented by the Municipal Water District with input from the California Landscape Contractors’ Association, the Orange County Integrated Management Department, the Metropolitan Water District of Southern California, and local nurseries and has the support of 32 retailing water suppliers. The program is already credited with increasing the use of arid-climate shrubs and landscaping to accommodate drip irrigation, and has resulted in cost savings to water customers.



Miscanthus sinensis
(Miscanthus grass, also called
Maiden grass) variety with
leaves turning yellow for fall.



For More Information



Turkish Speedwell (Veronica liwanensis) in background and tulips in foreground.

The following list of organizations can provide more information on water-efficient landscaping. This is not meant to be an exhaustive list, rather it is intended to help you locate local information sources and possible technical assistance.

Water Management Districts or Utilities

Your local water management district often can provide information on water conservation, including water efficient landscaping practices. Your city, town, or county water management district can be found in the Blue Pages section of your local phone book or through your city, town, or county's Web site if it has one. If you do not know your city, town, or county's Web site, check for a link on your state's Web site. URLs for state Web sites typically follow this format: <www.state.(two letter state abbreviation).us>.

State/County Extension Services

Your state or county extension service is also an excellent source of information. Many extension services provide free publications and advice on home landscaping issues including tips on plant selection and soil improvement. Some also offer a soil analysis service for a nominal fee. Your county extension service can be found in the Blue Pages section of your local phone book under the county government section or through your county's Web site if it has one. The U.S. Department of Agriculture's Cooperative State Research, Education, and Extension Service (www.reeusda.gov/statepartners/usa.htm) provides an online directory of land-grant universities which can help you locate your state extension service. Government Guide (www.governmentguide.com) is yet another online resource that might prove helpful in locating state or local agencies.

Organizations

The following is a partial list of organizations located across the United States that provide helpful information on water-efficient landscaping.

American Water Works Association (AWWA)

6666 West Quincy Avenue

Denver, CO 80235

Telephone: 303 794-7711

and

1401 New York Avenue, NW, Suite 640

Washington, DC 20005

Telephone: 202 628-8303

Web: <www.awwa.org>

Arizona Municipal Water Users Association (AMWUA)

Web: <www.amwua.org/program-xeriscape.htm>

BASIN

City of Boulder Environmental Affairs

P.O. Box 791

Boulder, CO 80306

Phone: 303 441-1964

E-mail: basin@bcn.boulder.co.us

Web: <bcn.boulder.co.us/basin/local/seven.html>

Denver Water

1600 West 12th Avenue

Denver, CO 80204

Phone: 303 628-6000

Fax: 303 628-6199

TDDY: 303 534-4116

Office of Water Conservation hotline:

303 628-6343

E-mail: jane.earle@denverwater.org

Web: <www.water.denver.co.gov/conservation/conservframe.html>

New Mexico Water Conservation Program/Water Conservation Clearinghouse

P. O. Box 25102

Santa Fe, NM 87504

Phone: 800 WATER-NM

E-mail: waternm@ose.state.nm.us

Fax: 505 827-3813

Web: <www.ose.state.nm.us/water-info/conservation/index.html>

Project WET - Water Education for Teachers

201 Culbertson Hall

Montana State University

Bozeman, MT 59717

Phone: 406 994-5392

Web: <www.montana.edu/wwwwet>

Rocky Mountain Institute

1739 Snowmass Creek Road

Snowmass, CO 81654-9199

Phone: 970 927-3851

Web: <www.rmi.org>

Southern Nevada Water Authority
1001 S. Valley View Boulevard, Mailstop #440
Las Vegas, NV 89153
Phone: 702 258-3930
Web: <www.snwa.com>

Southwest Florida Water Management District
2379 Broad Street
Brooksville, FL 34604-6899
Phone: 352 796-7211 or 800 423-1476 (Florida only)
Web: <www.swfwmd.state.fl.us/watercon/xeris/swfxeris.html>

Sustainable Sources Green Building Program: Sustainable Building Source Book
E-mail: info@greenbuilder.com
Web: <www.greenbuilder.com/sourcebook/xeriscape.html>

Water Conservation Garden – San Diego County
12122 Cuyamaca College Drive West
El Cajon, CA 92019
Phone: 619 660-0614
Fax: 619 660-1687

E-mail: info@thegarden.org
Web: <www.thegarden.org/garden/xeriscape/index.html> and <www.sdcwa.org/manage/conservation-xeriscape.phtml>

WaterWiser: The Water Efficiency Clearing House
(Operated by AWWA in cooperation with the U.S. Bureau of Reclamation)
6666 West Quincy Avenue
Denver, CO 80235
Phone: 800 559-9855
Fax: 303 794-6303
E-mail: bewiser@waterwiser.org
Web: <www.waterwiser.org>

Xeriscape Colorado!, Inc.
P.O. Box 40202
Denver, CO 80204-0202
Web: <www.xeriscape.org>

Resources

The following is a partial list of publications on resource efficient landscaping. For even more information, particularly on plants suited to your locale, consult your local library, county extension service, nursery, garden clubs, or water utility.

Ball, Ken and American Water Works Association Water Conservation Committee. *Xeriscape Programs for Water Utilities*. Denver: American Water Works Association, 1990.

Bennett, Jennifer. *Dry-Land Gardening: A Xeriscaping Guide for Dry-Summer, Cold-Winter Climates*. Buffalo: Firefly, 1998.

Bennett, Richard E. and Michael S. Hazinski. *Water-Efficient Landscape Guidelines*. Denver: American Water Works Association, 1993.

Brenzel, Kathleen N., ed. *Western Garden Book*, 2001 Edition. Menlo Park: Sunset Publishing Corporation, 2001.

City of Aurora, Colorado Utilities Department. *Landscaping for Water Conservation: Xeriscape!* Aurora: Colorado Utilities Department, 1989.

Johnson, Eric and Scott Millard. *The Low-Water Flower Gardener: 270 Unthirsty Plants for Color, Including Perennials, Ground Covers, Grasses & Shrubs*. Tucson: Ironwood Press, 1993.

Knopf, James M. *The Xeriscape Flower Gardener*. Boulder: Johnson Books, 1991.

Knopf, James M., ed. *Waterwise Landscaping with Trees, Shrubs, and Vines: A Xeriscape Guide for the Rocky Mountain Region, California, and the Desert Southwest*. Boulder: Chamisa Books, 1999.

Knox, Kim, ed. *Landscaping for Water Conservation: Xeriscape*. Denver: City of Aurora and Denver Water, 1989.

Nellis, David W. *Seashore Plants of South Florida and the Caribbean: A Guide to Identification and Propagation of Xeriscape Plants*. Sarasota: Pineapple Press, Inc., 1994.

Perry, Bob. *Landscape Plants for Western Regions: An Illustrated Guide to Plants for Water Conservation*. Claremont: Land Design Publishing, 1992.

Phillips, Judith. *Natural by Design: Beauty and Balance in Southwest Gardens*. Santa Fe: Museum of New Mexico Press, 1995.

- Phillips, Judith. *Plants for Natural Gardens: Southwestern Native & Adaptive Trees, Shrubs, Wildflowers & Grasses*. Santa Fe: Museum of New Mexico Press, 1995.
- Robinette, Gary O. *Water Conservation in Landscape Design and Maintenance*. New York: Nostrand Reinhold, 1984.
- Rumary, Mark. *The Dry Garden*. New York: Sterling Publishing Co., Inc., 1995.
- Springer, Lauren. *The Undaunted Garden: Planting for Weather-Resilient Beauty*. Golden: Fulcrum Publishing, 1994.
- Springer, Lauren. *Waterwise Gardening*. New York: Prentice Hall Gardening, 1994.
- Stephens, Tom, Doug Welsh, and Connie Ellefson. *Xeriscape Gardening, Water Conservation for the American Landscape*. New York: Macmillan Publishing, 1992.
- Sunset Books, eds. *Waterwise Gardening: Beautiful Gardens with Less Water*. Menlo Park: Lane Publishing Company, 1989.
- Vickers, Amy. *Handbook of Water Use and Conservation*. Amherst, MA: WaterPlow Press, 2001.
- Weinstein, Gayle. *Xeriscape Handbook : A How-To Guide to Natural, Resource-Wise Gardening*. Golden: Fulcrum Publishing, 1998.
- Williams, Sara. *Creating the Prairie Xeriscape*. Saskatchewan: University Extension Press, 1997.
- Winger, David, ed. *Xeriscape Plant Guide: 100 Water-Wise Plants for Gardens and Landscapes*. Golden: Fulcrum Publishing, 1998.
- Winger, David, ed. *Xeriscape Color Guide*. Golden: Fulcrum Publishing, 1998.
- Winger, David, ed. *Evidence of Care: The Xeriscape Maintenance Journal, 2002, Vol. 1*, Colorado WaterWise Council, 2001.

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For copies of this publication contact:

EPA Water Resources Center (RC-4100)
U.S. Environmental Protection Agency
Ariel Rios Building, 1200 Pennsylvania Avenue, NW.
Washington, DC 20460

For more information regarding water efficiency, please contact:

Water Efficiency Program (4204M)
U.S. Environmental Protection Agency
Ariel Rios Building, 1200 Pennsylvania Avenue, NW.
Washington, DC 20460
<www.epa.gov/OWM/water-efficiency/index.htm>



United States
Environmental Protection Agency (4204M)
Washington, DC 20460

Official Business
Penalty for Private Use \$300

Spill Prevention, Control & Cleanup SC-11



Photo Credit: Geoff Brosseau

Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Description

Many activities that occur at an industrial or commercial site have the potential to cause accidental or illegal spills. Preparation for accidental or illegal spills, with proper training and reporting systems implemented, can minimize the discharge of pollutants to the environment.

Spills and leaks are one of the largest contributors of stormwater pollutants. Spill prevention and control plans are applicable to any site at which hazardous materials are stored or used. An effective plan should have spill prevention and response procedures that identify potential spill areas, specify material handling procedures, describe spill response procedures, and provide spill clean-up equipment. The plan should take steps to identify and characterize potential spills, eliminate and reduce spill potential, respond to spills when they occur in an effort to prevent pollutants from entering the stormwater drainage system, and train personnel to prevent and control future spills.

Approach

Pollution Prevention

- Develop procedures to prevent/mitigate spills to storm drain systems. Develop and standardize reporting procedures, containment, storage, and disposal activities, documentation, and follow-up procedures.
- Develop a Spill Prevention Control and Countermeasure (SPCC) Plan. The plan should include:

Targeted Constituents

Sediment	
Nutrients	
Trash	
Metals	<input checked="" type="checkbox"/>
Bacteria	
Oil and Grease	<input checked="" type="checkbox"/>
Organics	<input checked="" type="checkbox"/>



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- Description of the facility, owner and address, activities and chemicals present
- Facility map
- Notification and evacuation procedures
- Cleanup instructions
- Identification of responsible departments
- Identify key spill response personnel
- Recycle, reclaim, or reuse materials whenever possible. This will reduce the amount of process materials that are brought into the facility.

Suggested Protocols (including equipment needs)

Spill Prevention

- Develop procedures to prevent/mitigate spills to storm drain systems. Develop and standardize reporting procedures, containment, storage, and disposal activities, documentation, and follow-up procedures.
- If consistent illegal dumping is observed at the facility:
 - Post “No Dumping” signs with a phone number for reporting illegal dumping and disposal. Signs should also indicate fines and penalties applicable for illegal dumping.
 - Landscaping and beautification efforts may also discourage illegal dumping.
 - Bright lighting and/or entrance barriers may also be needed to discourage illegal dumping.
- Store and contain liquid materials in such a manner that if the tank is ruptured, the contents will not discharge, flow, or be washed into the storm drainage system, surface waters, or groundwater.
- If the liquid is oil, gas, or other material that separates from and floats on water, install a spill control device (such as a tee section) in the catch basins that collects runoff from the storage tank area.
- Routine maintenance:
 - Place drip pans or absorbent materials beneath all mounted taps, and at all potential drip and spill locations during filling and unloading of tanks. Any collected liquids or soiled absorbent materials must be reused/recycled or properly disposed.
 - Store and maintain appropriate spill cleanup materials in a location known to all near the tank storage area; and ensure that employees are familiar with the site’s spill control plan and/or proper spill cleanup procedures.
 - Sweep and clean the storage area monthly if it is paved, *do not hose down the area to a storm drain.*

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- Check tanks (and any containment sumps) daily for leaks and spills. Replace tanks that are leaking, corroded, or otherwise deteriorating with tanks in good condition. Collect all spilled liquids and properly dispose of them.
- Label all containers according to their contents (e.g., solvent, gasoline).
- Label hazardous substances regarding the potential hazard (corrosive, radioactive, flammable, explosive, poisonous).
- Prominently display required labels on transported hazardous and toxic materials (per US DOT regulations).
- Identify key spill response personnel.

Spill Control and Cleanup Activities

- Follow the Spill Prevention Control and Countermeasure Plan.
- Clean up leaks and spills immediately.
- Place a stockpile of spill cleanup materials where it will be readily accessible (e.g., near storage and maintenance areas).
- On paved surfaces, clean up spills with as little water as possible. Use a rag for small spills, a damp mop for general cleanup, and absorbent material for larger spills. If the spilled material is hazardous, then the used cleanup materials are also hazardous and must be sent to a certified laundry (rags) or disposed of as hazardous waste. Physical methods for the cleanup of dry chemicals include the use of brooms, shovels, sweepers, or plows.
- Never hose down or bury dry material spills. Sweep up the material and dispose of properly.
- Chemical cleanups of material can be achieved with the use of adsorbents, gels, and foams. Use adsorbent materials on small spills rather than hosing down the spill. Remove the adsorbent materials promptly and dispose of properly.
- For larger spills, a private spill cleanup company or Hazmat team may be necessary.

Reporting

- Report spills that pose an immediate threat to human health or the environment to the Regional Water Quality Control Board.
- Federal regulations require that any oil spill into a water body or onto an adjoining shoreline be reported to the National Response Center (NRC) at 800-424-8802 (24 hour).
- Report spills to local agencies, such as the fire department; they can assist in cleanup.
- Establish a system for tracking incidents. The system should be designed to identify the following:
 - Types and quantities (in some cases) of wastes
 - Patterns in time of occurrence (time of day/night, month, or year)

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- Mode of dumping (abandoned containers, “midnight dumping” from moving vehicles, direct dumping of materials, accidents/spills)
- Responsible parties

Training

- Educate employees about spill prevention and cleanup.
- Well-trained employees can reduce human errors that lead to accidental releases or spills:
 - The employee should have the tools and knowledge to immediately begin cleaning up a spill should one occur.
 - Employees should be familiar with the Spill Prevention Control and Countermeasure Plan.
- Employees should be educated about aboveground storage tank requirements. Employees responsible for aboveground storage tanks and liquid transfers should be thoroughly familiar with the Spill Prevention Control and Countermeasure Plan and the plan should be readily available.
- Train employees to recognize and report illegal dumping incidents.

Other Considerations (Limitations and Regulations)

- A Spill Prevention Control and Countermeasure Plan (SPCC) is required for facilities that are subject to the oil pollution regulations specified in Part 112 of Title 40 of the Code of Federal Regulations or if they have a storage capacity of 10,000 gallons or more of petroleum. (Health and Safety Code 6.67)
- State regulations also exist for storage of hazardous materials (Health & Safety Code Chapter 6.95), including the preparation of area and business plans for emergency response to the releases or threatened releases.
- Consider requiring smaller secondary containment areas (less than 200 sq. ft.) to be connected to the sanitary sewer, prohibiting any hard connections to the storm drain.

Requirements

Costs (including capital and operation & maintenance)

- Will vary depending on the size of the facility and the necessary controls.
- Prevention of leaks and spills is inexpensive. Treatment and/or disposal of contaminated soil or water can be quite expensive.

Maintenance (including administrative and staffing)

- This BMP has no major administrative or staffing requirements. However, extra time is needed to properly handle and dispose of spills, which results in increased labor costs.

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Supplemental Information

Further Detail of the BMP

Reporting

Record keeping and internal reporting represent good operating practices because they can increase the efficiency of the facility and the effectiveness of BMPs. A good record keeping system helps the facility minimize incident recurrence, correctly respond with appropriate cleanup activities, and comply with legal requirements. A record keeping and reporting system should be set up for documenting spills, leaks, and other discharges, including discharges of hazardous substances in reportable quantities. Incident records describe the quality and quantity of non-stormwater discharges to the storm sewer. These records should contain the following information:

- Date and time of the incident
- Weather conditions
- Duration of the spill/leak/discharge
- Cause of the spill/leak/discharge
- Response procedures implemented
- Persons notified
- Environmental problems associated with the spill/leak/discharge

Separate record keeping systems should be established to document housekeeping and preventive maintenance inspections, and training activities. All housekeeping and preventive maintenance inspections should be documented. Inspection documentation should contain the following information:

- The date and time the inspection was performed
- Name of the inspector
- Items inspected
- Problems noted
- Corrective action required
- Date corrective action was taken

Other means to document and record inspection results are field notes, timed and dated photographs, videotapes, and drawings and maps.

Aboveground Tank Leak and Spill Control

Accidental releases of materials from aboveground liquid storage tanks present the potential for contaminating stormwater with many different pollutants. Materials spilled, leaked, or lost from

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tanks may accumulate in soils or on impervious surfaces and be carried away by stormwater runoff.

The most common causes of unintentional releases are:

- Installation problems
- Failure of piping systems (pipes, pumps, flanges, couplings, hoses, and valves)
- External corrosion and structural failure
- Spills and overfills due to operator error
- Leaks during pumping of liquids or gases from truck or rail car to a storage tank or vice versa

Storage of reactive, ignitable, or flammable liquids should comply with the Uniform Fire Code and the National Electric Code. Practices listed below should be employed to enhance the code requirements:

- Tanks should be placed in a designated area.
- Tanks located in areas where firearms are discharged should be encapsulated in concrete or the equivalent.
- Designated areas should be impervious and paved with Portland cement concrete, free of cracks and gaps, in order to contain leaks and spills.
- Liquid materials should be stored in UL approved double walled tanks or surrounded by a curb or dike to provide the volume to contain 10 percent of the volume of all of the containers or 110 percent of the volume of the largest container, whichever is greater. The area inside the curb should slope to a drain.
- For used oil or dangerous waste, a dead-end sump should be installed in the drain.
- All other liquids should be drained to the sanitary sewer if available. The drain must have a positive control such as a lock, valve, or plug to prevent release of contaminated liquids.
- Accumulated stormwater in petroleum storage areas should be passed through an oil/water separator.

Maintenance is critical to preventing leaks and spills. Conduct routine inspections and:

- Check for external corrosion and structural failure.
- Check for spills and overfills due to operator error.
- Check for failure of piping system (pipes, pumps, flanger, coupling, hoses, and valves).
- Check for leaks or spills during pumping of liquids or gases from truck or rail car to a storage facility or vice versa.

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- Visually inspect new tank or container installation for loose fittings, poor welding, and improper or poorly fitted gaskets.
- Inspect tank foundations, connections, coatings, and tank walls and piping system. Look for corrosion, leaks, cracks, scratches, and other physical damage that may weaken the tank or container system.
- Frequently relocate accumulated stormwater during the wet season.
- Periodically conduct integrity testing by a qualified professional.

Vehicle Leak and Spill Control

Major spills on roadways and other public areas are generally handled by highly trained Hazmat teams from local fire departments or environmental health departments. The measures listed below pertain to leaks and smaller spills at vehicle maintenance shops.

In addition to implementing the spill prevention, control, and clean up practices above, use the following measures related to specific activities:

Vehicle and Equipment Maintenance

- Perform all vehicle fluid removal or changing inside or under cover to prevent the run-on of stormwater and the runoff of spills.
- Regularly inspect vehicles and equipment for leaks, and repair immediately.
- Check incoming vehicles and equipment (including delivery trucks, and employee and subcontractor vehicles) for leaking oil and fluids. Do not allow leaking vehicles or equipment onsite.
- Always use secondary containment, such as a drain pan or drop cloth, to catch spills or leaks when removing or changing fluids.
- Immediately drain all fluids from wrecked vehicles.
- Store wrecked vehicles or damaged equipment under cover.
- Place drip pans or absorbent materials under heavy equipment when not in use.
- Use adsorbent materials on small spills rather than hosing down the spill.
- Remove the adsorbent materials promptly and dispose of properly.
- Promptly transfer used fluids to the proper waste or recycling drums. Don't leave full drip pans or other open containers lying around.
- Oil filters disposed of in trashcans or dumpsters can leak oil and contaminate stormwater. Place the oil filter in a funnel over a waste oil recycling drum to drain excess oil before disposal. Oil filters can also be recycled. Ask your oil supplier or recycler about recycling oil filters.

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- Store cracked batteries in a non-leaking secondary container. Do this with all cracked batteries, even if you think all the acid has drained out. If you drop a battery, treat it as if it is cracked. Put it into the containment area until you are sure it is not leaking.

Vehicle and Equipment Fueling

- Design the fueling area to prevent the run-on of stormwater and the runoff of spills:
 - Cover fueling area if possible.
 - Use a perimeter drain or slope pavement inward with drainage to a sump.
 - Pave fueling area with concrete rather than asphalt.
- If dead-end sump is not used to collect spills, install an oil/water separator.
- Install vapor recovery nozzles to help control drips as well as air pollution.
- Discourage “topping-off” of fuel tanks.
- Use secondary containment when transferring fuel from the tank truck to the fuel tank.
- Use adsorbent materials on small spills and general cleaning rather than hosing down the area. Remove the adsorbent materials promptly.
- Carry out all Federal and State requirements regarding underground storage tanks, or install above ground tanks.
- Do not use mobile fueling of mobile industrial equipment around the facility; rather, transport the equipment to designated fueling areas.
- Keep your Spill Prevention Control and Countermeasure (SPCC) Plan up-to-date.
- Train employees in proper fueling and cleanup procedures.

Industrial Spill Prevention Response

For the purposes of developing a spill prevention and response program to meet the stormwater regulations, facility managers should use information provided in this fact sheet and the spill prevention/response portions of the fact sheets in this handbook, for specific activities. The program should:

- Integrate with existing emergency response/hazardous materials programs (e.g., Fire Department)
- Develop procedures to prevent/mitigate spills to storm drain systems
- Identify responsible departments
- Develop and standardize reporting procedures, containment, storage, and disposal activities, documentation, and follow-up procedures
- Address spills at municipal facilities, as well as public areas

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- Provide training concerning spill prevention, response and cleanup to all appropriate personnel

References and Resources

California's Nonpoint Source Program Plan <http://www.swrcb.ca.gov/nps/index.html>

Clark County Storm Water Pollution Control Manual
<http://www.co.clark.wa.us/pubworks/bmpman.pdf>

King County Storm Water Pollution Control Manual <http://dnr.metrokc.gov/wlr/dss/spcm.htm>

Santa Clara Valley Urban Runoff Pollution Prevention Program <http://www.scvurppp.org>

The Stormwater Managers Resource Center <http://www.stormwatercenter.net/>

**CALIFORNIA ENVIRONMENTAL REPORTING SYSTEM (CERS)
 CONSOLIDATED EMERGENCY RESPONSE / CONTINGENCY PLAN**

Prior to completing this Plan, please refer to the INSTRUCTIONS FOR COMPLETING A CONSOLIDATED CONTINGENCY PLAN

A. FACILITY IDENTIFICATION AND OPERATIONS OVERVIEW

FACILITY ID #	1. CERS ID	A1.	DATE OF PLAN PREPARATION/REVISION	A2.
BUSINESS NAME (Same as Facility Name or DBA - Doing Business As) 3.				
BUSINESS SITE ADDRESS 103.				
BUSINESS SITE CITY	104.	CA	ZIP CODE	105.
TYPE OF BUSINESS (e.g., Painting Contractor)	A3.	INCIDENTAL OPERATIONS (e.g., Fleet Maintenance) A4.		
THIS PLAN COVERS CHEMICAL SPILLS, FIRES, AND EARTHQUAKES INVOLVING: (Check all that apply) A5.				
<input checked="" type="checkbox"/> 1. HAZARDOUS MATERIALS; <input type="checkbox"/> 2. HAZARDOUS WASTES				

B. INTERNAL RESPONSE

INTERNAL FACILITY EMERGENCY RESPONSE WILL OCCUR VIA: (Check all that apply) B1.
<input type="checkbox"/> 1. CALLING PUBLIC EMERGENCY RESPONDERS (i.e., 9-1-1)
<input type="checkbox"/> 2. CALLING HAZARDOUS WASTE CONTRACTOR
<input type="checkbox"/> 3. ACTIVATING IN-HOUSE EMERGENCY RESPONSE TEAM

C. EMERGENCY COMMUNICATIONS, PHONE NUMBERS AND NOTIFICATIONS

Whenever there is an imminent or actual emergency situation such as an explosion, fire, or release, the Emergency Coordinator (or his/her designee when the Emergency Coordinator is on call) shall:

1. Activate internal facility alarms or communications systems, where applicable, to notify all facility personnel.
2. Notify appropriate local authorities (i.e., call 9-1-1).
3. Notify the California Emergency Management Agency at (800) 852-7550.

Before facility operations are resumed in areas of the facility affected by the incident, the emergency coordinator shall notify the California Department of Toxic Substances Control (DTSC), the local Unified Program Agency (UPA), and the local fire department's hazardous materials program that the facility is in compliance with requirements to:

1. Provide for proper storage and disposal of recovered waste, contaminated soil or surface water, or any other material that results from an explosion, fire, or release at the facility; and
2. Ensure that no material that is incompatible with the released material is transferred, stored, or disposed of in areas of the facility affected by the incident until cleanup procedures are completed.

INTERNAL FACILITY EMERGENCY COMMUNICATIONS OR ALARM NOTIFICATION WILL OCCUR VIA: (Check all that apply) C1.
<input type="checkbox"/> 1. VERBAL WARNINGS; <input type="checkbox"/> 2. PUBLIC ADDRESS OR INTERCOM SYSTEM; <input type="checkbox"/> 3. TELEPHONE;
<input type="checkbox"/> 4. PAGERS; <input type="checkbox"/> 5. ALARM SYSTEM; <input type="checkbox"/> 6. PORTABLE RADIO
NOTIFICATIONS TO NEIGHBORING FACILITIES THAT MAY BE AFFECTED BY AN OFF-SITE RELEASE WILL OCCUR BY: (Check all that apply) C2.
<input type="checkbox"/> 1. VERBAL WARNINGS; <input type="checkbox"/> 2. PUBLIC ADDRESS OR INTERCOM SYSTEM; <input type="checkbox"/> 3. TELEPHONE;
<input type="checkbox"/> 4. PAGERS; <input type="checkbox"/> 5. ALARM SYSTEM; <input type="checkbox"/> 6. PORTABLE RADIO

EMERGENCY RESPONSE PHONE NUMBERS:	AMBULANCE, FIRE, POLICE AND CHP	9-1-1	
	CALIFORNIA EMERGENCY MANAGEMENT AGENCY (CAL/EMA)	(800) 852-7550	
	NATIONAL RESPONSE CENTER (NRC)	(800) 424-8802	
	POISON CONTROL CENTER	(800) 222-1222	
	LOCAL UNIFIED PROGRAM AGENCY (UPA/CUPA)		C3.
	OTHER (Specify):		C4. C5.
NEAREST MEDICAL FACILITY / HOSPITAL NAME:			C6. C7.

AGENCY NOTIFICATION PHONE NUMBERS:	CALIFORNIA DEPT. OF TOXIC SUBSTANCES CONTROL (DTSC)	(916) 255-3545	
	REGIONAL WATER QUALITY CONTROL BOARD		C8.
	U.S. ENVIRONMENTAL PROTECTION AGENCY (US EPA)	(800) 300-2193	
	CALIFORNIA DEPT OF FISH AND GAME (DFG)	(916) 358-2900	
	U.S. COAST GUARD	(202) 267-2180	
	CAL/OSHA	(916) 263-2800	
	STATE FIRE MARSHAL	(916) 445-8200	
	OTHER (Specify):		C9. C10.
	OTHER (Specify):		C11. C12.

D. EMERGENCY CONTAINMENT AND CLEANUP PROCEDURES

SPILL PREVENTION, CONTAINMENT, AND CLEANUP PROCEDURES: (Check all boxes that apply to indicate your procedures for containing spills, releases, fires or explosions; and, preventing and mitigating associated harm to persons, property, and the environment.)

- 1. MONITOR FOR LEAKS, RUPTURES, PRESSURE BUILD-UP, ETC.;
- 2. PROVIDE STRUCTURAL PHYSICAL BARRIERS (e.g., Portable spill containment walls);
- 3. PROVIDE ABSORBENT PHYSICAL BARRIERS (e.g., Pads, pigs, pillows);
- 4. COVER OR BLOCK FLOOR AND/ OR STORM DRAINS;
- 5. BUILT-IN BERM IN WORK / STORAGE AREA;
- 6. AUTOMATIC FIRE SUPPRESSION SYSTEM;
- 7. ELIMINATE SOURCES OF IGNITION FOR FLAMMABLE HAZARDS (e.g. Flammable liquids, Propane);
- 8. STOP PROCESSES AND/OR OPERATIONS;
- 9. AUTOMATIC / ELECTRONIC EQUIPMENT SHUT-OFF SYSTEM;
- 10. SHUT-OFF WATER, GAS, ELECTRICAL UTILITIES AS APPROPRIATE;
- 11. CALL 9-1-1 FOR PUBLIC EMERGENCY RESPONDER ASSISTANCE / MEDICAL AID;
- 12. NOTIFY AND EVACUATE PERSONS IN ALL THREATENED AREAS;
- 13. ACCOUNT FOR EVACUATED PERSONS IMMEDIATELY AFTER EVACUATION CALL;
- 14. PROVIDE PROTECTIVE EQUIPMENT FOR ON-SITE RESPONSE TEAM;
- 15. REMOVE OR ISOLATE CONTAINERS / AREA AS APPROPRIATE;
- 16. HIRE LICENSED HAZARDOUS WASTE CONTRACTOR;
- 17. USE ABSORBENT MATERIAL FOR SPILLS WITH SUBSEQUENT PROPER LABELING, STORAGE, AND HAZARDOUS WASTE DISPOSAL AS APPROPRIATE;
- 18. SUCTION USING SHOP VACUUM WITH SUBSEQUENT PROPER LABELING, STORAGE, AND HAZARDOUS WASTE DISPOSAL AS APPROPRIATE;
- 19. WASH / DECONTAMINATE EQUIPMENT W/ CONTAINMENT and DISPOSAL OF EFFLUENT / RINSATE AS HAZARDOUS WASTE;
- 20. PROVIDE SAFE TEMPORARY STORAGE OF EMERGENCY-GENERATED WASTES;
- 21. OTHER (Specify):

D1.

D2.

E. FACILITY EVACUATION

THE FOLLOWING ALARM SIGNAL(S) WILL BE USED TO BEGIN EVACUATION OF THE FACILITY (CHECK ALL THAT APPLY):

E1.

- 1. BELLS;
- 2. HORNS/SIRENS;
- 3. VERBAL (I.E., SHOUTING);
- 4. OTHER (Specify):

E2.

THE FOLLOWING LOCATION(S) IS/ARE EVACUEE EMERGENCY ASSEMBLY AREA(S) (i.e., Front parking lot, specific street corner, etc.)

E3.

Note: The Emergency Coordinator must account for all on site employees and/or site visitors after evacuation.

EVACUATION ROUTE MAP(S) POSTED AS REQUIRED

E4.

Note: The map(s) must show primary and alternate evacuation routes, emergency exits, and primary and alternate staging areas, and must be prominently posted throughout the facility in locations where it will be visible to employees and visitors.

F. ARRANGEMENTS FOR EMERGENCY SERVICES

Explanation of Requirement: Advance arrangements with local fire and police departments, hospitals, and/or emergency services contractors should be made as appropriate for your facility. You may determine that such arrangements are not necessary.

ADVANCE ARRANGEMENTS FOR LOCAL EMERGENCY SERVICES (Check one of the following)

F1.

- 1. HAVE BEEN DETERMINED NOT NECESSARY; *or*
- 2. THE FOLLOWING ARRANGEMENTS HAVE BEEN MADE (Specify):

F2.

G. EMERGENCY EQUIPMENT

Check all boxes that apply to list emergency response equipment available at the facility and identify the location(s) where the equipment is kept and the equipment's capability, if applicable. [e.g., CHEMICAL PROTECTIVE GLOVES | Spill response kit | One time use, Oil & solvent resistant only.]

TYPE	EQUIPMENT AVAILABLE ^{G1.}	LOCATION	CAPABILITY (If applicable)
Safety and First Aid	1. <input type="checkbox"/> CHEMICAL PROTECTIVE SUITS, APRONS, OR VESTS	G2.	G3.
	2. <input type="checkbox"/> CHEMICAL PROTECTIVE GLOVES	G4.	G5.
	3. <input type="checkbox"/> CHEMICAL PROTECTIVE BOOTS	G6.	G7.
	4. <input type="checkbox"/> SAFETY GLASSES / GOGGLES / SHIELDS	G8.	G9.
	5. <input type="checkbox"/> HARD HATS	G10.	G11.
	6. <input type="checkbox"/> CARTRIDGE RESPIRATORS	G12.	G13.
	7. <input type="checkbox"/> SELF-CONTAINED BREATHING APPARATUS (SCBA)	G14.	G15.
	8. <input type="checkbox"/> FIRST AID KITS / STATIONS	G16.	G17.
	9. <input type="checkbox"/> PLUMBED EYEWASH FOUNTAIN / SHOWER	G18.	G19.
	10. <input type="checkbox"/> PORTABLE EYEWASH KITS	G20.	G21.
	11. <input type="checkbox"/> OTHER	G22.	G23.
	12. <input type="checkbox"/> OTHER	G24.	G25.
Fire Fighting	13. <input type="checkbox"/> PORTABLE FIRE EXTINGUISHERS	G26.	G27.
	14. <input type="checkbox"/> FIXED FIRE SYSTEMS / SPRINKLERS / FIRE HOSES	G28.	G29.
	15. <input type="checkbox"/> FIRE ALARM BOXES OR STATIONS	G30.	G31.
	16. <input type="checkbox"/> OTHER	G32.	G33.
Spill Control and Clean-Up	17. <input type="checkbox"/> ALL-IN-ONE SPILL KIT	G34.	G35.
	18. <input type="checkbox"/> ABSORBENT MATERIAL	G36.	G37.
	19. <input type="checkbox"/> CONTAINER FOR USED ABSORBENT	G38.	G39.
	20. <input type="checkbox"/> BERMING / DIKING EQUIPMENT	G40.	G41.
	21. <input type="checkbox"/> BROOM	G42.	G43.
	22. <input type="checkbox"/> SHOVEL	G44.	G45.
	23. <input type="checkbox"/> SHOP VAC	G46.	G47.
	24. <input type="checkbox"/> EXHAUST HOOD	G48.	G49.
	25. <input type="checkbox"/> EMERGENCY SUMP / HOLDING TANK	G50.	G51.
	26. <input type="checkbox"/> CHEMICAL NEUTRALIZERS	G52.	G53.
	27. <input type="checkbox"/> GAS CYLINDER LEAK REPAIR KIT	G54.	G55.
	28. <input type="checkbox"/> SPILL OVERPACK DRUMS	G56.	G57.
29. <input type="checkbox"/> OTHER	G58.	G59.	
Communications and Alarm Systems	30. <input type="checkbox"/> TELEPHONES (Includes cellular)	G60.	G61.
	31. <input type="checkbox"/> INTERCOM / PA SYSTEM	G62.	G63.
	32. <input type="checkbox"/> PORTABLE RADIOS	G64.	G65.
	33. <input type="checkbox"/> AUTOMATIC ALARM CHEMICAL MONITORING EQUIPMENT	G66.	G67.
Other	34. <input type="checkbox"/> OTHER	G68.	G69.
	35. <input type="checkbox"/> OTHER	G70.	G71.

H. EARTHQUAKE VULNERABILITY

Identify areas of the facility that are vulnerable to hazardous materials releases / spills due to earthquake-related motion. These areas require immediate isolation and inspection.

VULNERABLE AREAS: (Check all that apply) <input type="checkbox"/> 1. HAZARDOUS MATERIALS / WASTE STORAGE AREA <input type="checkbox"/> 2. PROCESS LINES / PIPING <input type="checkbox"/> 3. LABORATORY <input type="checkbox"/> 4. WASTE TREATMENT AREA	H1.	LOCATIONS (e.g., shop, outdoor shed, forensic lab) _____ _____ _____ _____	H2. H3. H4. H5.
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Identify mechanical systems vulnerable to releases / spills due to earthquake-related motion. These systems require immediate isolation and inspection.

VULNERABLE SYSTEMS: (Check all that apply) <input type="checkbox"/> 1. SHELVES, CABINETS AND RACKS <input type="checkbox"/> 2. TANKS (EMERGENCY SHUTOFF) <input type="checkbox"/> 3. PORTABLE GAS CYLINDERS <input type="checkbox"/> 4. EMERGENCY SHUTOFF AND/OR UTILITY VALVES <input type="checkbox"/> 5. SPRINKLER SYSTEMS <input type="checkbox"/> 6. STATIONARY PRESSURIZED CONTAINERS (e.g., Propane dispensing tank)	H6.	LOCATIONS _____ _____ _____ _____ _____	H7. H8. H9. H10. H11. H12.
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I. EMPLOYEE TRAINING

Explanation of Requirement: Employee training is required for all employees handling hazardous materials and hazardous wastes in day-to-day or clean-up operations including volunteers and/or contractors. Training must be:

- Provided within 6 months for new hires;
- Amended as necessary prior to change in process or work assignment;
- Given upon modification to the Emergency Response / Contingency Plan, and updated/refreshed annually for all employees.

Required content includes all of the following:

- | | |
|---|--|
| <ul style="list-style-type: none"> • Material Safety Data Sheets; • Hazard communication related to health and safety; • Methods for safe handling of hazardous substances; • Fire hazards of materials / processes; • Conditions likely to worsen emergencies; • Coordination of emergency response; • Notification procedures; • Applicable laws and regulations; | <ul style="list-style-type: none"> • Communication and alarm systems; • Personal protective equipment; • Use of emergency response equipment (e.g. Fire extinguishers, respirators, etc.); • Decontamination procedures; • Evacuation procedures; • Control and containment procedures; • UST monitoring system equipment and procedures (if applicable). |
|---|--|

INDICATE HOW EMPLOYEE TRAINING PROGRAM IS ADMINISTERED (Check all that apply) <input type="checkbox"/> 1. FORMAL CLASSROOM; <input type="checkbox"/> 2. VIDEOS; <input type="checkbox"/> 3. SAFETY / TAILGATE MEETINGS; <input type="checkbox"/> 4. STUDY GUIDES / MANUALS (Specify): _____ <input type="checkbox"/> 5. OTHER (Specify): _____ <input type="checkbox"/> 6. NOT APPLICABLE BECAUSE FACILITY HAS NO EMPLOYEES	J1. J2. J3.
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Large Quantity Generator (LQG) Training Records: Large quantity hazardous waste generators (i.e., who generate more than 270 gallons/1,000 kilograms of hazardous waste per month) must retain written documentation of employee hazardous waste management training sessions which includes:

- A written outline/agenda of the type and amount of both introductory and continuing training that will be given to persons filling each job position having responsibility for the management of hazardous waste (e.g., labeling, manifesting, compliance with accumulation time limits, etc.).
- The name, job title, and date of training for each hazardous waste management training session given to an employee filling such a job position; and
- A written job description for each of the above job positions that describes job duties and the skills, education, or other qualifications required of personnel assigned to the position.
- Current employee training records must be retained until closure of the facility.
- Former employee training records must be retained at least three years after termination of employment.

J. LIST OF ATTACHMENTS

(Check one of the following) <input type="checkbox"/> 1. NO ATTACHMENTS ARE REQUIRED; <i>or</i> <input type="checkbox"/> 2. THE FOLLOWING DOCUMENTS ARE ATTACHED:	J1. J2.
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K. SIGNATURE / CERTIFICATION

Certification: Based on my inquiry of those individuals responsible for obtaining the information, I certify under penalty of law that I have personally examined and am familiar with the information submitted and believe the information is true, accurate, and complete, and that a copy is available on site.

SIGNATURE OF OWNER/OPERATOR	DATE SIGNED	K1.
NAME OF SIGNER (print)	TITLE OF SIGNER	K3.



Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize

Description

As a consequence of its function, the stormwater conveyance system collects and transports urban runoff and stormwater that may contain certain pollutants. The protocols in this fact sheet are intended to reduce pollutants reaching receiving waters through proper conveyance system operation and maintenance.

Approach

Pollution Prevention

Maintain catch basins, stormwater inlets, and other stormwater conveyance structures on a regular basis to remove pollutants, reduce high pollutant concentrations during the first flush of storms, prevent clogging of the downstream conveyance system, restore catch basins' sediment trapping capacity, and ensure the system functions properly hydraulically to avoid flooding.

Suggested Protocols

Catch Basins/Inlet Structures

- Staff should regularly inspect facilities to ensure compliance with the following:
 - Immediate repair of any deterioration threatening structural integrity.
 - Cleaning before the sump is 40% full. Catch basins should be cleaned as frequently as needed to meet this standard.
 - Stenciling of catch basins and inlets (see SC34 Waste Handling and Disposal).

Targeted Constituents

Sediment	✓
Nutrients	
Trash	✓
Metals	
Bacteria	✓
Oil and Grease	
Organics	



SC-44 Drainage System Maintenance

- Clean catch basins, storm drain inlets, and other conveyance structures before the wet season to remove sediments and debris accumulated during the summer.
- Conduct inspections more frequently during the wet season for problem areas where sediment or trash accumulates more often. Clean and repair as needed.
- Keep accurate logs of the number of catch basins cleaned.
- Store wastes collected from cleaning activities of the drainage system in appropriate containers or temporary storage sites in a manner that prevents discharge to the storm drain.
- Dewater the wastes if necessary with outflow into the sanitary sewer if permitted. Water should be treated with an appropriate filtering device prior to discharge to the sanitary sewer. If discharge to the sanitary sewer is not allowed, water should be pumped or vacuumed to a tank and properly disposed. Do not dewater near a storm drain or stream.

Storm Drain Conveyance System

- Locate reaches of storm drain with deposit problems and develop a flushing schedule that keeps the pipe clear of excessive buildup.
- Collect and pump flushed effluent to the sanitary sewer for treatment whenever possible.

Pump Stations

- Clean all storm drain pump stations prior to the wet season to remove silt and trash.
- Do not allow discharge to reach the storm drain system when cleaning a storm drain pump station or other facility.
- Conduct routine maintenance at each pump station.
- Inspect, clean, and repair as necessary all outlet structures prior to the wet season.

Open Channel

- Modify storm channel characteristics to improve channel hydraulics, increase pollutant removals, and enhance channel/creek aesthetic and habitat value.
- Conduct channel modification/improvement in accordance with existing laws. Any person, government agency, or public utility proposing an activity that will change the natural (emphasis added) state of any river, stream, or lake in California, must enter into a Stream or Lake Alteration Agreement with the Department of Fish and Game. The developer-applicant should also contact local governments (city, county, special districts), other state agencies (SWRCB, RWQCB, Department of Forestry, Department of Water Resources), and Federal Corps of Engineers and USFWS.

Illicit Connections and Discharges

- Look for evidence of illegal discharges or illicit connections during routine maintenance of conveyance system and drainage structures:
 - Is there evidence of spills such as paints, discoloring, etc?

- Are there any odors associated with the drainage system?
- Record locations of apparent illegal discharges/illicit connections?
- Track flows back to potential dischargers and conduct aboveground inspections. This can be done through visual inspection of upgradient manholes or alternate techniques including zinc chloride smoke testing, fluorometric dye testing, physical inspection testing, or television camera inspection.
- Eliminate the discharge once the origin of flow is established.
- Stencil or demarcate storm drains, where applicable, to prevent illegal disposal of pollutants. Storm drain inlets should have messages such as “Dump No Waste Drains to Stream” stenciled next to them to warn against ignorant or intentional dumping of pollutants into the storm drainage system.
- Refer to fact sheet SC-10 Non-Stormwater Discharges.

Illegal Dumping

- Inspect and clean up hot spots and other storm drainage areas regularly where illegal dumping and disposal occurs.
- Establish a system for tracking incidents. The system should be designed to identify the following:
 - Illegal dumping hot spots
 - Types and quantities (in some cases) of wastes
 - Patterns in time of occurrence (time of day/night, month, or year)
 - Mode of dumping (abandoned containers, “midnight dumping” from moving vehicles, direct dumping of materials, accidents/spills)
 - Responsible parties
- Post “No Dumping” signs in problem areas with a phone number for reporting dumping and disposal. Signs should also indicate fines and penalties for illegal dumping.
- Refer to fact sheet SC-10 Non-Stormwater Discharges.

Training

- Train crews in proper maintenance activities, including record keeping and disposal.
- Allow only properly trained individuals to handle hazardous materials/wastes.
- Have staff involved in detection and removal of illicit connections trained in the following:
 - OSHA-required Health and Safety Training (29 CFR 1910.120) plus annual refresher training (as needed).

SC-44 Drainage System Maintenance

- OSHA Confined Space Entry training (Cal-OSHA Confined Space, Title 8 and Federal OSHA 29 CFR 1910.146).
- Procedural training (field screening, sampling, smoke/dye testing, TV inspection).

Spill Response and Prevention

- Investigate all reports of spills, leaks, and/or illegal dumping promptly.
- Clean up all spills and leaks using “dry” methods (with absorbent materials and/or rags) or dig up, remove, and properly dispose of contaminated soil.
- Refer to fact sheet SC-11 Spill Prevention, Control, and Cleanup.

Other Considerations (Limitations and Regulations)

- Clean-up activities may create a slight disturbance for local aquatic species. Access to items and material on private property may be limited. Trade-offs may exist between channel hydraulics and water quality/riparian habitat. If storm channels or basins are recognized as wetlands, many activities, including maintenance, may be subject to regulation and permitting.
- Storm drain flushing is most effective in small diameter pipes (36-inch diameter pipe or less, depending on water supply and sediment collection capacity). Other considerations associated with storm drain flushing may include the availability of a water source, finding a downstream area to collect sediments, liquid/sediment disposal, and prohibition against disposal of flushed effluent to sanitary sewer in some areas.
- Regulations may include adoption of substantial penalties for illegal dumping and disposal.
- Local municipal codes may include sections prohibiting discharge of soil, debris, refuse, hazardous wastes, and other pollutants into the storm drain system.

Requirements

Costs

- An aggressive catch basin cleaning program could require a significant capital and O&M budget.
- The elimination of illegal dumping is dependent on the availability, convenience, and cost of alternative means of disposal. The primary cost is for staff time. Cost depends on how aggressively a program is implemented. Other cost considerations for an illegal dumping program include:
 - Purchase and installation of signs.
 - Rental of vehicle(s) to haul illegally-disposed items and material to landfills.
 - Rental of heavy equipment to remove larger items (e.g., car bodies) from channels.
 - Purchase of landfill space to dispose of illegally-dumped items and material.

- Methods used for illicit connection detection (smoke testing, dye testing, visual inspection, and flow monitoring) can be costly and time-consuming. Site-specific factors, such as the level of impervious area, the density and ages of buildings, and type of land use will determine the level of investigation necessary.

Maintenance

- Two-person teams may be required to clean catch basins with vacuor trucks.
- Teams of at least two people plus administrative personnel are required to identify illicit discharges, depending on the complexity of the storm sewer system.
- Arrangements must be made for proper disposal of collected wastes.
- Technical staff are required to detect and investigate illegal dumping violations.

Supplemental Information

Further Detail of the BMP

Storm Drain Flushing

Flushing is a common maintenance activity used to improve pipe hydraulics and to remove pollutants in storm drainage systems. Flushing may be designed to hydraulically convey accumulated material to strategic locations, such as an open channel, another point where flushing will be initiated, or the sanitary sewer and the treatment facilities, thus preventing resuspension and overflow of a portion of the solids during storm events. Flushing prevents “plug flow” discharges of concentrated pollutant loadings and sediments. Deposits can hinder the designed conveyance capacity of the storm drain system and potentially cause backwater conditions in severe cases of clogging.

Storm drain flushing usually takes place along segments of pipe with grades that are too flat to maintain adequate velocity to keep particles in suspension. An upstream manhole is selected to place an inflatable device that temporarily plugs the pipe. Further upstream, water is pumped into the line to create a flushing wave. When the upstream reach of pipe is sufficiently full to cause a flushing wave, the inflated device is rapidly deflated with the assistance of a vacuum pump, thereby releasing the backed up water and resulting in the cleaning of the storm drain segment.

To further reduce impacts of stormwater pollution, a second inflatable device placed well downstream may be used to recollect the water after the force of the flushing wave has dissipated. A pump may then be used to transfer the water and accumulated material to the sanitary sewer for treatment. In some cases, an interceptor structure may be more practical or required to recollect the flushed waters.

It has been found that cleansing efficiency of periodic flush waves is dependent upon flush volume, flush discharge rate, sewer slope, sewer length, sewer flow rate, sewer diameter, and population density. As a rule of thumb, the length of line to be flushed should not exceed 700 feet. At this maximum recommended length, the percent removal efficiency ranges between 65-75% for organics and 55-65% for dry weather grit/inorganic material. The percent removal efficiency drops rapidly beyond that. Water is commonly supplied by a water truck, but fire hydrants can also supply water. To make the best use of water, it is recommended that reclaimed water be used or that fire hydrant line flushing coincide with storm sewer flushing.

SC-44 Drainage System Maintenance

References and Resources

California's Nonpoint Source Program Plan <http://www.swrcb.ca.gov/nps/index.html>

Clark County Storm Water Pollution Control Manual
<http://www.co.clark.wa.us/pubworks/bmpman.pdf>

Ferguson, B.K. 1991. Urban Stream Reclamation, p. 324-322, Journal of Soil and Water Conservation.

King County Storm Water Pollution Control Manual <http://dnr.metrokc.gov/wlr/dss/spcm.htm>

Oregon Association of Clean Water Agencies. Oregon Municipal Stormwater Toolbox for Maintenance Practices. June 1998.

Santa Clara Valley Urban Runoff Pollution Prevention Program <http://www.scvurppp.org>

The Storm Water Managers Resource Center <http://www.stormwatercenter.net>

United States Environmental Protection Agency (USEPA). 2002. Pollution Prevention/Good Housekeeping for Municipal Operations Storm Drain System Cleaning. On line:
http://www.epa.gov/npdes/menuofbmps/poll_16.htm

Site Design & Landscape Planning SD-10



Design Objectives

- Maximize Infiltration
 - Provide Retention
 - Slow Runoff
 - Minimize Impervious Land Coverage
 - Prohibit Dumping of Improper Materials
 - Contain Pollutants
 - Collect and Convey
-

Description

Each project site possesses unique topographic, hydrologic, and vegetative features, some of which are more suitable for development than others. Integrating and incorporating appropriate landscape planning methodologies into the project design is the most effective action that can be done to minimize surface and groundwater contamination from stormwater.

Approach

Landscape planning should couple consideration of land suitability for urban uses with consideration of community goals and projected growth. Project plan designs should conserve natural areas to the extent possible, maximize natural water storage and infiltration opportunities, and protect slopes and channels.

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment.

Design Considerations

Design requirements for site design and landscapes planning should conform to applicable standards and specifications of agencies with jurisdiction and be consistent with applicable General Plan and Local Area Plan policies.



SD-10 Site Design & Landscape Planning

Designing New Installations

Begin the development of a plan for the landscape unit with attention to the following general principles:

- Formulate the plan on the basis of clearly articulated community goals. Carefully identify conflicts and choices between retaining and protecting desired resources and community growth.
- Map and assess land suitability for urban uses. Include the following landscape features in the assessment: wooded land, open unwooded land, steep slopes, erosion-prone soils, foundation suitability, soil suitability for waste disposal, aquifers, aquifer recharge areas, wetlands, floodplains, surface waters, agricultural lands, and various categories of urban land use. When appropriate, the assessment can highlight outstanding local or regional resources that the community determines should be protected (e.g., a scenic area, recreational area, threatened species habitat, farmland, fish run). Mapping and assessment should recognize not only these resources but also additional areas needed for their sustenance.

Project plan designs should conserve natural areas to the extent possible, maximize natural water storage and infiltration opportunities, and protect slopes and channels.

Conserve Natural Areas during Landscape Planning

If applicable, the following items are required and must be implemented in the site layout during the subdivision design and approval process, consistent with applicable General Plan and Local Area Plan policies:

- Cluster development on least-sensitive portions of a site while leaving the remaining land in a natural undisturbed condition.
- Limit clearing and grading of native vegetation at a site to the minimum amount needed to build lots, allow access, and provide fire protection.
- Maximize trees and other vegetation at each site by planting additional vegetation, clustering tree areas, and promoting the use of native and/or drought tolerant plants.
- Promote natural vegetation by using parking lot islands and other landscaped areas.
- Preserve riparian areas and wetlands.

Maximize Natural Water Storage and Infiltration Opportunities Within the Landscape Unit

- Promote the conservation of forest cover. Building on land that is already deforested affects basin hydrology to a lesser extent than converting forested land. Loss of forest cover reduces interception storage, detention in the organic forest floor layer, and water losses by evapotranspiration, resulting in large peak runoff increases and either their negative effects or the expense of countering them with structural solutions.
- Maintain natural storage reservoirs and drainage corridors, including depressions, areas of permeable soils, swales, and intermittent streams. Develop and implement policies and

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regulations to discourage the clearing, filling, and channelization of these features. Utilize them in drainage networks in preference to pipes, culverts, and engineered ditches.

- Evaluating infiltration opportunities by referring to the stormwater management manual for the jurisdiction and pay particular attention to the selection criteria for avoiding groundwater contamination, poor soils, and hydrogeological conditions that cause these facilities to fail. If necessary, locate developments with large amounts of impervious surfaces or a potential to produce relatively contaminated runoff away from groundwater recharge areas.

Protection of Slopes and Channels during Landscape Design

- Convey runoff safely from the tops of slopes.
- Avoid disturbing steep or unstable slopes.
- Avoid disturbing natural channels.
- Stabilize disturbed slopes as quickly as possible.
- Vegetate slopes with native or drought tolerant vegetation.
- Control and treat flows in landscaping and/or other controls prior to reaching existing natural drainage systems.
- Stabilize temporary and permanent channel crossings as quickly as possible, and ensure that increases in run-off velocity and frequency caused by the project do not erode the channel.
- Install energy dissipaters, such as riprap, at the outlets of new storm drains, culverts, conduits, or channels that enter unlined channels in accordance with applicable specifications to minimize erosion. Energy dissipaters shall be installed in such a way as to minimize impacts to receiving waters.
- Line on-site conveyance channels where appropriate, to reduce erosion caused by increased flow velocity due to increases in tributary impervious area. The first choice for linings should be grass or some other vegetative surface, since these materials not only reduce runoff velocities, but also provide water quality benefits from filtration and infiltration. If velocities in the channel are high enough to erode grass or other vegetative linings, riprap, concrete, soil cement, or geo-grid stabilization are other alternatives.
- Consider other design principles that are comparable and equally effective.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define “redevelopment” in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of “redevelopment” must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under “designing new installations” above should be followed.

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Redevelopment may present significant opportunity to add features which had not previously been implemented. Examples include incorporation of depressions, areas of permeable soils, and swales in newly redeveloped areas. While some site constraints may exist due to the status of already existing infrastructure, opportunities should not be missed to maximize infiltration, slow runoff, reduce impervious areas, disconnect directly connected impervious areas.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Stormwater Management Manual for Western Washington, Washington State Department of Ecology, August 2001.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.



Design Objectives

- Maximize Infiltration
- Provide Retention
- Slow Runoff
- Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- Contain Pollutants
- Collect and Convey

Description

Irrigation water provided to landscaped areas may result in excess irrigation water being conveyed into stormwater drainage systems.

Approach

Project plan designs for development and redevelopment should include application methods of irrigation water that minimize runoff of excess irrigation water into the stormwater conveyance system.

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment. (Detached residential single-family homes are typically excluded from this requirement.)

Design Considerations

Designing New Installations

The following methods to reduce excessive irrigation runoff should be considered, and incorporated and implemented where determined applicable and feasible by the Permittee:

- Employ rain-triggered shutoff devices to prevent irrigation after precipitation.
- Design irrigation systems to each landscape area's specific water requirements.
- Include design featuring flow reducers or shutoff valves triggered by a pressure drop to control water loss in the event of broken sprinkler heads or lines.
- Implement landscape plans consistent with County or City water conservation resolutions, which may include provision of water sensors, programmable irrigation times (for short cycles), etc.



- Design timing and application methods of irrigation water to minimize the runoff of excess irrigation water into the storm water drainage system.
- Group plants with similar water requirements in order to reduce excess irrigation runoff and promote surface filtration. Choose plants with low irrigation requirements (for example, native or drought tolerant species). Consider design features such as:
 - Using mulches (such as wood chips or bar) in planter areas without ground cover to minimize sediment in runoff
 - Installing appropriate plant materials for the location, in accordance with amount of sunlight and climate, and use native plant materials where possible and/or as recommended by the landscape architect
 - Leaving a vegetative barrier along the property boundary and interior watercourses, to act as a pollutant filter, where appropriate and feasible
 - Choosing plants that minimize or eliminate the use of fertilizer or pesticides to sustain growth
- Employ other comparable, equally effective methods to reduce irrigation water runoff.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define “redevelopment” in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of “redevelopment” must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under “designing new installations” above should be followed.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

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Design Objectives

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Description

Waste materials dumped into storm drain inlets can have severe impacts on receiving and ground waters. Posting notices regarding discharge prohibitions at storm drain inlets can prevent waste dumping. Storm drain signs and stencils are highly visible source controls that are typically placed directly adjacent to storm drain inlets.

Approach

The stencil or affixed sign contains a brief statement that prohibits dumping of improper materials into the urban runoff conveyance system. Storm drain messages have become a popular method of alerting the public about the effects of and the prohibitions against waste disposal.

Suitable Applications

Stencils and signs alert the public to the destination of pollutants discharged to the storm drain. Signs are appropriate in residential, commercial, and industrial areas, as well as any other area where contributions or dumping to storm drains is likely.

Design Considerations

Storm drain message markers or placards are recommended at all storm drain inlets within the boundary of a development project. The marker should be placed in clear sight facing toward anyone approaching the inlet from either side. All storm drain inlet locations should be identified on the development site map.

Designing New Installations

The following methods should be considered for inclusion in the project design and show on project plans:

- Provide stenciling or labeling of all storm drain inlets and catch basins, constructed or modified, within the project area with prohibitive language. Examples include “NO DUMPING



– DRAINS TO OCEAN” and/or other graphical icons to discourage illegal dumping.

- Post signs with prohibitive language and/or graphical icons, which prohibit illegal dumping at public access points along channels and creeks within the project area.

Note - Some local agencies have approved specific signage and/or storm drain message placards for use. Consult local agency stormwater staff to determine specific requirements for placard types and methods of application.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define “redevelopment” in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. If the project meets the definition of “redevelopment”, then the requirements stated under “designing new installations” above should be included in all project design plans.

Additional Information

Maintenance Considerations

- Legibility of markers and signs should be maintained. If required by the agency with jurisdiction over the project, the owner/operator or homeowner’s association should enter into a maintenance agreement with the agency or record a deed restriction upon the property title to maintain the legibility of placards or signs.

Placement

- Signage on top of curbs tends to weather and fade.
- Signage on face of curbs tends to be worn by contact with vehicle tires and sweeper brooms.

Supplemental Information

Examples

- Most MS4 programs have storm drain signage programs. Some MS4 programs will provide stencils, or arrange for volunteers to stencil storm drains as part of their outreach program.

Other Resources

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