LINSCOTT LAW & GREENSPAN engineers

TRANSPORTATION IMPACT ANALYSIS

COTTONWOOD SAND MINE

County of San Diego, California
September 2021

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TABLE OF CONTENTS

APPENDICES

LIST OF FIGURES

LIST OF TABLES

TRANSPORTATION IMPACT ANALYSIS

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1.0 INTRODUCTION

Linscott, Law & Greenspan, Engineers (LLG) has prepared this Transportation Impact Analysis (TIA) for the Cottonwood Sand Mine Project (proposed project) in the County of San Diego. The project proposes a redevelopment of the existing Cottonwood Golf Club for mining mineral resources. The project site is located at 3121 Willow Glen Drive, east of Jamacha Road in the Valle de Oro community of the County of San Diego. A maximum production limit of 570,000-tons (380,000 cubic yards) of construction grade aggregate (sand and gravel) in any calendar year is anticipated. This report addresses the potential construction transportation impacts from the proposed project.

This TIA has been prepared to evaluate the effects of the Project using Vehicle Miles Traveled (VMT), as proposed by the California Governor's Office of Planning and Research (OPR) to implement California State Law Senate Bill (SB) 743.

The report is organized as follow:

Section 1.0 Introduction
Section 2.0 Project Description
Section 3.0 Report Approach
Section 4.0 VMT Background
Section 5.0 Project VMT Significance Criteria & Methodology
Section 6.0 Project VMT Analysis

2.0 PROJECT DESCRIPTION

2.1 Project Location

The project proposes a Major Use Permit (MUP) to allow sand mining activities on 251 acres of an approximately 280-acre site in the unincorporated community of Rancho San Diego in eastern San Diego County. The Project site is currently occupied by the existing Cottonwood Golf Club, which is located on the south side of Willow Glen Drive, east and west of Steele Canyon Road in the County of San Diego.

Figure 2–1 shows the vicinity map. ***Figure 2–2*** shows a more detailed Project area map.

2.2 Project Description

The property is currently occupied by the Cottonwood Golf Club, which is permitted to operate two 18-hole golf courses referred to as the Lakes course and the Ivanhoe course. The project proposes to convert the golf courses to a sand mining operation that would be conducted in three phases, with three to four sub-phases in each phase of less than 30 acres each, and a fourth phase for cleanup, equipment removal, and final reclamation. Mining is expected to be completed over an approximately 10 year period. The project proposes to extract approximately 4.3 million cubic yards (CY; 6.40 million tons) of material, with approximately 3.8 million CY (5.7 million tons) produced for market use. Extraction operations would be limited to a maximum production of 380,000 cy (570,000 tons) of construction grade aggregate per calendar year. Material extracted and processed at the site would be suitable for construction uses and would be available to customers in San Diego County.

In association with the MUP, a Reclamation Plan would be required to specify the standards to which the site must be reclaimed upon completion of mining activities. Areas disturbed by resource extraction would be progressively reclaimed in an ongoing process that commences when mining operations have ceased within a given area and continues until all mining-related disturbance is reclaimed and all equipment involved in the operations has been removed. Reclaimed areas would be restored to an end use of open space, recreational trails, and land suitable for uses allowed by the General Plan and existing zoning classifications. Surface areas included within the MUP boundary that would not be disturbed by mining would be subject to removal of invasive species in the Sweetwater River channel on the southwest portion of the site or be left in their current condition.

Sand excavation and processing will occur Monday through Friday, between the hours of 7:00 a.m. and 5:00 p.m. Trucking operations for material sales would occur from 9:00 a.m. to 3:30 p.m. Monday through Friday to avoid peak traffic periods. Construction traffic would include heavy vehicles and light vehicles. A total of 88 trucks, 14 employee light vehicles and 4 vendor vehicles are assumed to commute to the construction site on a daily basis. This represents a conservative assumption as only 9 employees are expected.

The primary truck and employee access to the project site is proposed via two driveways (one inbound and one outbound) on Willow Glen Drive, east of Steele Canyon Road. The Project

proposes to restripe Willow Glen Drive between Steele Canyon Road and the Project ingress driveway to provide Class II buffered bike lanes on both sides of the roadway per the County Roadway Standards. To facilitate deceleration of right-turning vehicles into the project ingress driveway, a dedicated right-turn lane would also be constructed, which would serve as the primary access for mining operations, material sales, employees, and vendors. A new egress point would be established in the approximate center of the existing parking lot. The project also proposes to construct a two-way left-turn lane between the ingress and egress driveways, which would serve as a refuge lane for trucks to complete their outbound maneuver. A pedestrian pathway would be provided along the northern project frontage/Willow Glen Drive east of Steele Canyon Road to provide pedestrian access within the project vicinity where there are no existing sidewalks. In addition, a new access point to the property from Willow Glen Drive west of the Steele Canyon Road (Phase 1 area) would be necessary as the clearance height of the bridge that crosses the Sweetwater River on Steele Canyon Road would not allow most large trucks used by service vendors to pass beneath the bridge. This additional access point is proposed to be constructed at the intersection of Willow Glen Drive and Muirfield Drive and would be restricted to use by service vendors only.

2.3 Project Phasing

The project will be developed in three continuous mining phases, with 20- to 30-acre sub-phases in each major phase and a fourth (4^{th}) phase for final reclamation. Operations would commence west of the Steele Canyon Road bridge on the closed Lakes course, and then generally proceed in a southwest-to-northeast direction across the project site. Processing facilities would be located near the center of the Project area, adjacent to Willow Glen Drive and west of the existing golf course parking lot. A portable conveyor line would be installed to minimize the use of on-site roads to transport excavated materials to the processing plant from the excavation areas.

Phase 1 would include site development for the construction of the access road and processing plant pad, as well as installation of screening berms, the conveyor line, and the processing plant. Sand extraction during Phase 1 would be located within the area currently occupied by the closed Lakes course to the west of Steele Canyon Road. Phase 2 would be located in the center of the site, east of Steele Canyon Road, on the currently operating Ivanhoe course. Public use of the Ivanhoe golf course would cease upon approval of the project/major use permit. Phase 3 mining operations would encompass the remaining acreage of the project site located to the east of Phase 2. Each phase would include three to four sub-phases that are less than 30 acres each to begin reclamation as soon as possible. Excavation in each sub-phase would be completed before moving the conveyor and excavation equipment to the next sub-phase and reclamation would begin in the completed sub-phase. Areas disturbed by resource extraction would be progressively reclaimed as mine operations within a given sub-phase area are completed. Phase 4 would consist of removal of the processing plant, grading to final contours, final reclamation and revegetation efforts, cleanup, and equipment removal. Revegetation monitoring will continue for a minimum of five years or until revegetation standards are met after this final phase.

Figure 2–3 shows a project phasing plan.

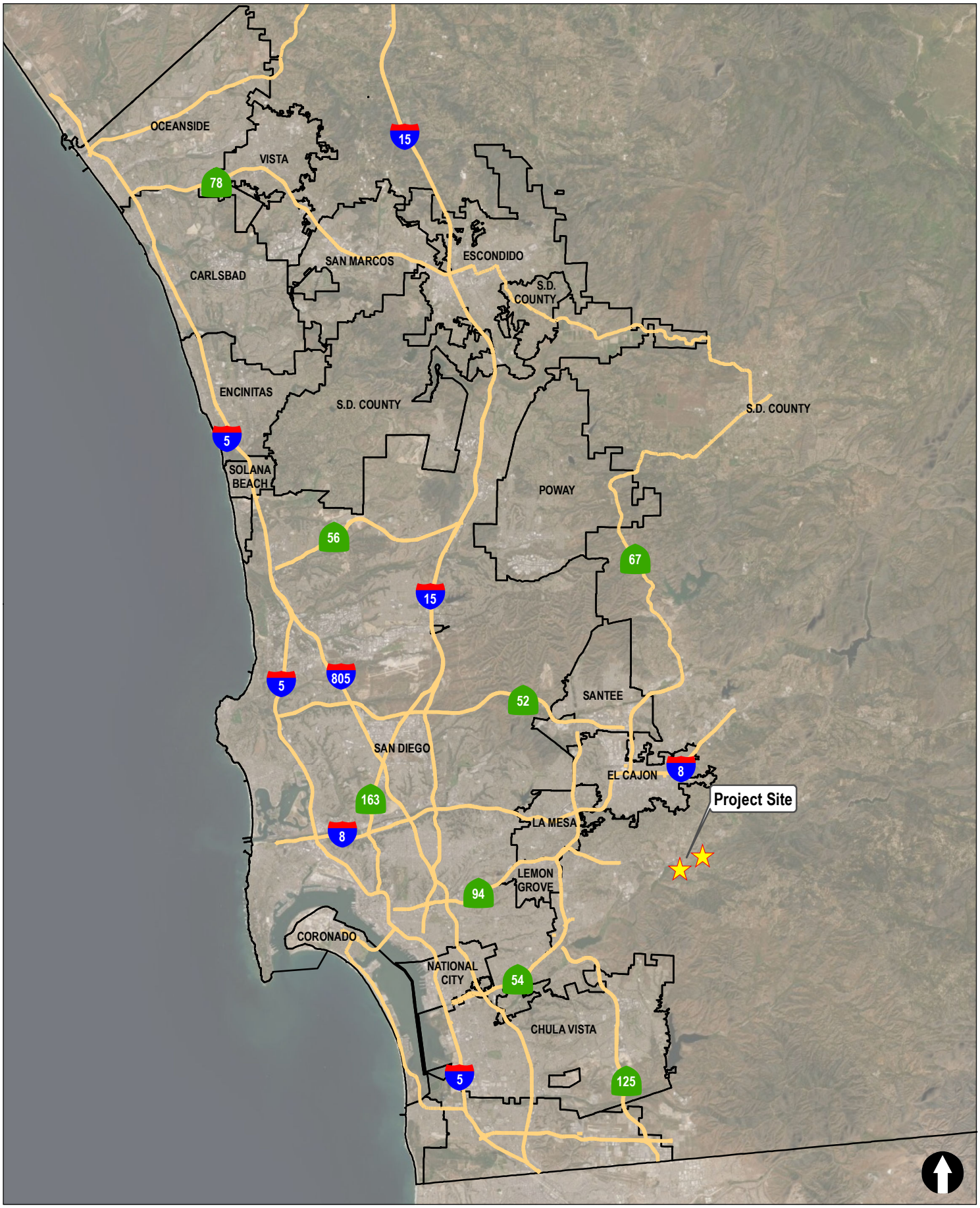

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Figure 2-1

Vicinity Map

Cottonwood Sand Mine

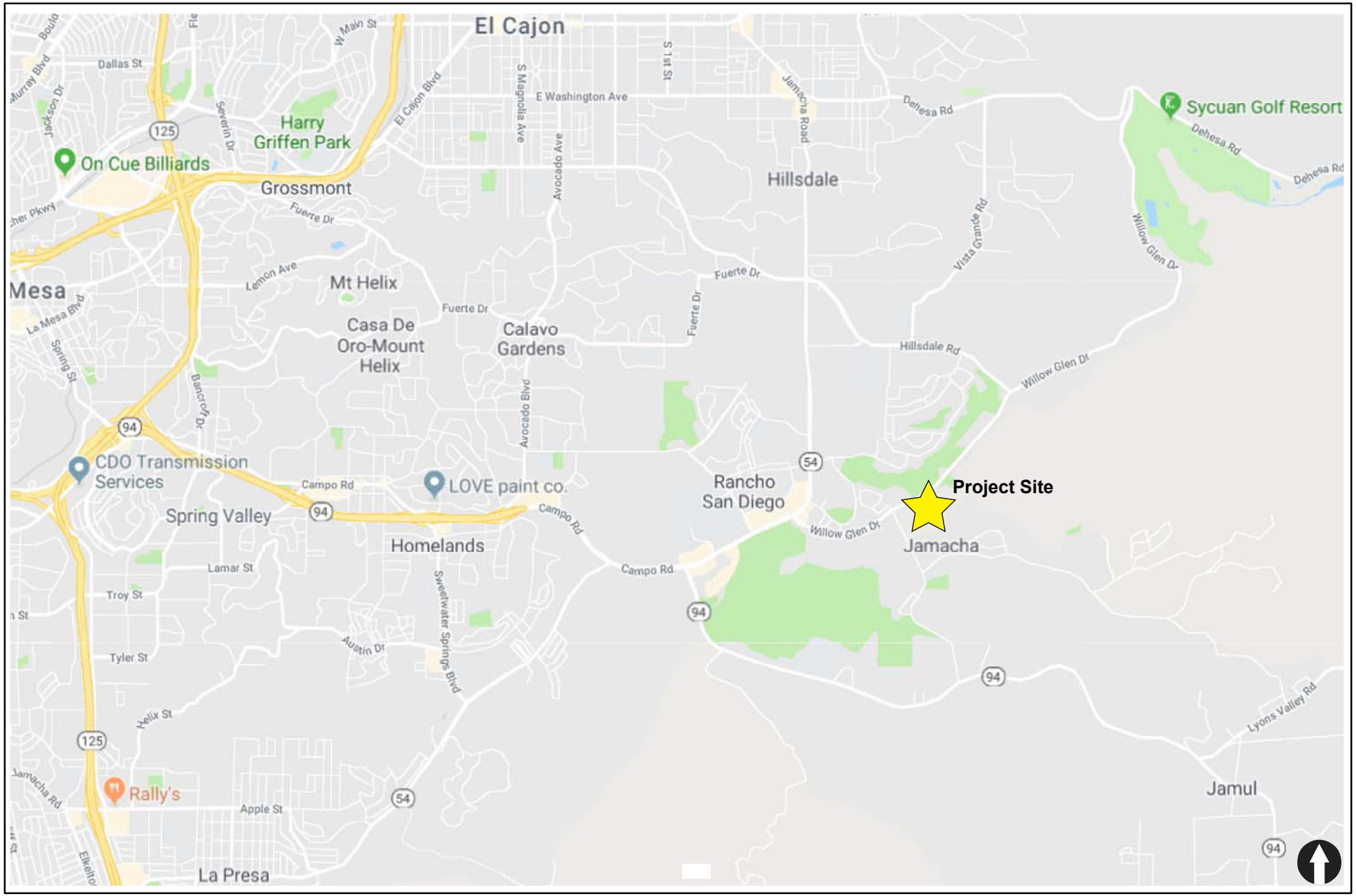

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Figure 2-2

Project Area Map

COTTONWOOD SAND MINE

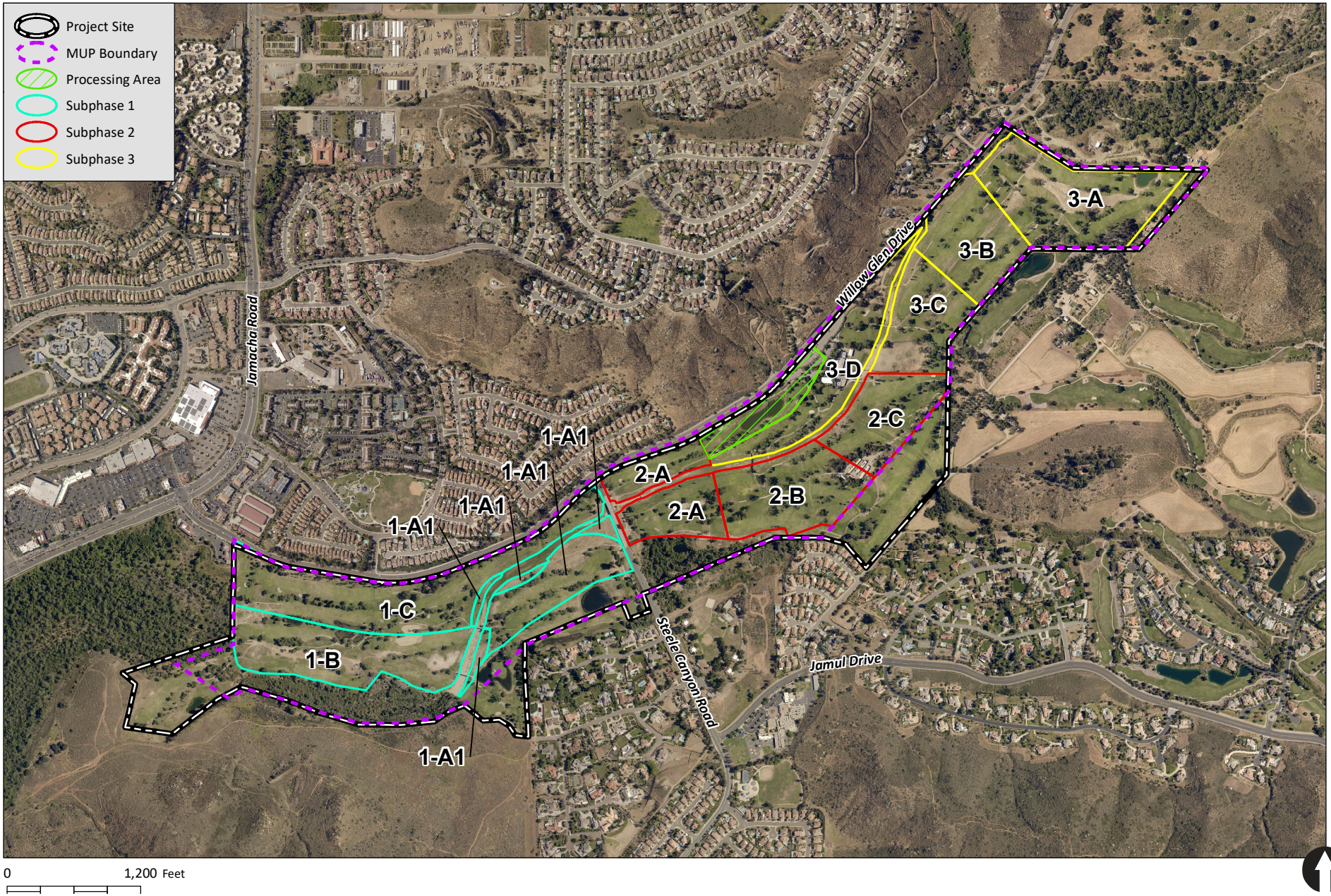

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Figure 2-3

Project Phasing Plan

COTTONWOOD SAND MINE

3.0 REPORT APPROACH

3.1 VMT Background

Vehicle Miles Traveled (VMT) is defined as the "amount and distance of automobile travel attributable to a project" per CEQA Guidelines Section 15064.3. VMT is a measure of the use and efficiency of the transportation network as well land uses in a region. VMT is calculated based on individual vehicle trips generated and their associated trip lengths. VMT accounts for two-way (roundtrip) travel and is estimated for a typical weekday for the purposes of measuring transportation impacts.

3.2 Transportation Analyses

This potential transportation impacts of the proposed Project are based on VMT to satisfy the California Environmental Quality Act (CEQA) guidelines through SB 743. Public Resources Code section 20199, enacted pursuant to SB 743, identifies VMT as an appropriate metric for measuring transportation impacts along with the elimination of auto delay/Level of Service (LOS) for CEQA purposes statewide. The justification for this paradigm shift is that auto delay/LOS impacts may lead to improvements that increase roadway capacity and therefore sometimes induce longer vehicle trips, more traffic, and greenhouse gas emissions. In contrast, constructing projects in VMT-efficient locations assists California in meeting greenhouse gas emissions targets. Therefore, consistent with SB 743 and CEQA Guidelines 15064.3, the CEQA significance determination for the Project is based only on VMT and not on LOS.

4.0 VEHICLE MILES TRAVELED (VMT) BACKGROUND

4.1 VMT Background and Induced Travel

VMT is defined as a measurement of miles traveled by vehicles within a specified region and for a specified time period. VMT is a measure of the use and efficiency of the transportation network. VMT's are calculated based on individual vehicle trips generated and their associated trip lengths. VMT accounts for two-way (round trip) travel and is estimated for a typical weekday for the purposes of measuring transportation impacts.

Induced travel occurs where roadway capacity is expanded in an area of present or projected future traffic congestion. The effect typically manifests over several years. Lower travel times make the modified facility more attractive to travelers, resulting in potential trip-making changes. Each of the following effects has implications for the total amount of vehicle travel.

- **Longer Trips.** The ability to travel a long distance in a shorter time increases the attractiveness of destinations that are farther away, potentially increasing trip length and vehicle travel.
- **Changes in Mode Choice.** When transportation investments are devoted to reducing automobile travel time, travelers tend to shift toward automobile use from other modes, which increases vehicle travel.
- **Route Changes.** Faster travel times on a route attract more drivers to that route from other routes, which can increase or decrease vehicle travel depending on whether it shortens or lengthens trips.
- **Newly Generated Trips.** Increasing travel speeds can induce additional trips, which increases vehicle travel.
- **Land Use Changes.** Faster travel times along a corridor can lead to land development farther along that corridor; that new development generates and attracts longer trips, which increases vehicle travel. Over several years, this growth component of induced vehicle travel can be substantial.

4.2 Senate Bill 743

In September 2013, the Governor's Office signed SB 743 into law, starting a process that fundamentally changed the way transportation impact analysis is conducted under CEQA. Within the State's CEQA Guidelines, these changes include the elimination of Auto Delay, LOS, and similar measurements of vehicular roadway capacity and traffic congestion as the basis for determining significant impacts. The guidance identifies VMT as the most appropriate CEQA transportation metric, along with the elimination of Auto Delay/LOS for CEQA purposes statewide. The justification for this paradigm shift is that Auto Delay/LOS impacts lead to improvements that increase roadway capacity and therefore induce more traffic and greenhouse gas emissions.

In January 2016, the OPR issued Draft Guidance, which provided recommendations for updating the State's CEQA Guidelines in response to SB 743 and recommended practice for VMT analysis in an accompanying "Technical Advisory on Evaluating Transportation Impacts in CEQA, December 2018." (Technical Advisory.) The Technical Advisory can be helpful in establishing a threshold of

significance because it was developed by the environmental planning and transportation experts at OPR. When using a threshold of significance, a lead agency may consider the thresholds of significance recommended by experts and supported by substantial evidence. (CEQA Guidelines 15064.7(c).)

When OPR and the Secretary of Natural Resources finalized the CEQA Guidelines implementing SB 743 on December 28, 2018, it stated that a lead agency may elect to be governed by the VMT guidelines immediately. However, beginning July 1, 2020, VMT shall apply statewide.

4.3 Proposed OPR Technical Guidance Support for a De minimis Screening Threshold

In the Technical Advisory, OPR notes that many agencies use "screening thresholds" to quickly identify when a project should be expected to cause a less-than-significant impact without conducting a detailed study. (See e.g., CEQA Guidelines, §§ 15063(c)(3)(C), 15128, and Appendix G.) One basis for concluding a project's VMT impact is below a level of significance without a detailed study is projects that are small in size. OPR notes that absent substantial evidence indicating that a project would generate a potentially significant level of VMT, projects that generate or attract fewer than 110 trips per day generally may be assumed to cause a less-than significant transportation impact."

CEQA provides a categorical exemption for existing facilities, including additions to existing structures of up to 10,000 square feet, so long as the project is in an area where public infrastructure is available to allow for maximum planned development and the project is not in an environmentally sensitive area. (CEQA Guidelines, § 15301, subd. (e)(2).) Typical project types for which trip generation increases relatively linearly with building footprint (i.e., general office building, single tenant office building, office park, and business park) generate or attract an additional 110-124 trips per 10,000 square feet. Therefore, absent substantial evidence otherwise, it is reasonable to conclude that the addition of 110[1] or fewer trips could be considered not to lead to a significant impact.

Like all categorical exemptions, this categorical exemption was established only after the Secretary of Resources found that it would not have a significant effect on the environment (CEQA Guidelines § 15300).

4.4 Proposed Technical Guidance Support for a Project-Specific Threshold

Upon reviewing OPR's Technical Advisory, it is clear that the suggested threshold of 15% VMT reduction from average regional or sub-regional VMT threshold was created for, and is applicable to, *residential, office, and retail projects*. When dealing with other project types such as the proposed project (atypical use within the Industrial category of aggregate extraction), OPR suggests that "lead

[1] OPR in its technical advisory states that VMT refers to the amount and distance of automobile travel attributed to a project and "automobile" refers to on-road passenger vehicles, specifically cars and light trucks. Heavy duty trucks associated with operations and constructions are not intended to be factored in the VMT analysis for transportation.

agencies, using more location-specific information, may develop their own more specific thresholds".[2]

When doing so, OPR states that "strategies and projects that decrease local VMT but increase total VMT should be avoided." Moreover, OPR advised that "where a project replaces existing VMT-generating land uses, if the replacement leads to a net overall decrease in VMT, the project would lead to a less-than-significant impact." This guidance is offered in place of the 15% average regional/sub-regional VMT reduction threshold for residential, office, and retail projects in favor of a 15% net VMT reduction for resource-dependent industrial projects, such as a sand mine that must be located where the sand is.

To further assist Cities and Counties in setting project-specific thresholds, OPR created Appendix 1 "Considerations About Which VMT to Count." In this guide, one of the alternative methods suggested is assessing change in total VMT. In fact, San Francisco – one of the early-adopters of VMT analysis – specifically includes "change in total VMT" as an appropriate method for evaluating projects with atypical trip generators, like this proposed project.

When assessing total change in VMT, the lead agency must estimate the *net change in total VMT* with and without the project. This looks at the miles traveled to and from the project site in the context of how the project is likely to divert existing trips, and what the impact of those diversions will be on total VMT. An example provided by OPR is to consider a grocery store built in a food desert. At first, it might seem that the store is generating significant VMTs if one looked only at the increased daily trips of customers, employees, deliveries, etc. However, this project could likely produce a *net decrease* in VMTs because it would divert trips from grocery stores much further away. Similarly, a new resource-dependent industrial project can decrease net VMT by diverting trips from other sand mines located further away.

In doing this type of analysis, OPR emphasizes that the "full area over which the project affects travel behavior" should be taken into account, "even if the effect on travel behavior crosses political boundaries." Therefore, this project-specific threshold and supplemental analysis accounts for VMT from the major sand mines outside the County that import sand into the County and sand mines located inside the County.

[2] Moreover, lead agencies have always retained the discretion to apply a project-specific / case-by-case CEQA threshold when the lead agency's careful judgment, based to the extent possible on scientific and factual data, concludes it is appropriate because CEQA recognizes that an iron clad definition of significant effect is not always possible given that the significance of an activity may vary with the setting. (CEQA Guidelines 15064.7(b); 15064(b).) In evaluating the significance of an environmental effect of a project, the lead agency shall consider reasonably foreseeable indirect physical changes in the environment. (CEQA Guidelines 15064(d).)

5.0 PROJECT VMT SIGNIFICANCE CRITERIA AND METHODOLOGY

5.1 De minimis Screening Threshold

As noted in the VMT Background (Section 4.0) of this technical study, in the Technical Advisory, projects generating less than 110 average daily trips are screened out from conducting a CEQA transportation analysis. (See e.g., CEQA Guidelines, §§ 15063(c)(3)(C), 15128, and Appendix G.) One basis for concluding a project's VMT impact is below a level of significance without a detailed study is projects that are small in size. Based on the traffic generated by CEQA existing categorical exemption[3] for additions to facilities of up to 10,000 square feet and the fact that non-residential uses typically generate approximately 110-114 trips per 10,000 square feet, OPR notes that "absent substantial evidence indicating that a project would generate a potentially significant level of VMT, projects that generate or attract fewer than 110 trips[4] per day generally may be assumed to cause a less than significant transportation impact."

Accordingly, projects in the San Diego region that generate fewer than 110 daily trips may be assumed to cause a less than significant transportation impact.

5.2 Project-Specific VMT Threshold – Supplemental Analysis

Although the De minimis Screening Threshold alone is adequate to support an independent determination of whether a project's VMT impact is below a level of significance or needs more in-depth study, out of an abundance of caution, an atypical project's transportation impact that combines the project's car and light truck VMT with the project's operational heavy truck trip VMT can be analyzed under Project-specific VMT Threshold and thereby included as a supplemental analysis.

The OPR has made clear that a lead agency shall have discretion in choosing both the most appropriate methodology and the most appropriate threshold for projects. Lead agencies may even go so far as to choose whether a project-specific threshold involving quantification of vehicle miles traveled or a qualitative analysis is more appropriate for the specific project. This need for tailoring the threshold to the individual project is especially strong for projects, such as the proposed industrial project at a location that is dependent upon the existing location of the sand resource, which do not fall within the recommended 15% average regional/sub-regional VMT reduction threshold for residential, office, and retail projects. The proposed industrial project is not residential, office or retail, and its location is dependent upon the existing location of the sand resource off Willow Glen Road in the community of Valle de Oro.

The Project-Specific VMT threshold that is proposed for the project is Total Change in annual VMT accounting for the full area over which the project affects travel behavior (i.e. indirect VMT). The

[3] Like all categorical exemptions, the 10,000 square foot categorical exemption was established only after the Secretary of Resources found that it would not have a significant effect on the environment. CEQA Guidelines § 15300.
[4] OPR in its technical advisory states that VMT refers to the amount and distance of automobile travel attributed to a project and "automobile" refers to on-road passenger vehicles, specifically cars and light trucks. Heavy duty trucks associated with operations and constructions are not intended to be factored in the VMT analysis for transportation.

Total Change in annual VMT would be calculated by analyzing the annual Total VMT without the Project associated with 570,000 tons of sand production minus the annual Total VMT with the project in the existing and near-term scenarios. If the annual Total Change in VMT is at least a 15% reduction, then the impact is below a level of significance. If the annual Total Change in VMT is a net increase in VMT or less than a 15% reduction, then the impact is above a level of significance.

This project-specific threshold is particularly conservative because the CEQA Guidelines advise that any net reduction in VMT creates a presumption that the project does not have a significant traffic impact. (CEQA Guidelines 15064.3(b)(1).) By setting the threshold to require at least a 15% net reduction, the County has extra assurance the Project is contributing positively toward the legislative goals of SB 743. ***Appendix A*** contains "San Diego County Construction Material Aggregate Study" (Enviromine, February 2020).

5.3 Analysis Approach and Methodology for Project-Specific Threshold

The following supplemental analysis is a project-specific analysis approach and methodology that has been developed to evaluate the VMT for the proposed project relying in part on existing sand demand, projected sand demand, sand supply locations within and outside San Diego County, San Diego County population and other pertinent information described in the "San Diego County Construction Aggregate Market Study" (*Enviromine, February 2020*) (henceforth referred to as the "Market Study"). The proposed VMT analysis will be conducted for 570,000 tons:

- ***Step 1:*** Identify the consistent and inconsistent sources of sand being imported into San Diego County.

- ***Step 2:*** Map the existing concrete batch plants that are located within the San Diego County to which sand is being delivered/supplied. Given that these concrete batch plants are located across the San Diego County and there is not any publicly available data on how much sand is being delivered to each plant, a midpoint of these ready-mix concrete operations was used to calculate the average distances sand is transported. The midpoint was selected from a geographic information systems analysis and represents an adequate, complete and good faith effort at full disclosure.

- ***Step 3:*** Determine the trip length of a round trip from the existing consistent major sand import mine locations in Step 1 to the midpoint calculated in Step 2.

- ***Step 4:*** Because the Market Study concludes that the distribution of construction aggregate demand is correlated with population, the distribution of population north and south of the midpoint was identified. These percentages were then used to estimate the volume of sand that is transported from locations that consistently supply material to San Diego County from sources north and south of the midpoint.

- ***Step 5:*** Based on the total sand demand in tons in the Market Study multiplied by the sand distribution delivery percentages in Step 4, the sand demand was calculated from each consistent importer of sand and permitted sources within the County.

- ***Step 6*****:** Because each truck typically carries 25 tons of sand, the total volume of sand transported from each source estimated in Step 5 was divided by 25 to estimate the number of trucks/vehicles used to transport the material.

- ***Step 7*****:** Multiply the number of trucks per day from Step 6 by the approximately 260 working days in a year and by the trip lengths calculated in Step 2 to determine the total baseline VMT of each major, consistent mine.

- ***Step 8*****:** Add the sums from each mine in Step 7 to determine the total VMT in the "without project" scenario.

- ***Step 9*****:** Determine the project's portion of the total sand demand by dividing 570,000 tons by the total sand demand in the without project scenario and multiply it by the total VMT in Step 8. This would represent the annual total VMT for the "without project" scenario (VMT associated with importing 570,000 tons of sand).

- ***Step 10:*** With sand demand remaining constant, repeat Steps 1 to 9 with the Cottonwood Sand Mine in place. This would represent the total VMT for the "with project" scenario (i.e. VMT associated with not importing 570,000 tons of sand).

- ***Step 11*****:** Using the numbers in Step 9 and Step 10, determine the total change in annual VMT between the without project and with project scenario (570,000 tonnage production) (annual Total Change in VMT) and convert the change to a percentage.

- ***Step 12*****:** Determine if the annual Total Change in VMT is at least a 15% reduction to determine impact significance on a project-specific basis.

- ***Step 13*****:** Conduct the above analysis for Near-Term cumulative conditions by using 2021 sand demand numbers from the Market Study and adding additional major consistent sand mines in San Diego County (i.e. El Monte) that would foreseeably be in production in the Near-Term Based on the above methodology, determine if the annual Total Change in VMT is at least 15% to determine impact significance on a cumulative basis.

6.0 PROJECT VMT ANALYSIS

6.1 De minimis Screening Threshold

Under the De minimis Screening Threshold discussed in Section 5.2 of this report, projects in the San Diego region that generate fewer than 110 daily light truck and car trips may be assumed to cause a less than significant transportation impact.

Site-specific trip generation was calculated for the Project, which includes a total of 14 employee and visitor light vehicles and 4 vendors. Based on this calculation, the Project's total car and light truck trips generate 36 average daily trips, which is far below the 110 daily trip screening threshold of significance.

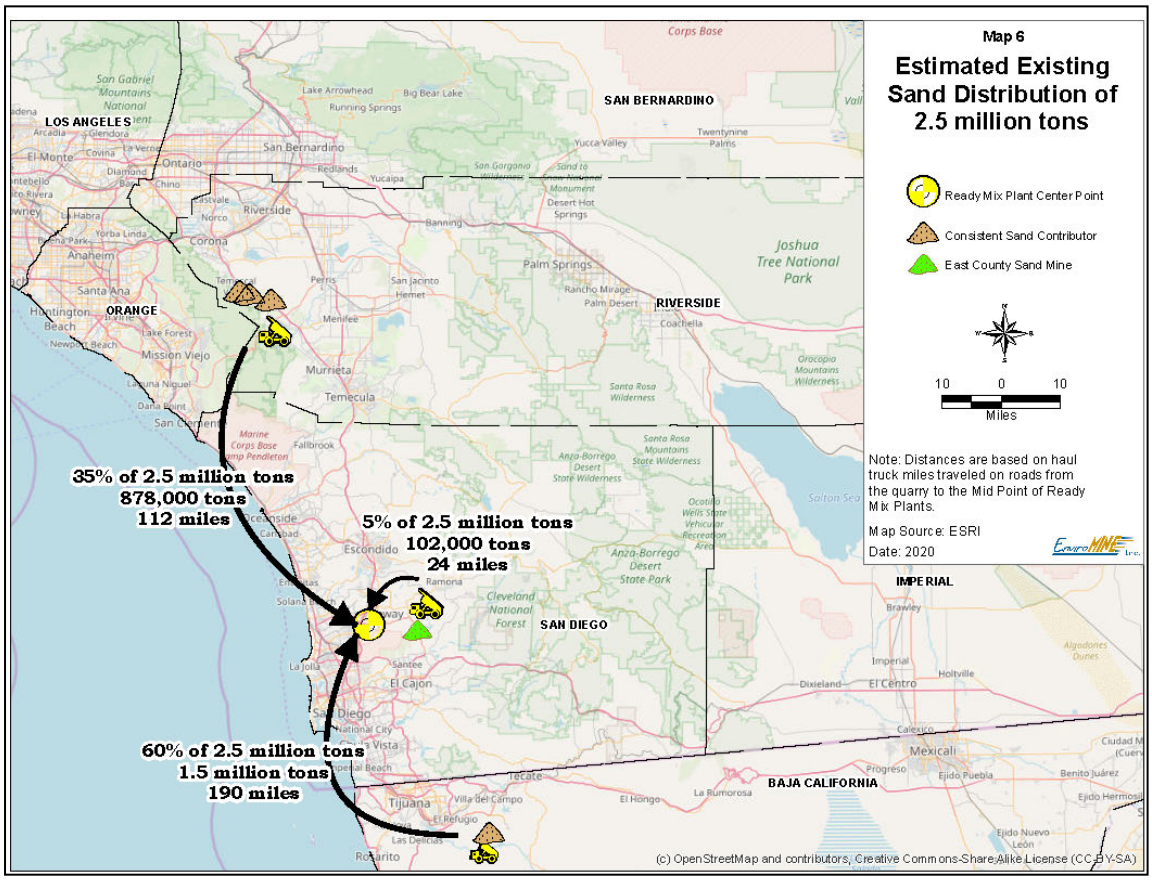
6.2 Project-Specific VMT Thresholds – Supplemental Analysis

Although the De minimis Screening Threshold alone is adequate to support an independent determination that the project's VMT impact is below a level of significance, out of an abundance of caution, the Project's transportation impact that combines the project's car and light truck VMT with the project's operational heavy truck trip VMT was analyzed under a project-specific VMT threshold discussed in Sections 5.3 and 5.4 of this report. The project VMT was calculated by utilizing the approach discussed in Section 5.4 of this report.

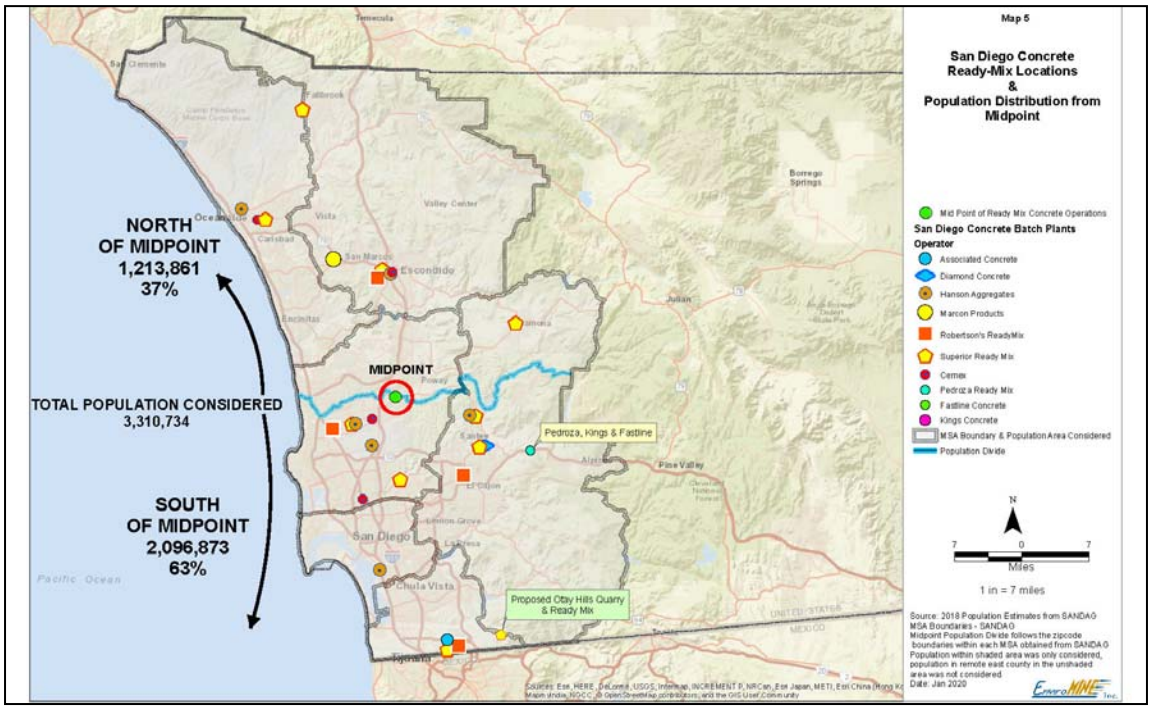
6.2.1 *Existing Conditions*

The following is a description of the project-specific VMT analysis under Existing + Project conditions.

- ***Steps 1 through 3:*** The figure below shows the consistent sources of sand being imported into San Diego County, the midpoint location of the existing ready-mix concrete batch plants located within San Diego County, and the one-way distance between the midpoint and the consistent major sand import mine locations. As seen in the figure below, sand is consistently being imported from Mexico (henceforth referred to as the "south" source), Riverside County (henceforth referred to as the "north" source), and from the East County Sand Mine in San Diego County. ***Table 6–1*** shows the average trip length for a round trip from each sand source.


Map 6
Estimated Existing Sand Distribution of 2.5 million tons
Ready Mix Plant Center Point
Consistent Sand Contributor
East County Sand Mine
10 0 10
Miles
Note: Distances are based on haul truck miles traveled on roads from the quarry to the Mid Point of Ready Mix Plants.
Map Source: ESRI
Date: 2020
35% of 2.5 million tons
878,000 tons
112 miles
5% of 2.5 million tons
102,000 tons
24 miles
60% of 2.5 million tons
1.5 million tons
190 miles
LOS ANGELES
ORANGE
SAN BERNARDINO
RIVERSIDE
SAN DIEGO
IMPERIAL
BAJA CALIFORNIA
(c) OpenStreetMap and contributors, Creative Commons-ShareAlike License (CC-BY-SA)

- ***Step 4:*** The figure below shows the distribution of population north and south of the midpoint. As seen in the figure below, approximately 37% of the population is north of the midpoint, while 63% of the population is south of the midpoint.



- ***Step 5***: Based on the Market Study, the total sand demand in tons for San Diego County is 2,500,000 tons per year. The East County Sand Mine, which is a currently operating mine source, is estimated to fulfill approximately 5% of this demand. The demand fulfilled by the north and south sources were determined by multiplying the population distribution percentages identified in Section 4 to the remaining sand demand. *Table 6–1* summarizes the total sand demand in tons fulfilled by each source.

- ***Steps 6 through 9: VMT without the Project:*** The number of trucks per day used to transport sand from each source was determined by dividing the total volume of sand from each source per year estimated in Step 5 by 6,500 (= 25 tons of sand per vehicle x 260 working days per year). *Table 6–1* summarizes the number of trucks used by each source per day. To determine the daily VMT associated with sand import to San Diego County, the number of trucks used by each source per day determined in Step 5 was multiplied by the trip length calculated in Step 2 and summed together.

  As seen in *Table 6–1*, the total daily VMT associated with importing 2,500,000 tons of sand into San Diego County is approximately 59,205.11. The project's portion of the total sand demand is 22.80% (=570,000/2,500,000). Without the project, the total daily VMT associated with importing 570,000 tons of sand into San Diego County is 13,498.77 (=22.80% x 59,205.11).

- ***Steps 10-12: VMT with the Project:*** Steps 1 through 9 were completed with the project in place. As shown in *Table 6–1*, with the addition of the project, less sand would need to be imported from the north and south sources. The VMT associated with obtaining 570,000 tons of sand from the project site rather than being imported in from the north and south sources is 2,806.15 under the Existing scenario, which is a difference of 10,692.62 from the without project scenario.

  This corresponds to a 79.2% reduction, which is greater than the 15% VMT reduction threshold. **Therefore, based on the significance criteria, the Cottonwood Sand Mining project is calculated to have a less-than-significant transportation impact under existing conditions.**

6.2.2 *Near-Term Conditions*

The following is a description of the project-specific VMT analysis under Near-Term + Project conditions.

- ***Step 13:*** Based on the Market Study, the near-term sand demand for San Diego County is 3,500,000 tons. The El Monte Sand Mine in San Diego County is an additional major consistent sand mine that would foreseeably be in production in the near term and therefore was included in the near-term analysis to be conservative. ***Table 6–2*** summarizes the near-term VMT analysis.

  As seen in *Table 6–2*, the total daily VMT associated with meeting San Diego County's near-term sand demand of 3,500,000 tons of sand in the near term is approximately 71,231.41. The project's portion of the total sand demand is approximately 16.29% (=570,000/3,500,000). Without the project, the totally daily VMT associated with importing 570,000 tons of sand into San Diego County is 11,600.54 (=16.29% x 71,231.41).

  The VMT associated with obtaining 570,000 tons of sand from the project site rather than being imported in from the north and south sources is 2,806.15 under the Near-Term scenario, which is a difference of 8,794.39 from the without project scenario.

  This corresponds to a 75.8% reduction, which is greater than the 15% VMT reduction threshold. **Therefore, based on the significance criteria, the Cottonwood Sand Mining project is calculated to have a less-than-significant transportation impact under cumulative conditions.**

6.3 VMT Impacts Summary

Based on the OPR Technical Advisory De-Minimis screening and project-specific significance thresholds and the analysis methodology presented in this report, no significant transportation impacts were determined. Therefore, mitigation measures are not necessary.

TABLE 6–1
EXISTING + PROJECT VMT CALCULATIONS

Scenario	**Existing**			**Existing + Project**			
Total Sand Demand (tons)	2,500,000			2,500,000			
Number of sources	3			4			
Calculations	***Source 1***	***Source 2***	***Source 3***	***Source 1***	***Source 2***	***Source 3***	***Source 4***
Name	South	North	East County Sand Mine	South	North	East County Sand Mine	Cottonwood
Tonnage split	60%	35%	5%	45%	27%	5%	23%
Tonnage #	1,494,990	878,010	102,000	1,135,890	667,110	102,000	570,000
Tonnage per truck	25	25	25	25	25	25	25
Number of working days in a year	260	260	260	260	260	260	260
Number of trucks per day	230	135	16	175	103	16	88
Average Trip Length to midpoint (miles, roundtrip)	190	112	24	190	112	24	32
Total Baseline VMT	43,699.71	15,128.79	376.62	33,202.94	11,494.82	376.62	2,806.15
Grand Total VMT	59,205.11			47,880.53			
Project portion of Sand Demand	22.80%			–			
Grand Total VMT for 570K tonnage production	13,498.77			2,806.15			
VMT Reduction for proposed project production	**79.2%**						

General Notes:

1. South refers to the major operating mine south of midpoint that exports sand consistently (i.e. Mexico Las Palmas Valley Mine).
2. North refers to the major operating mine north of the midpoint that exports sand consistently (i.e. Lake Elsinore).

TABLE 6–2
NEAR-TERM + PROJECT VMT CALCULATIONS

Scenario	**Near-Term**				**Near-Term+ Project**				
Total Sand Demand (tons)	3,500,000				3,500,000				
Number of sources	4				5				
Calculations	*Source 1*	*Source 2*	*Source 3*	*Source 4*	*Source 1*	*Source 2*	*Source 3*	*Source 4*	*Source 5*
Name	South	North	East County Sand Mine	El Monte Sand Mine	South	North	East County Sand Mine	El Monte Sand Mine	Cottonwood
Tonnage split	51%	29%	3%	17%	41%	24%	3%	17%	15%
Tonnage #	1,950,720	1,097,280	102,000	650,000	1,561,140	916,860	102,000	650,000	570,000
Tonnage per truck	25	25	25	25	25	25	25	25	25
Number of working days in a year	260	260	260	260	260	260	260	260	260
Number of trucks per day	271	152	16	100	211	124	16	100	88
Average Trip Length to midpoint (miles, roundtrip)	190	112	24	24	190	112	24	24	32
Total Baseline VMT	51,408.74	17,046.06	376.62	2,400.00	40,108.71	13,885.59	376.62	2,400.00	2,806.15
Grand Total VMT	71,231.41				59,577.06				
Project portion of Sand Demand	16.29%								
Grand Total VMT for 570K tonnage production	11,600.54				2,806.15				
VMT Reduction for proposed project production	**75.8%**								

General Notes:

1. South refers to the major operating mine south of midpoint that exports sand consistently (i.e. Mexico Las Palmas Valley Mine).
2. North refers to the major operating mine north of the midpoint that exports sand consistently (i.e. Lake Elsinore).

End of Report

LINSCOTT LAW & GREENSPAN engineers

TRANSPORTATION IMPACT ANALYSIS
TECHNICAL APPENDICES
COTTONWOOD SAND MINE

County of San Diego, California
September 2021

LLG Ref. 3-18-2958

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APPENDICES

APPENDIX

A. "San Diego County Construction Aggregate Market Study" (Enviromine February 2020)

APPENDIX A

"SAN DIEGO COUNTY CONSTRUCTION AGGREGATE MARKET STUDY" (ENVIROMINE FEBRUARY 2020)

February 2020

San Diego County Construction Aggregate Market Study – With an Emphasis on Sand Imports

Prepared By:

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Table of Contents

List of Tables

Introduction

This report illustrates the market environment for the construction aggregates industry in San Diego County as of 2018 and identifies projected demand for aggregate through 2050. This report also focuses on the import of sand (a.k.a. fine aggregate products) to San Diego County. This information has been developed from published reports and from personal communication with various sources operating in the construction aggregates industry.

It is useful to understand construction aggregate terms to avoid confusion throughout the report. Construction aggregate is a term used for the raw materials; crushed rock, sand and gravel, used in construction. The raw material is used in final products like concrete, stucco, and asphalt. It is also used as base material beneath rail and transit lines, roads, pipelines, foundations etc. It is essential for building all infrastructure projects like transit centers, bike lanes, roads, hospitals, utilities, schools, affordable housing, homeless shelter, and market-rate houses etc. Construction aggregate products are divided into two main categories: fine and coarse. Fine aggregates are sand products and produced from alluvial deposits. Coarse aggregate is crushed rock and is produced from hard rock or cobble deposits. Fine aggregates from alluvial sources are used in concrete manufacturing and the method of extraction and processing does not require crushing the product. Coarse aggregates are rock products greater than 3/8" and generally require crushing and screening to process the material into different sizes. This report talks about construction aggregate or aggregate as a general term used for fine and coarse aggregates together. When the discussion is narrowed to fine aggregate/sand it will be indicated.

Background on San Diego County Aggregate Consumption

Similar to statewide trends, San Diego County experienced peak production in 2006 and saw a reduction in construction aggregate demand during the recession with a 57 percent drop from 2006 to 2011. Aggregate production fluctuated between 2009 and 2012 but did not consistently increase until 2013. As of 2018, aggregate consumption is estimated to be 18 percent below 2006 levels (Table 1).

Aggregate consumption in the County (column 3 of Table 1) is the sum of aggregate produced within the County and the fine aggregate sand required to be imported from outside the County due to the lack of local mines with active permits able to produce sand. Aggregate production from local mines in the County are almost all coarse aggregate/crushed rock. The absence of local San Diego sand mines is well documented. Referring to Figure 1, starting in approximately 1990, San Diego County Quarries were unable to meet local demand and imports were relied on to satisfy production shortfalls. With minor exceptions, the majority of aggregate imports are limited to sand because of the lack of permitted sand sources within San Diego County. This is supported by the DOC where they reported there had been a large decrease in both the number of instream sand mines and the reserves of permitted sand resources between 1980 (25 mines and 121 million tons of reserves) and 1995

(eight mines and 55 million tons of reserves)[1]. Map 1 illustrates the location of permitted sand operations in the County in 1982 as reported by the DOC.[2] The DOC updated the Mineral Land Classification report for Western San Diego County in 2017 and assessed industry activity through 2014. The report indicates that there were four sand mines in San Diego County. Since that time, 3 have become depleted and only one new operation has been permitted[3]. In all cases, the existing sand production sites in San Diego County are very small in scale and imports are necessary to satisfy the demand for sand in San Diego County.

Aggregate Production within the County

With actual production data for San Diego County not being available after 2015, in-county production from 2016-2018 was estimated using data reported to the Mine Safety and Health Administration (MSHA). MSHA data is used to estimate actual production between 2016-2018 by assuming the percent change in hourly labor activity will result in the same percent change in actual production. In the short run MSHA data is commonly used to estimate aggregate production. MSHA data is useful because each mine operation is required to submit hourly data employees worked in "Strip, Quarry, Open Pit" activities. This reflects the amount of time spent in the quarry and this data was evaluated for all operations in San Diego County. The MSHA data showed quarries within the County increased hourly mining activity from 2016-2018. The percent increase in hourly mining activity was assumed to translate into the same percentage increase in production. This estimated increase in production from quarries within San Diego County from 2016-2018 is reflected in Table 1 within the second column titled "San Diego County Aggregate Production".

Imported Sand to the County

Because imports of mainly fine aggregate play such a significant role in satisfying demand in San Diego County, the California Department of Conservation (DOC) estimated imports in their 2017 report and are included in the third column of Table 1 entitled "Estimated Sand Imports". Using the most recent published data of both San Diego County aggregate production and imported sand from the same year (2014), we note that sand imports correlate to approximately 36 percent of the aggregate production from San Diego County quarries, which when added to the total aggregate production from San Diego County quarries equals the total aggregate consumption within San Diego. Accordingly, the estimates for sand imports for 2015-2018 in the

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[1] Miller, Davis, James F. "Update of Mineral Land Classification: Aggregate Materials in the Western San Diego County Production-Consumption Region." California Department of Conservation, DMG Open-File Report 96-04, 1996.

[2] Kohler, S.L. & R.V. Miller. "Mineral Land Classification: Aggregate Materials in the Western San Diego County Production Consumption Region." California Department of Conservation, Special Report 153, 1982.

[3] Gius, F.W., L.L. Busch & R.V. Miller. "Update of Mineral Land Classification: Portland Cement Concrete-Grade Aggregate in the Western San Diego County Production-Consumption Region, CA." California Geological Survey. Special Report 240. 2017.

third column of Table 1 is derived from assuming imports will remain 36 percent[4] of the aggregate production from quarries within the county.

Table 1: San Diego County Total Construction Aggregate Production, Imports & Consumption[5]

Year	San Diego County Aggregate Production (million tons)	Estimated Sand Imports (million tons)	Estimated Total Aggregate Consumption (million tons)
2005	9.4	1.8	11.2
2006	9.5	1.8	11.3
2007	7.0	1.8	8.9
2008	5.8	1.7	7.6
2009	4.6	1.4	6.0
2010	4.5	1.4	5.9
2011	4.7	1.6	6.3
2012	4.9	1.5	6.3
2013	5.8	1.7	7.5
2014	5.7	2.1	7.8
2015	6.6	2.4	8.9
2016	6.5	2.4	8.9
2017	6.7	2.5	9.2
2018	6.8	2.5	9.3

Numbers in red indicate estimates provided by EnviroMINE

Future San Diego Aggregate Supply

San Diego County is facing a severe shortage of permitted construction aggregate reserves. Permitted reserves are 35% of the estimated 50-year demand[6]. If no new reserves are permitted and the remaining quarries produced enough to satisfy demand (no imports), the existing permitted reserves would be exhausted within 11-20 years. It is important to note that this shortage covers both coarse and fine aggregate products over the long term. Figure 1 illustrates how aggregate production has changed over time within the County. As shown on Figure 1, aggregate production slipped below demand around 1990. This is largely due to quarries closing (green bars) and a lack of new permits being issued as discussed in more detail below. The solid blue line reflects the projected construction aggregate demand estimated by the DOC in 1996 and the dashed blue line indicates the revised demand projections in 2014.

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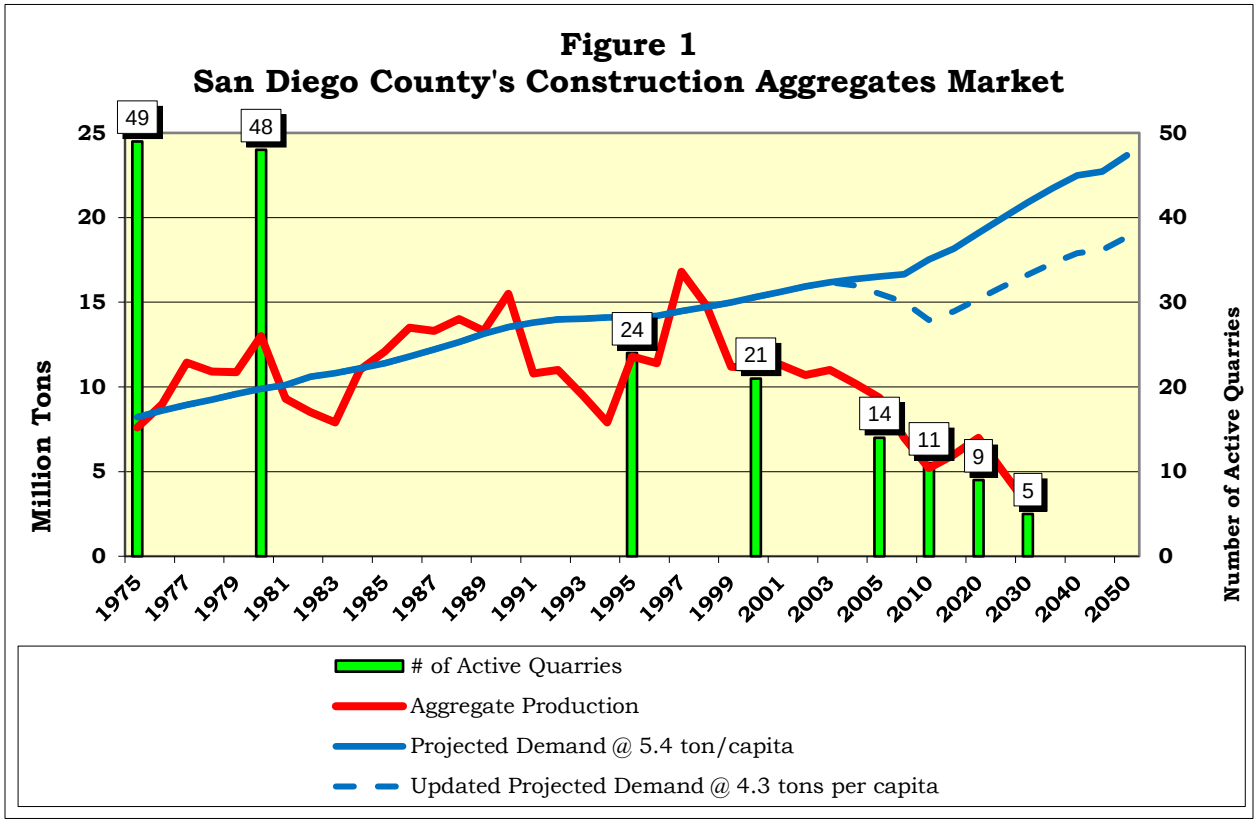
[4] Referring to data in 2014, sand imports of 2.1 is approximately 36% of in county production of 5.1, therefore imports were assumed to stay at 36% of in county production to estimate the volume of imports from 2015-2018.

[5] Gius, F.W., L.L. Busch & R.V. Miller. "Update of Mineral Land Classification: Portland Cement Concrete-Grade Aggregate in the Western San Diego County Production-Consumption Region, CA." California Geological Survey. Special Report 240. 2017.

[6] Clinkenbeard, J.P. & F.W. Gius, "Aggregate Sustainability in California." California Geological Survey, Map Sheet 52. 2018.



Existing and Proposed Mines Supplying Construction Aggregate to San Diego

Existing Mines in San Diego County

San Diego County currently has 13 active production sites, 2 idle operations and one newly permitted, small mining site – the East County Sand Mine. There has only been one new quarry of significant size permitted in the last 30 years -- Rosemary's Mountain. This site was in the permitting process for 18 years before finally gaining approval in 2003.

Table 2 lists the status of each production site in the County, including the permit expiration date and whether the site is a crushed rock or sand source. Some of the sites listed in Table 2 are not significant producers. Those quarries in bold indicate sites that produce 250,000 tons or more annually. The smaller sites produce inconsistent or small amounts on an annual basis. Map 2 illustrates the location of each quarry. The number next to each symbol on the map correlates with the number in the first column in Table 2.

Currently, with 260 to 308 million tons of reserves, crushed rock is adequately supplied by existing operations located within the County. In contrast, with only 1 million tons of reserves, there is a significant shortage of permitted sand sources. The "East County Sand Mine" was recently permitted but has limited reserves.

Table 2: Existing San Diego County Permitted Aggregate Mines

Map #	Quarry Name	Operator	Commodity	Permit Exp Date	Status
Crushed Rock Quarries in San Diego					
1	**Rosemary's Mountain**	**Granite[7]**	**Crushed Rock**	**2040**	**Active**
2	**Twin Oaks Quarry**	**Superior**	**Crushed Rock**	**Vested**	**Active**
3	JEB	JEB	Crushed Rock	Vested	Active
4	Inland Valley	Escondido Materials	Crushed Rock	Vested	Active
5	**Vulcan – Carroll Canyon[1]**	**Vulcan**	**Crushed Rock**	**Expired - application to extend**	**Active**
6	Poway	TBD	Crushed Rock	2031	Idle
7	**Sycamore Landfill**	**Hanson**	**Crushed Rock**	**2025**	**Active**
8	**Mission Gorge Pit**	**Superior**	**Crushed Rock**	**2033**	**Active**
9	**TTT Quarry**	**Superior**	**Crushed Rock**	**Vested**	**Active**
10	**Vigilante Quarry**	**Hanson**	**Crushed Rock**	**2030**	**Active**
11	Slaughterhouse Canyon[3]	Hanson	Crushed Rock	2020	Idle
12	Jamacha	Superior	Crushed Rock	Vested	Active
13	**Hester's Granite Quarry**	**Robertson's**	**Crushed Rock**	**Vested**	**Active**
14	Turvey DG Pit	Turvey & Son	Decomposed Granite	2020	Active
15	**Chula Vista Quarry**	**Vulcan**	**Crushed Rock**	**Vested**	**Active**
2019 Estimated Crushed Rock Permitted Reserves in San Diego County 265-308 million tons					
Map #	**Quarry Name**	**Operator**	**Commodity**	**Permit Exp Date**	**Status**
Sand Sources in San Diego County					
16	East County Sand Mine	TBD	Sand	2023	Newly Permitted
2019 Estimated Permitted Sand Reserves in San Diego County Approximately 1 million tons					

Note: Quarries in **Bold** are considered significant producers or ones that produce 250,000 tons or more annually. Non-bolded sites are minor producers and do not significantly contribute to total County production.

[1] Currently in the process of re-permitting the site.

[7] Ownership/Operator is transitioning.

Proposed Mines in San Diego County

As listed in Table 3, there are three proposed aggregate projects in the permitting process -- Otay Hills in South County, El Monte Sand Mining Project, and the Cottonwood Sand Mine site. Map 2 also illustrates the locations of these proposed projects. Otay Hills is proposed as a hard rock quarry and the remaining two are proposed sand operations.

Table 3: Proposed San Diego County Aggregate Mines

Map #	Quarry Name	Operator	Commodity	Proposed Annual Production (mil tons)	Proposed Permitted Reserves (mil tons)
17	Otay Hills Quarry	Superior	Crushed Rock	1	75
18	El Monte Sand Mining Project	TBD	Sand	1	12.5
19	Cottonwood Sand Mine	TBD	Sand	0.5	5

Mines Importing Sand to San Diego County

Table 4 lists each of the sites that are known to import sand into San Diego County and their locations are also indicated on Map 3. From the south, sand is imported from Mexico by Associated Ready Mix from the Las Palmas Valley site located approximately 30 miles southeast of Tijuana. Personal interviews with employees from Associated indicated that the Las Palmas Valley site is consistently the largest exporter of sand to San Diego County from the south.[8]

From the north, sand imports generally originate from Pacific Aggregates and Werner Corporation located in Lake Elsinore/Temescal Valley/Corona. Limited and inconsistent amounts are also imported from sites located in Riverside and San Bernardino Counties operated by Robertson's and Cemex (Table 4), the Ocotillo area of Imperial County, and Irwindale in Los Angeles County.

Therefore, the two most consistent major sources of sand imports are from Mexico and the permitted sites near Lake Elsinore. Map 3 indicates the locations of inconsistent and consistent sand imports. Referring to Table 1 in the Estimated Sand Imports column, sand imports in the market total approximately 2.4-2.5 million tons annually as of 2015. Unless local sources of concrete-grade sand can be permitted to displace the imported sand, sand imports from these two locations in the north and south will continue to meet the rising demand for sand in the County.

[8] Personal interview with confidential employee, October 2018.

Table 4: San Diego Sand Imports

Operator	Site	Location
Associated Ready Mix	Otay Mesa Yard	Otay Mesa: Las Palmas Valley Mexico
Pacific Aggregates	Pacific Aggregates	Lake Elsinore, Riverside County
Chandler/Werner Aggregates	Temescal Valley Operations/Corona	Riverside County
FST	Corona	Riverside County
Robertson's	Banning or Cabazon	Riverside County
Cemex	Lytle Creek	Redlands, Santa Ana Wash
Various	Ocotillo Operations	Imperial County
Various	Irwindale Operations	Los Angeles County

Future San Diego Aggregate Demand

Forecasters use population growth to project demand for construction aggregate resources.[9], [10], [11] Map 4 illustrates the expected percent growth in population within the various regions of San Diego County from 2020-2050. In addition, the total projected population for 2050 is shown. Map 4 shows the southern part of the County is expected to grow by the greatest percentage followed by central or downtown area of San Diego.

The projected construction aggregate demand for San Diego County was estimated by the DOC and is summarized in Table 5.[12] Table 5 also includes the estimated projections for fine aggregate or sand. The DOC projected total construction aggregate demand. The demand for sand is estimated at about 27%of the total construction aggregate demand.[13] Therefore, Table 5 also includes projected sand demand in San Diego.

[9] Robinson, Gilpin R. & William M. Brown. "Sociocultural Dimensions of Supply and Demand for Natural Aggregate – Examples from the Mid-Atlantic Region, United States." U.S. Geological Survey Open-File Report 02-350. 2002.
[10] Davis, James F. "Update of Mineral Land Classification: Aggregate Materials in the Western San Diego County Production-Consumption Region." California Department of Conservation, DMG Open-File Report 96-04, 1996.
[11] Gius, F.W., L.L. Busch & R.V. Miller. "Update of Mineral Land Classification: Portland Cement Concrete-Grade Aggregate in the Western San Diego County Production-Consumption Region, CA." California Geological Survey. Special Report 240. 2017.
[12] Davis, James F. "Update of Mineral Land Classification: Aggregate Materials in the Western San Diego County Production-Consumption Region." California Department of Conservation, DMG Open-File Report 96-04, 1996.
[13] Gius, F.W., L.L. Busch & R.V. Miller. "Update of Mineral Land Classification: Portland Cement Concrete-Grade Aggregate in the Western San Diego County Production-Consumption Region, CA." California Geological Survey. Special Report 240. 2017.

Table 5: San Diego County Projected Construction Aggregate Demand[14]

Year	Total Aggregate/Sand Demand (million tons)	Year	Total Aggregate /Sand Demand (million tons)	Year	Total Aggregate/Sand Demand (million tons)
2022	13.8/3.5	2032	14.7/4.0	2042	15.4/4.2
2023	13.9/3.8	2033	14.8/4.0	2043	15.5/4.2
2024	14.0/3.8	2034	14.8/4.0	2044	15.6/4.2
2025	14.1/3.8	2035	14.9/4.0	2045	15.6/4.2
2026	14.2/3.8	2036	15.0/4.1	2046	15.7/4.2
2027	14.3/3.9	2037	15.1/4.1	2047	15.8/4.3
2028	14.3/3.9	2038	15.1/4.1	2048	15.8/4.3
2029	14.4/3.9	2039	15.2/4.1	2049	15.9/4.3
2030	14.5/3.9	2040	15.3/4.1	2050	16.0/4.3
2031	14.6/3.9	2041	15.4/4.2		

Estimating VMT from Roundtrip Deliveries of Sand from Mines Meeting San Diego Sand Demand.

With the lack of permitted high-quality sand resources in San Diego County, sand is imported from surrounding counties and Mexico to satisfy demand. The objective of this report is to illustrate the status of construction aggregate reserves in the County and is also intended to provide the basis for estimating the Vehicle Miles Traveled (VMT) analysis for the Cottonwood project. As a result, this report estimates VMT for sand based on the following assumptions.

1. Sand imports are used for the production of ready-mix concrete. As a result, the material is transported to the various ready-mix concrete plants throughout the County.

2. Map 5 illustrates the location of each plant and identifies the mid-point for the use of estimating the distance sand imports are transported in the County for the Vehicle Miles Traveled Analysis. This establishes the average distance traveled for sand imports and in-county sources. For reference, the distances indicated on Map 3 are to the Mid-Point identified on Map 5.

While the location of sand imports is known, the volume of imports from each site varies from month-to-month; is driven by economic activity and company specific demands; and is considered proprietary by the mine operators. As a result, it is difficult to estimate with certainty the exact volume of VMT traveled from each location. To overcome this gap in available information, a good faith analysis of estimated VMT can be determined by focusing on the major, consistent sand mines

[14] Gius, F.W., L.L. Busch & R.V. Miller. "Update of Mineral Land Classification: Portland Cement Concrete-Grade Aggregate in the Western San Diego County Production-Consumption Region, CA." California Geological Survey. Special Report 240. 2017.

importing sand to San Diego and apportioning the percentage of demand from each based-on population.

3. Based on industry expert interviews, sand is consistently imported from Mexico and permitted sites near Lake Elsinore in Riverside County. The distances from these consistent imports to the Mid-Point (190 miles round trip from the Mexico site in the south and 112 miles round trip from the Lake Elsinore area sites in the north) were used to provide the basis of Vehicle Miles Traveled from sand imports. It is recognized this is a conservative assumption because the existing VMT would be higher if one counted the VMT from mines further north in Riverside, San Bernardino, and Los Angeles County, but it reflects the most consistent market condition known.

4. Because construction aggregate demand is driven by population, the analysis divides the imports coming from the north and south based on population. Referring to Map 5, 37% of the population within the County is North of the Mid-Point and 63% is to the South. Therefore, 37% of the sand imports is assumed to come from the north and 63% from Mexico. Those percentages should be proportionately adjusted downward to 60% from the South and 35% from the North in the existing condition scenario to account for the 5% of sand production generated by the single, local sand mine called East County San Mine (27 mile round trip to the Mid-Point) that partially displaces sand imports from the north and south.

Conclusion

San Diego County is currently experiencing a shortage of permitted aggregate resources. This is particularly true when evaluating fine aggregate production within the County. High quality sand is imported to San Diego daily from outside the region, as there are no significant local sand production sources. San Diego County needs to permit additional aggregate resources to ensure future demand is satisfied and reduce its VMT from imported sources in Lake Elsinore area and Mexico.

Just as East County Sand Mine reduces the percentage of sand supplied from imports and delivers them with far fewer VMTs (27 miles round trip compared to 190 miles round trip or 112 miles roundtrip) permitting additional sand mines closer to the Mid-Point of cement plants is expected to further reduce VMT needed to meet the growing demand for sand in San Diego.

Appendix

Maps

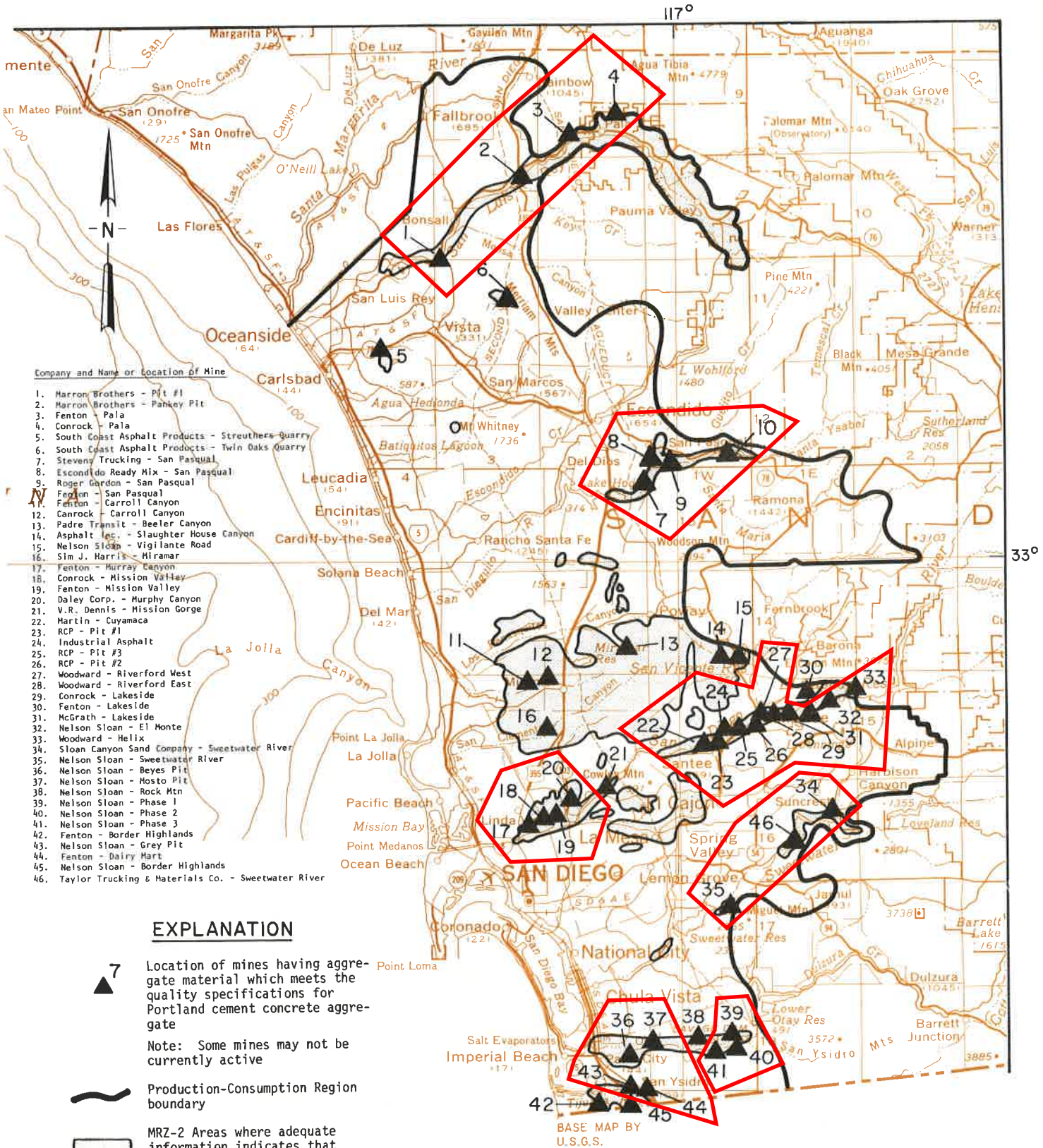
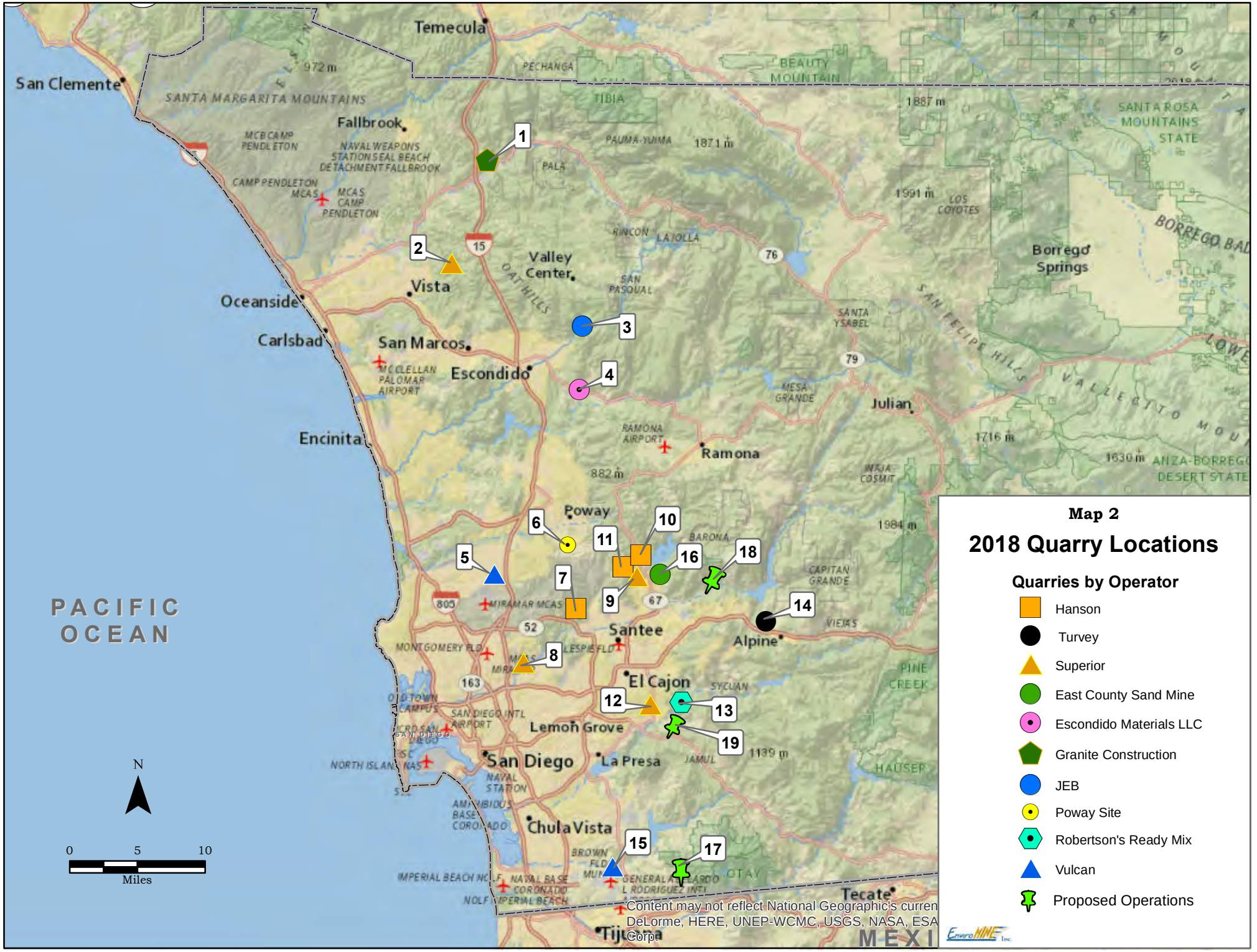


Figure 3. Map of Western San Diego County P-C Region showing locations of sand and gravel mines which have permits to mine aggregate.


Map 2
2018 Quarry Locations
Quarries by Operator
Hanson
Turvey
Superior
East County Sand Mine
Escondido Materials LLC
Granite Construction
JEB
Poway Site
Robertson's Ready Mix
Vulcan
Proposed Operations
PACIFIC OCEAN
N
0 5 10
Miles
Temecula
San Clemente
Fallbrook
Vista
Valley Center
Oceanside
Carlsbad
San Marcos
Escondido
Encinitas
Poway
Ramona
Julian
Borrego Springs
Santee
Alpine
El Cajon
Lemon Grove
San Diego
La Presa
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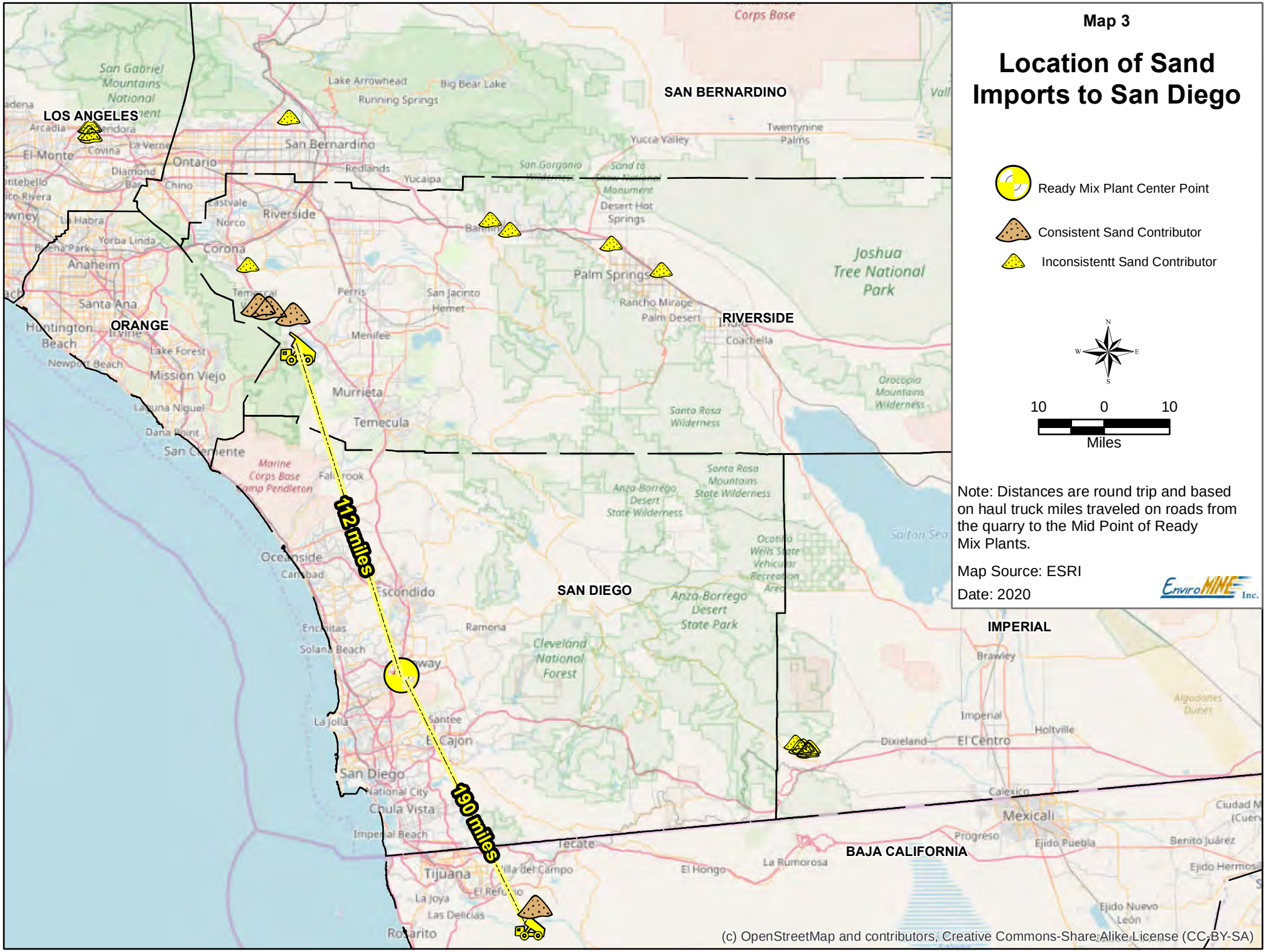
Corp.


Map 3
Location of Sand Imports to San Diego
Ready Mix Plant Center Point
Consistent Sand Contributor
Inconsistentt Sand Contributor
N
W
E
S
10 0 10
Miles
Note: Distances are round trip and based on haul truck miles traveled on roads from the quarry to the Mid Point of Ready Mix Plants.
Map Source: ESRI
Date: 2020
EnviroMINE Inc.
112 miles
190 miles
LOS ANGELES
ORANGE
SAN BERNARDINO
RIVERSIDE
SAN DIEGO
IMPERIAL
BAJA CALIFORNIA
Corps Base
San Gabriel Mountains National
Lake Arrowhead
Big Bear Lake
Running Springs
San Bernardino
Redlands
Yucaipa
Yucca Valley
Twentynine Palms
Ontario
Riverside
Corona
Norco
Chino
Diamond Bar
Pomona
Anaheim
Yorba Linda
La Habra
Fullerton
Santa Ana
Huntington Beach
Irvine
Lake Forest
Mission Viejo
Laguna Niguel
Dana Point
San Clemente
Newport Beach
Temecula
Murrieta
Menifee
Perris
San Jacinto
Hemet
Temescal Canyon
Palm Springs
Desert Hot Springs
Rancho Mirage
Palm Desert
Indio
Coachella
Joshua Tree National Park
Orocopia Mountains Wilderness
Santa Rosa Wilderness
Santa Rosa Mountains State Wilderness
Anza-Borrego Desert State Wilderness
Anza-Borrego Desert State Park
Salton Sea
Ocotillo Wells State Vehicular Recreation Area
Marine Corps Base Camp Pendleton
Oceanside
Carlsbad
Escondido
Encinitas
Solana Beach
Del Mar
Ramona
Cleveland National Forest
La Jolla
Santee
El Cajon
San Diego
National City
Chula Vista
Imperial Beach
Tijuana
Tecate
La Joya
Las Delicias
Rosarito
Otay Mesa
El Hongo
La Rumorosa
Brawley
Imperial
Holtville
El Centro
Dixieland
Calexico
Mexicali
Progreso
Ejido Puebla
Benito Juárez
Ejido Hermosillo
Ejido Nuevo León
Algodones Dunes
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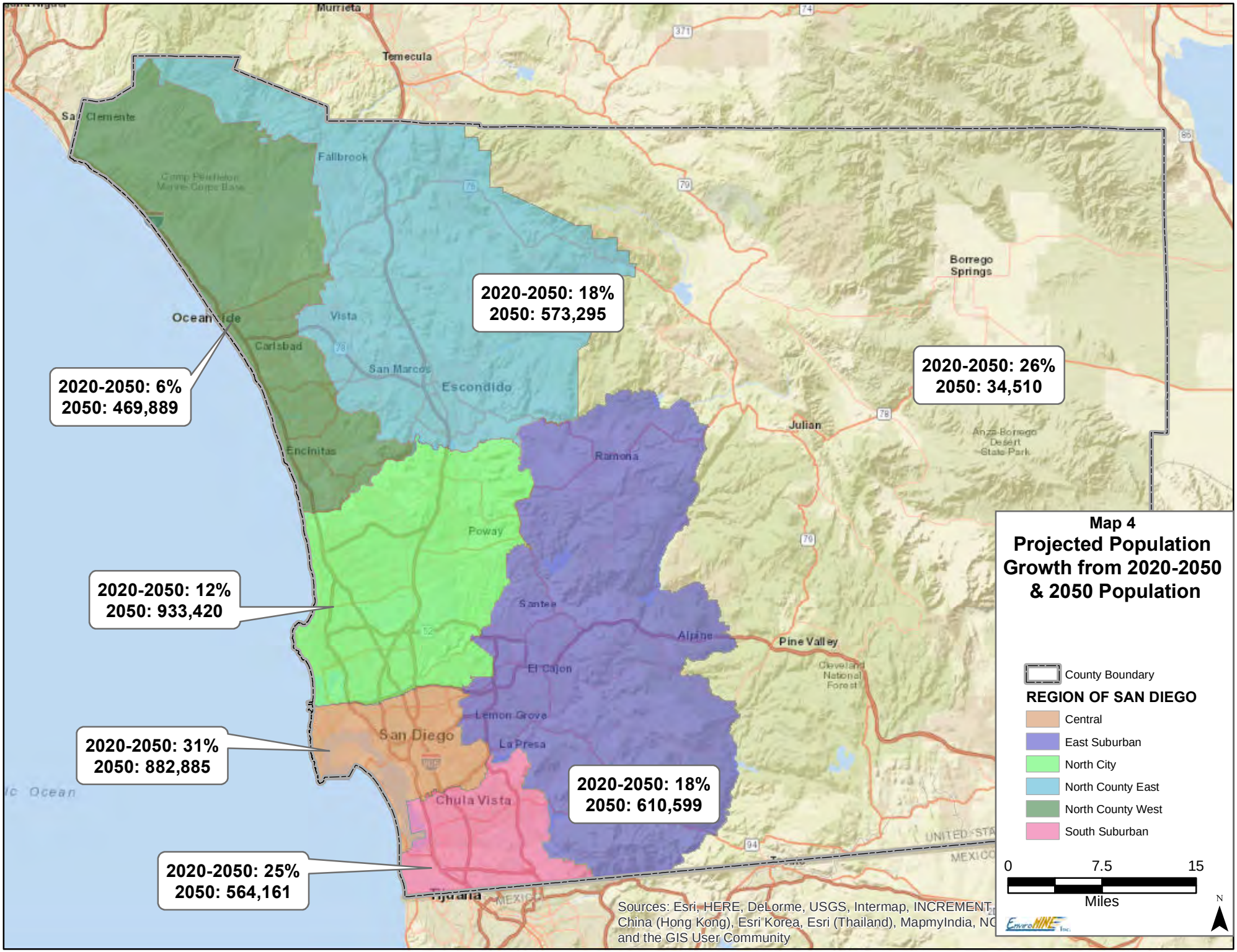

2020-2050: 6%
2050: 469,889
2020-2050: 18%
2050: 573,295
2020-2050: 26%
2050: 34,510
2020-2050: 12%
2050: 933,420
2020-2050: 31%
2050: 882,885
2020-2050: 18%
2050: 610,599
2020-2050: 25%
2050: 564,161
Map 4
Projected Population Growth from 2020-2050 & 2050 Population
County Boundary
REGION OF SAN DIEGO
Central
East Suburban
North City
North County East
North County West
South Suburban
0
7.5
15
Miles
N
Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT
China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NC
and the GIS User Community
Murrieta
Temecula
Fallbrook
Vista
Carlsbad
San Marcos
Escondido
Encinitas
Ramona
Poway
Santee
Alpine
El Cajon
Lemon Grove
La Presa
San Diego
Chula Vista
Julian
Borrego Springs
Pine Valley
Anza-Borrego Desert State Park
Cleveland National Forest

Map 5

San Diego Concrete Ready-Mix Locations & Population Distribution from Midpoint

NORTH OF MIDPOINT
1,213,861
37%

TOTAL POPULATION CONSIDERED
3,310,734

SOUTH OF MIDPOINT
2,096,873
63%

MIDPOINT

Pedroza, Kings & Fastline

Proposed Otay Hills Quarry & Ready Mix

Temecula
San Clemente
Fallbrook
Camp Pendleton Marine Corps Base
Oceanside
Vista
Carlsbad
Valley Center
San Marcos
Escondido
Encinitas
Ramona
Borrego Springs
Julian
Anza-Borrego Desert State Park
Poway
Santee
Alpine
Pine Valley
El Cajon
Cleveland National Forest
Lemon Grove
San Diego
La Mesa
Chula Vista
Tijuana
MEXICO
UNITED STATES
Pacific Ocean

Mid Point of Ready Mix Concrete Operations

San Diego Concrete Batch Plants

Operator

- Associated Concrete
- Diamond Concrete
- Hanson Aggregates
- Marcon Products
- Robertson's ReadyMix
- Superior Ready Mix
- Cemex
- Pedroza Ready Mix
- Fastline Concrete
- Kings Concrete
- MSA Boundary & Population Area Considered
- Population Divide

N

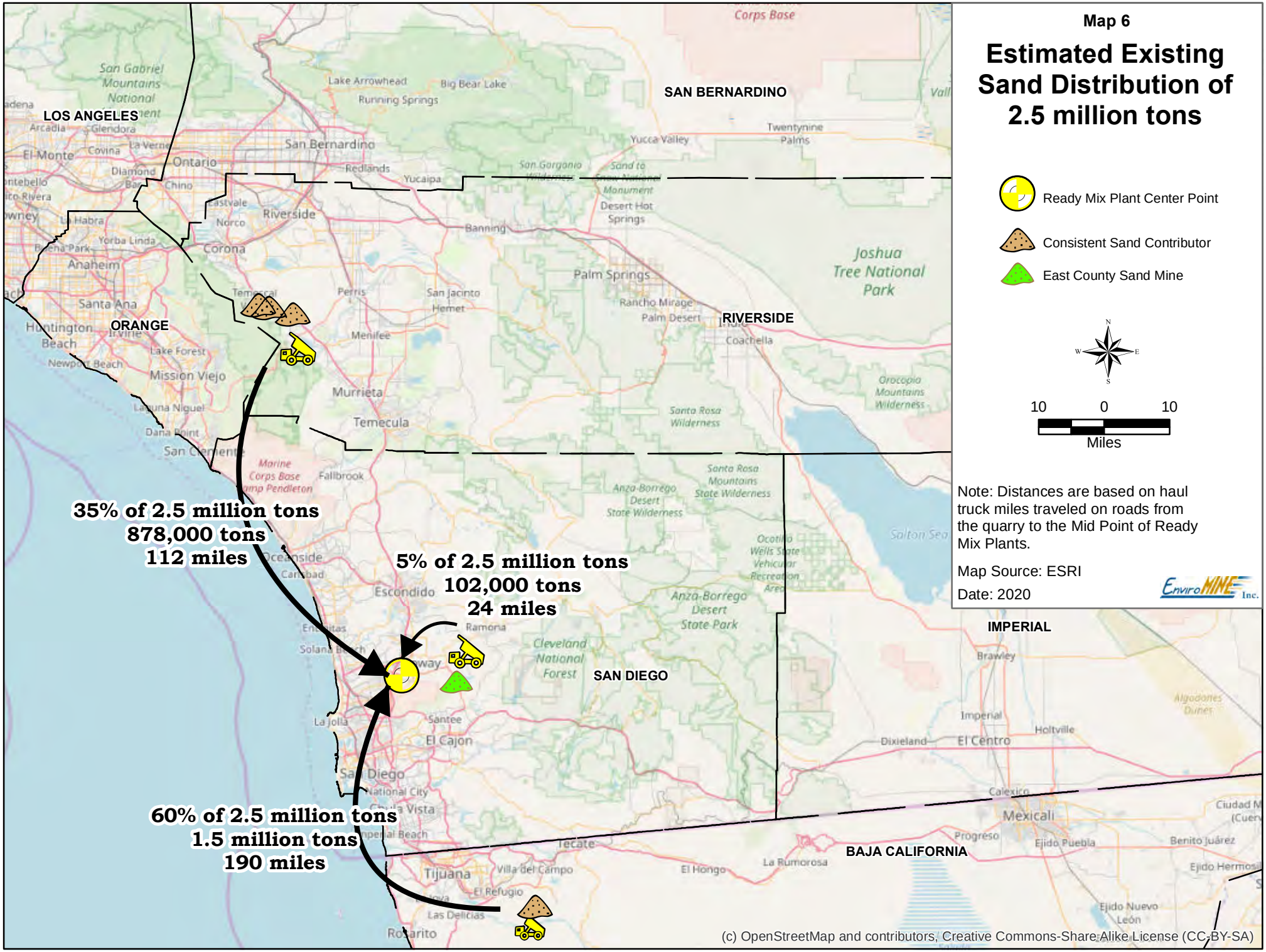
7 0 7

Miles

1 in = 7 miles

Source: 2018 Population Estimates from SANDAG
MSA Boundaries - SANDAG
Midpoint Population Divide follows the zipcode boundaries within each MSA obtained from SANDAG
Population within shaded area was only considered, population in remote east county in the unshaded area was not considered.
Date: Jan 2020

EnviroMINE Inc.


Map 6
Estimated Existing Sand Distribution of 2.5 million tons
Ready Mix Plant Center Point
Consistent Sand Contributor
East County Sand Mine
N
W
E
S
10 0 10
Miles
Note: Distances are based on haul truck miles traveled on roads from the quarry to the Mid Point of Ready Mix Plants.
Map Source: ESRI
Date: 2020
EnviroMINE Inc.
35% of 2.5 million tons
878,000 tons
112 miles
5% of 2.5 million tons
102,000 tons
24 miles
60% of 2.5 million tons
1.5 million tons
190 miles
LOS ANGELES
ORANGE
SAN BERNARDINO
RIVERSIDE
SAN DIEGO
IMPERIAL
BAJA CALIFORNIA
Corps Base
San Gabriel Mountains National
Lake Arrowhead
Big Bear Lake
Running Springs
San Bernardino
Redlands
Yucaipa
Yucca Valley
Twentynine Palms
Ontario
Riverside
Corona
Norco
Banning
Desert Hot Springs
Joshua Tree National Park
Palm Springs
Rancho Mirage
Palm Desert
Coachella
Anaheim
Santa Ana
Huntington Beach
Irvine
Lake Forest
Mission Viejo
Laguna Niguel
Dana Point
San Clemente
Temecula
Murrieta
Menifee
Perris
San Jacinto
Hemet
Marine Corps Base Camp Pendleton
Fallbrook
Oceanside
Carlsbad
Escondido
Ramona
Santa Rosa Mountains State Wilderness
Anza-Borrego Desert State Wilderness
Anza-Borrego Desert State Park
Cleveland National Forest
Salton Sea
Brawley
Imperial
El Centro
Holtville
Dixieland
Calexico
Mexicali
Progreso
Ejido Puebla
Benito Juárez
Ejido Hermosillo
Ejido Nuevo León
La Jolla
Santee
El Cajon
San Diego
National City
Chula Vista
Imperial Beach
Tecate
Tijuana
Villa del Campo
El Refugio
Las Delicias
Rosarito
El Hongo
La Rumorosa
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