

The Junipers Project  
Final Environmental Impact Report  
SCH No. 2018041032 - Project No. 586670

Appendix J4

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Waste Management Plan

January 2021

# The Junipers Project

## Waste Management Plan

August 2019 | LEN-84

*Prepared for:*

**Carmel Land, LLC**  
16465 Via Esprillo, Suite 150  
San Diego, CA 92127

*Prepared by:*

**HELIX Environmental Planning, Inc.**  
7578 El Cajon Boulevard  
La Mesa, CA 91942

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## ACRONYMS AND ABBREVIATIONS

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AB	Assembly Bill
APN	Assessor's Parcel Number
Applicant	Carmel Land, LLC
C&D	Construction and Demolition
CalRecycle	California Department of Resources Recycling and Recovery
CEQA	California Environmental Quality Act
City	City of San Diego
CIWMA	California Integrated Waste Management Act of 1989
CY	cubic yard(s)
DSD	Development Services Department (City of San Diego)
ESD	Environmental Services Department (City of San Diego)
FEMA	Federal Emergency Management Agency
HOA	Homeowner's Association
IWMP	Integrated Waste Management Plan
lbs	pounds
SDMC	San Diego Municipal Code
SF	square foot/feet
SRRE	Source Reduction and Recycling Element
SWMC	Solid Waste Management Coordinator
WDM	Waste Diversion Measures
WMP	Waste Management Plan

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# 1.0 INTRODUCTION

## 1.1 PURPOSE OF THE REPORT

The purpose of this Waste Management Plan (WMP) is to identify the quantity of solid waste that would be generated by The Junipers project (project) throughout demolition, construction, and operation, and to identify measures to reduce the potential impacts associated with management of such waste.

Proper separation and diversion of recyclable waste materials is required in order to divert each material type to a recycling/reuse facility with the highest possible diversion rate. As discussed further in Section 2.0, *Regulatory Framework*, in order to comply with City of San Diego's (City's) waste reduction ordinances and the waste diversion goals established in State Assembly Bill (AB) 341, the project must achieve a 75 percent diversion rate during demolition and construction. The City's California Environmental Quality Act (CEQA) Significance Thresholds for solid waste identify a threshold of 1,500 tons of waste or more during construction and demolition (C&D) for direct solid waste impacts, and 60 tons of waste or more during C&D for potentially significant cumulative solid waste impacts. The City Environmental Services Department's (ESD) Certified Construction & Demolition Recycling Facility Directory (City 2019; Appendix A) provides guidance on identifying recycling/reuse facility locations, accepted materials, recycling/reuse rates, and associated disposal fees and/or the value of the materials accepted for recycling/reuse.

This WMP has been prepared to be consistent with applicable federal, State, and local laws, regulations, and standards pertinent to the project. Its goal is to implement an approach for managing waste that conserves landfill space, preserves environmental quality, conserves natural resources, and reduces disposal costs. Responsibility for ensuring ongoing WMP compliance would be under the direction of the project Solid Waste Management Coordinator (SWMC), as assigned by Carmel Land, LLC (Applicant).

## 1.2 PROJECT LOCATION

The project is located on an approximately 112.3-acre property at 14455 Peñasquitos Drive (Assessor's Parcel Numbers [APNs] 313-011-06, 313-011-07, 313-011-10, and 313-060-10) in the Rancho Peñasquitos Community Plan Area. The project is located west of Interstate 15 (I-15), north of Carmel Mountain Road, and east of Peñasquitos Drive. Surrounding uses include single- and multi-family residential to the west and north, and a hotel (Hotel Karlan) immediately to the south. A large commercial shopping area is located beyond I-15, east of the site along Carmel Mountain Road. Black Mountain Open Space Park is located farther west of the project site, west of Peñasquitos Drive.

The site is zoned as Residential (RS-1-14), and is designated as Park, Open Space, and Recreation in the City General Plan, and Preserve Golf Course Use in the Rancho Peñasquitos Community Plan. Refer to Figure 1, *Regional Location Map*, and Figure 2, *Project Vicinity*.

## 1.3 PROJECT DESCRIPTION

The project entails the development of a vacant property formerly used as a golf course to create a residential subdivision with a total of 536 units. The project would include 455 attached and detached, multi-family, age-restricted residences, 81 affordable age-restricted multi-family apartments. The project would also include amenities such as a privately maintained but publicly accessible "social loop"

perimeter trail, open space/parks for development use, internal private streets, a public park along Peñasquitos Drive, and a privately maintained but publicly accessible park adjacent to Carmel Mountain Road that would include a basketball court, two pickleball courts, a mobility zone, a bike hub, and other amenities. As part of the project approval, zoning would be changed to RM-1-1 for the 455 market rate multi-family units, RM-3-7 for the 81 affordable multi-family residences, and OR-1-1 and OP-1-1 for the proposed parks and open space areas. The project would also require a General Plan Amendment and Community Plan Amendment to change the land use designations to Low Density Residential.

Vehicular access to the project site would be provided from Peñasquitos Drive at the existing intersection with Janal Way, and from a new right-in only deceleration lane and driveway off of Carmel Mountain Road. Multiple internal roadways and roundabouts would be constructed to provide access within the project site. Pedestrian and other non-vehicular (e.g., bicycle) circulation would be accommodated throughout the site. A 20-foot-wide, gated secondary emergency access road would replace the existing emergency access road in the northern portion of the project site, terminating at Del Diablo Street. Refer to Figure 3, *Site Plan*.

Solid waste design features would include an approximately 400 square foot (SF) composting facility. The composting area would be located within the central portion of the project, west of the proposed housing, and approximately 300 feet from the nearest off-site homes on Del Diablo Street. During occupancy of the project, contractors would collect food waste separated by individual households and deliver it to this on-site composting area. Food waste would be mixed in with vegetation from landscaping areas to provide an appropriate mix of materials for the composting process to reduce odors and pests. The resulting mulch and compost would be used within the project and for residents' use.

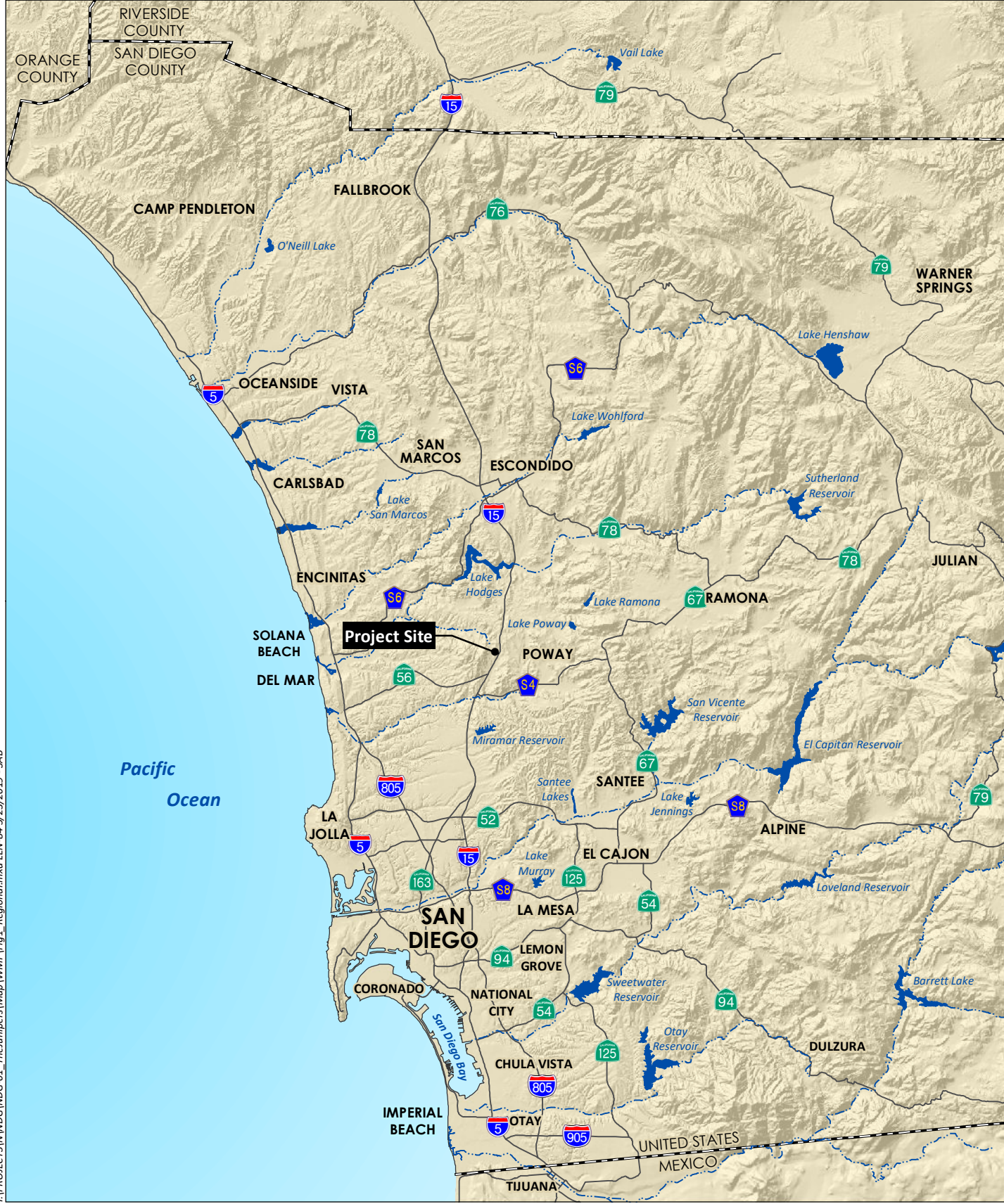
## **2.0 REGULATORY FRAMEWORK**

### **2.1 STATE REGULATIONS**

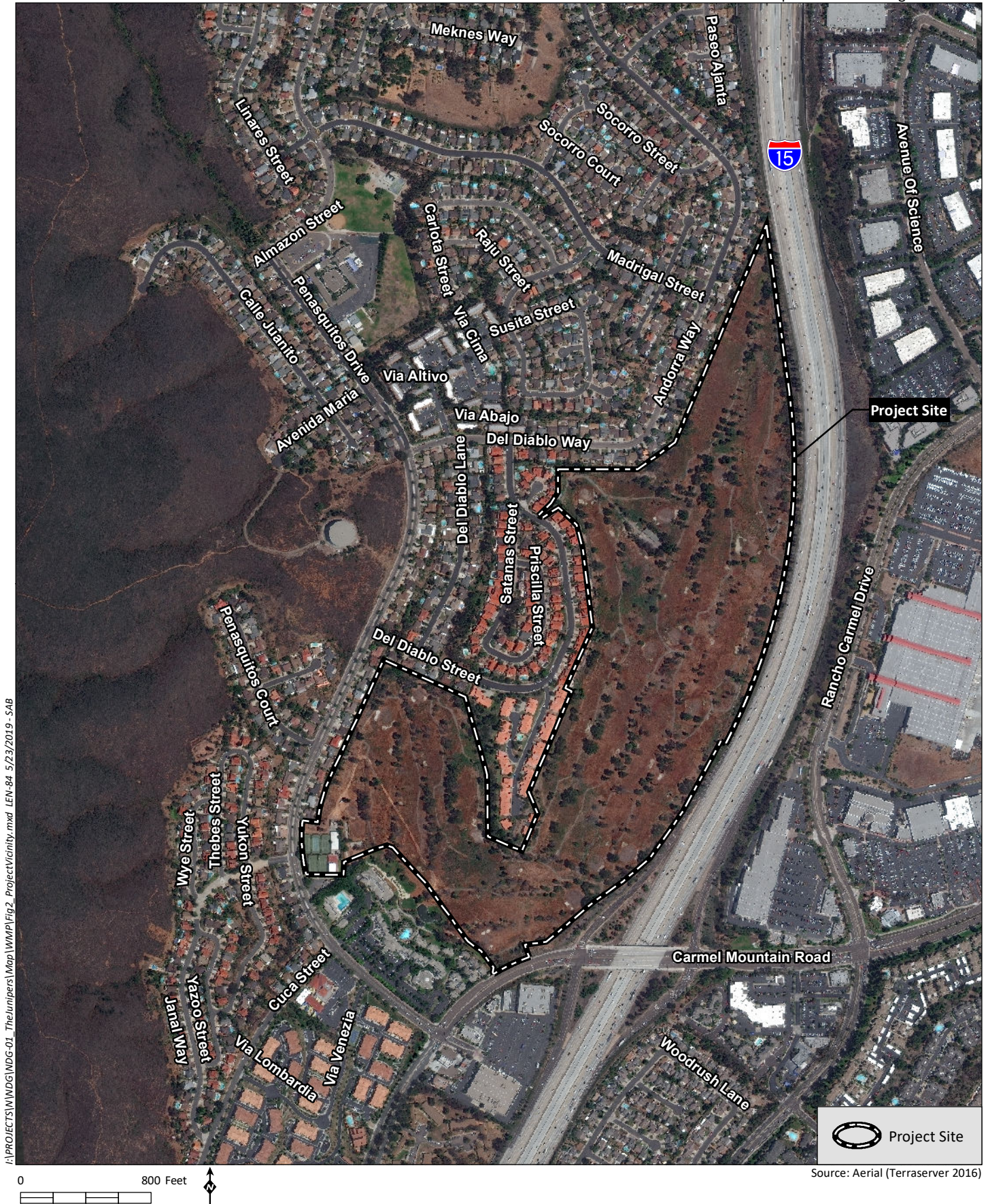
The State of California (State) Integrated Waste Management Act (CIWMA) of 1989 [California AB 939], which is administered by the California Department of Resources Recycling and Recovery (CalRecycle), requires counties to develop an Integrated Waste Management Plan (IWMP) that describes local waste diversion and disposal conditions, and lays out realistic programs to achieve the waste diversion goals. IWMPs compile Source Reduction and Recycling Elements (SRREs) that are required to be prepared by each local government, including cities. SRREs analyze the local waste stream to determine where to focus diversion efforts and provide a framework to meet waste reduction mandates. The goal of the solid waste management efforts is not to increase recycling, but to decrease the amount of waste entering landfills. AB 939 required all cities and counties to divert a minimum 50 percent of all solid waste from landfill disposal.

In 2011, the State legislature enacted AB 341 (California Public Resource Code Section 42649.2), increasing the diversion target to 75 percent statewide. AB 341 also requires the provision of recycling service to commercial and residential facilities that generate 4 cubic yards (CY) or more of solid waste per week.

In October of 2014, Governor Brown signed AB 1826, Chesbro (Chapter 727, Statutes of 2014), requiring businesses to recycle their organic waste on and after April 1, 2016, depending on the amount of waste



Source: Base Map Layers (SanGIS, 2016)

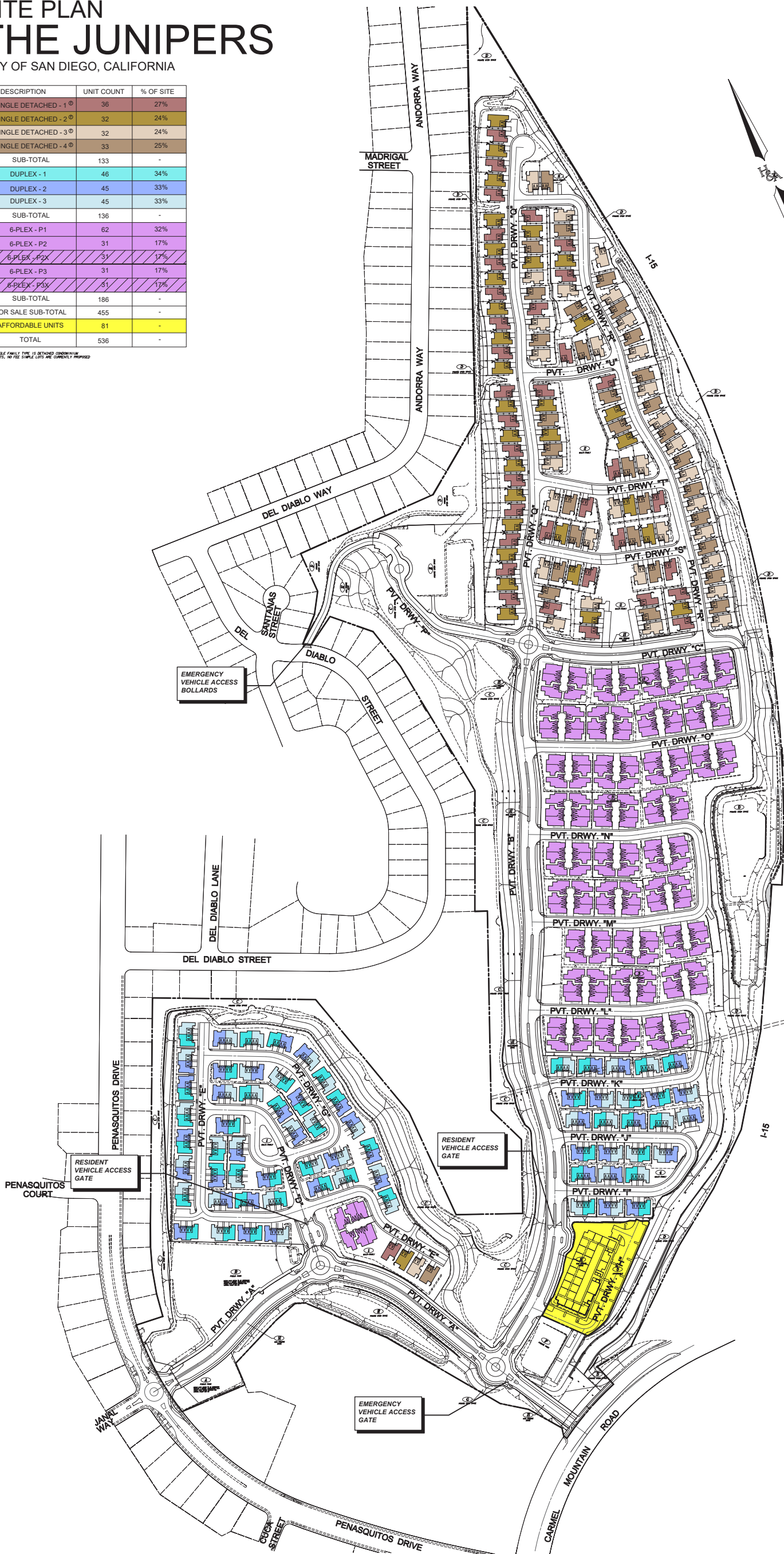


# SITE PLAN THE JUNIPERS

CITY OF SAN DIEGO, CALIFORNIA

DESCRIPTION	UNIT COUNT	% OF SITE
SINGLE DETACHED - 1 <sup>①</sup>	36	27%
SINGLE DETACHED - 2 <sup>①</sup>	32	24%
SINGLE DETACHED - 3 <sup>①</sup>	32	24%
SINGLE DETACHED - 4 <sup>①</sup>	33	25%
SUB-TOTAL	133	-
DUPLEX - 1	46	34%
DUPLEX - 2	45	33%
DUPLEX - 3	45	33%
SUB-TOTAL	136	-
6-PLEX - P1	62	32%
6-PLEX - P2	31	17%
6-PLEX - P2X	31	17%
6-PLEX - P3	31	17%
6-PLEX - P3X	31	17%
SUB-TOTAL	186	-
FOR SALE SUB-TOTAL	455	-
AFFORDABLE UNITS	81	-
TOTAL	536	-

<sup>①</sup> SINGLE FAMILY TRIP, IS DETACHED COORDINUM UNITS, NO PEE SIMLE LOTS ARE CURRENTLY PROPOSED



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Source: Hunsaker & Associates 8/2019

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they generate per week. Organic waste means food waste, green waste, landscape and pruning waste, nonhazardous wood waste, and food-soiled paper waste that is mixed in with food waste. For businesses that generate 8 or more CY of organic waste per week, this requirement began April 1, 2016, while those that generate 4 CY of organic waste per week must have an organic waste recycling program in place beginning January 1, 2017. This law also requires that on and after January 1, 2016, local jurisdictions across the State implement an organic waste recycling program to divert organic waste generated by businesses, including multi-family residential dwellings that consist of five or more units. This law phases in the mandatory recycling of commercial organics over time, while also offering an exemption process for rural counties.

## 2.2 LOCAL REGULATIONS

The City has enacted codes and policies directed at the achievement of State-required diversion levels, including the Refuse and Recyclable Materials Storage Regulations (San Diego Municipal Code [SDMC] Chapter 14, Article 2 Division 8), Recycling Ordinance (City 2007; Municipal Code Chapter 6, Article 6, Division 7), and the Construction and Demolition (C&D) Debris Deposit Ordinance (City 2008; Municipal Code Chapter 6, Article 6, Division 6). The City's Zero Waste Plan, a component of the City's Climate Action Plan, was approved and adopted by City Council on July 13, 2015. The Zero Waste Plan identifies goals and strategies to achieve 75 percent diversion by 2020, 90 percent diversion by 2035, and "zero" waste by 2040 (City 2015).

As stated in the City Development Services Department (DSD) CEQA Significance Determination Thresholds (City 2016a), implementation of these regulations and ordinances alone is not projected to achieve a 50 percent diversion rate, far below the current 75 percent diversion level targeted by the State and identified in the Zero Waste Plan for 2020. The City's ESD estimates that compliance with existing City ordinances and regulations alone achieves an approximately 30 and 40 percent diversion rate for small and large projects, respectively (City 2013). Therefore, discretionary projects must undertake additional measures to comply with existing regulations.

### 2.2.1 City of San Diego CEQA Significance Determination Thresholds

The City's CEQA Significance Determination Thresholds establish solid waste generation thresholds for discretionary projects. Proposed projects that involve construction, demolition, and/or renovation that meet or exceed the thresholds described below are considered to have potentially significant solid waste impacts and require the preparation of a WMP.

#### Direct Impacts

A project would have a direct impact on solid waste services if it would generate 1,500 tons of waste or more during demolition and construction. Projects that include the construction, demolition, or renovation of 1,000,000 SF or more of building space are considered by the City to have the potential to generate this amount of waste, and therefore may have direct impacts on solid waste services. Additional considerations are as follows:

- The generation of large amounts of waste result in direct impacts that bring facilities closer to daily throughput limits, shorten facility lifespans, require increased numbers of trucks and other equipment, and make it difficult for the City to achieve required waste reduction levels. Waste

management planning is based on a steady rate of waste generation and does not assume increased waste generation due to growth.

- While all projects are required to comply with the City's waste management ordinances, direct and cumulative impacts are mitigated by the implementation of project-specific WMPs, which may reduce solid waste impacts to below a level of significance.
- For projects over 1,000,000 square feet, a significant direct and cumulative solid waste impact would result if the compliance with the City's ordinances and the WMP fail to reduce the impacts of such projects to below a level of significance and/or if a WMP for the project is not prepared and conceptually approved by the ESD prior to distribution of the draft environmental document for public review.

## Cumulative Impacts

A project would have a cumulative impact on solid waste services if it would generate 60 tons of waste or more per year. Projects that include the construction, demolition, and/or renovation of 40,000 SF or more of building space are considered by the City to potentially generate this amount of waste, and therefore may have cumulative impacts on solid waste services. Other projects such as new single-family residences on public streets or projects creating a demand for litter bin service may also cumulatively impact solid waste services.

While all projects are required to comply with the City's waste management ordinances, cumulative impacts are mitigated by the implementation of a project-specific WMP that reduces solid waste impacts to below a level of significance.

## Project Potential Impacts

The project may generate more than 1,500 tons of solid waste materials during demolition and construction and therefore may exceed the City's threshold for direct solid waste impacts. The project also proposes construction of more than 40,000 SF, thereby exceeding the City's threshold for cumulative solid waste impacts without implementation of solid waste diversion measures. Furthermore, the project proposes a public park which would increase demand for litter bin service from the City.

Because implementation of the project without waste diversion measures may exceed direct and cumulative solid waste thresholds, the City has required preparation of this WMP in compliance with CEQA and City Guidelines, to ensure that the project contribution to the overall waste produced within the City would be reduced sufficiently to allow the City to comply with the waste reduction targets established in the Public Resources Code and State statutes.

### 2.2.2 City of San Diego Refuse and Recyclable Materials Storage Ordinance

SDMC Section 142.0801 et seq. contains the language of the City Refuse and Recyclable Materials Storage Ordinance (Storage Ordinance), an ordinance that is required by State law.

Table 1, *Required Minimum Storage Areas for Residential Development*, provides information on minimum exterior refuse and recyclable material storage areas for residential development.

**Table 1**  
**REQUIRED MINIMUM STORAGE AREAS FOR RESIDENTIAL DEVELOPMENT**

<b>Number of Dwelling Units</b>	<b>Minimum Refuse Storage Area (SF)</b>	<b>Minimum Recyclable Material Storage Area (SF)</b>	<b>Total Minimum Storage Area (SF)</b>
2-6	12	12	24
7-15	24	24	48
16-25	48	48	96
26-50	96	96	192
51-75	144	144	288
76-100	192	192	348
101-125	240	240	480
126-150	288	288	676
151-175	336	336	672
176-200	384	384	768
200+	384 + 48 for every 25 dwelling units above 201	384 + 48 for every 25 dwelling units above 201	768 + 96 for every 25 dwelling units above 201

Source: San Diego Municipal Code Table 142-08B  
SF = square feet

### **2.2.3 City of San Diego Recycling Ordinance**

The City's Recycling Ordinance, found in SDMC Section 66.0701 et seq., was adopted in November 2007 (City 2007). The Recycling Ordinance requires the provision of recycling service for all commercial facilities, all single-family residences, and multi-family residences with more than 49 units. The Ordinance also provides an exemption for land uses that generate less than 6 CY of waste per week. However, as noted above, AB 341, which was chaptered after the City enacted this ordinance, has imposed a requirement that "captures" any uses being served with 4 CY or more of refuse capacity. This State requirement makes the provision of recycling service a virtually universal requirement. In addition, the Recycling Ordinance also requires development of educational materials to ensure occupants are informed about the City's ordinance and recycling services, including information on types of recyclable materials accepted.

### **2.2.4 City of San Diego Construction and Demolition Debris Deposit Ordinance**

On July 1, 2008, the City's C&D Debris Deposit Ordinance became effective (City 2008). An amendment to the ordinance and revisions to the associated C&D deposit schedule were approved by the City Council on December 10, 2013 and went into effect on (effective January 1, 2014) and on April 19, 2016 (effective June 22, 2016). The C&D Debris Deposit Ordinance is designed to keep C&D materials out of local landfills and ensure that materials are diverted from disposal. The ordinance creates an economic incentive to recycle C&D debris through the collection of fully refundable deposits that are returned, in whole or in part, upon proof of the amount of C&D debris the project applicant diverted from landfill disposal. The ordinance requires that the majority of construction, demolition and remodeling projects requiring building, combination, and demolition permits pay a refundable C&D Debris Recycling Deposit and divert at least 65 percent of their debris by recycling, reusing, or donating usable materials. The

deposit is held until the applicant provides receipts demonstrating that a minimum 65 percent of the material generated has been diverted from disposal in landfills.

The C&D Ordinance stipulates that projects will be required to divert 75 percent of their wastes when mixed debris facilities with a permitted daily tonnage capacity of at least 1,000 tons maintain a 75 percent diversion rate for three consecutive calendar year quarters. Greater than 75 percent diversion also may be required for a project if a higher goal is specified during discretionary permitting. Mixed debris recyclers in San Diego County currently achieve between 68 and 88 percent diversion rates at their facilities (refer to the City's Certified Construction & Demolition Recycling Facility Directory, provided in Appendix A of this report). This is because not everything that is brought to be recycled is usable or marketable. While there is one facility that achieves a diversion rate greater than 75 percent, the others have a diversion rate of 68 percent. For a project that would dispose of mixed debris at one of the facilities that achieve a less than 75 percent diversion rate, virtually all clean C&D waste from a project must be source-separated and sent to a material-specific recycling facility, such as aggregate and metal recyclers, in order to achieve an overall diversion rate of 75 percent. Higher diversion rates can also be accomplished by salvage and/or on-site reuse of C&D materials. The City's C&D thresholds and deposit amounts are shown below in Table 2, *City C&D Deposit Schedule*.

**Table 2**  
**CITY C&D DEPOSIT SCHEDULE**

Building Category	Deposit per SF <sup>1</sup>	Minimum SF Subject to Ordinance	Maximum SF Subject to Ordinance	Range of Deposits
Residential New Construction, Non-residential Alterations, Demolition	\$0.40	1,000	100,000	\$400-\$40,000
Non-residential New Construction	\$0.20	1,000	50,000	\$200-\$10,000
<b>Flat Rate</b>				
Residential Alterations	\$1,000	1,000	6,999	\$1,000

Source: City 2016b

<sup>1</sup> Deposit amounts are applied to the entire area(s) where work will be performed and are calculated based on square footage.

SF = square feet

### 3.0 PRE-CONSTRUCTION WASTE

All C&D-generated waste would be subject to compliance with the source separation and diversion requirements contained in this WMP to divert, recycle, and/or re-use these materials to the maximum degree possible. As identified in the City's Certified Construction & Demolition Recycling Facility Directory (City 2019; Appendix A), "Mixed C&D Debris" recyclers attain at most an 88 percent diversion rate, whereas "source separated" material recyclers can attain nearly 100 percent diversion rates. As a result, in order to achieve the highest level of waste diversion from landfills and highest dollar value for the quality of materials, the project would source separate (segregate) clean recyclable materials on the site by material type, to the maximum extent practicable, and divert them for recycling or reuse at City-certified facilities specializing in each material type.

## **3.1 CLEARING/GRUBBING**

Clearing/grubbing involves the removal of existing vegetation. Clearing/grubbing of the site would be extensive, as the site contains few structures and paved areas.

The vegetated portions of the site are mostly covered in grasses and small shrubs with rows of mature trees lining former fairways. Exact estimates of vegetation removal are not known at this time. The Federal Emergency Management Agency (FEMA) Debris Estimating Field Guide (2010) estimates that one acre of mixed debris 10 feet high converts to 16,133 CY of material. This analysis assumes an approximate average vegetation height of 6 inches over an estimated 100 acres of vegetated area, which takes into account the closely cropped nature of the site, and the rows of taller trees. Assuming approximately 100 acres of vegetated area, clearing/grubbing would require the removal of approximately 80,665 CY of material. Using the City of San Diego C&D Debris Conversion Rate Table (City 2016c, Appendix B), approximately 12,100 tons of vegetation would require removal.

Most of the existing landscaping on the Project site would be removed; however, some existing trees may be retained on site, where possible. For the purposes of this analysis, no removed vegetation is assumed to be reused or mulched on-site. Vegetation would be processed and recycled at a target rate of 100 percent diversion at Miramar Greenery, a City-certified green waste recycling facility. The City's Certified Construction & Demolition Recycling Facility Directory (City 2019; Appendix A) states the diversion rate for clean source-separated materials shall be 100 percent. Other waste materials associated with the clearing and grubbing are anticipated to include relatively negligible amounts of waste generated by contractors working on the site during the clearing and grubbing process.

## **3.2 DEMOLITION**

### **3.2.1 Building Demolition**

Building demolition involves the removal of structures at the site. The existing development includes an approximately 5,000 SF enclosed parking and storage area near the western edge of the project site, and an approximately 3,500 SF shed in the center of the northern half of the site. The storage area consists of a wood and metal structure with no walls and a metal roof. The structure is used for maintenance and storage for golf carts, vending machines, and miscellaneous equipment used at the former golf course. The northern structure is a single-story wood frame structure with an asphalt shingle roof, vertical siding, and metal roll-up doors (IS Architecture 2017).

#### **3.2.1.1 Salvage**

No salvage of materials from the existing buildings is assumed.

#### **3.2.1.2 Recycling**

The overall estimated quantity of debris from the existing buildings are based on the "General Building Formula" contained in the FEMA Debris Estimating Field Guide. The formula multiplies building length, width, and height (in feet) by a constant of 0.33 to account for air space in the building, and divides the resulting number by 27 to convert cubic feet to cubic yards (FEMA 2010):

$$\frac{\text{Length} \times \text{Width} \times \text{Height} \times 0.33}{27} = \text{CY}$$

The existing buildings have a height of approximately 15 feet. The square footage listed above equals their length times width. Using these dimensions, structural debris for all buildings is estimated as follows:

$$\frac{(8,500 \text{ SF} \times 15 \text{ feet} \times 0.33)}{27} = 1,558 \text{ CY}$$

As specific materials likely to be contained in the existing structures are not known, estimates are based on the Military Base Closure Handbook – A Guide to Construction and Demolition Materials Recovery (CalRecycle 2002). According to this handbook, demolition of typical commercial wood structures results in a C&D waste stream (by volume) of 73 percent wood, 18 percent brick, 7 percent concrete, and 3 percent metal. To better demonstrate the anticipated higher metal content of the structures and the lower brick content, the waste stream is revised as follows:

- 73 percent wood
- 18 percent metal
- 7 percent concrete
- 3 percent brick

In addition to the percentages listed above, it is assumed that there are other recyclable “mixed debris” materials present in unknown quantities, which are estimated to comprise 20 percent of the total demolition debris. These materials would be too damaged or mixed to be source-separated into clean materials and would be disposed of accordingly. An additional eight percent non-recyclable “waste” also was factored into the total waste stream anticipated for demolition of the structure. Factoring in the 28 percent mixed debris and trash that would be generated during demolition, the wood, brick, metal, and concrete breakdown provided in the Military Base Closure Handbook would account for the remaining 72 percent of total waste.

The complete breakdown of waste types and volumes of demolition waste anticipated to be generated are shown in Table 3, *Existing Structure Demolition Waste Content*.

**Table 3**  
**EXISTING STRUCTURE DEMOLITION WASTE CONTENT**

<b>Material</b>	<b>Waste by Material (Percent)<sup>1</sup></b>	<b>Volume Waste by Material (CY)<sup>2</sup></b>
Concrete	5	78
Brick	2	31
Wood – Clean <sup>3</sup>	26	405
Wood – Treated <sup>3</sup>	26	405
Metal	13	203
Mixed debris	20	312
Trash	8	125
<b>TOTAL</b>	<b>100</b>	<b>1,558</b>

Sources: FEMA 2010; CalRecycle 2002

Note: Columns may not total due to rounding

<sup>1</sup> Estimated percentages for concrete, brick, wood, and metal provided by the Military Base Closure Handbook – A Guide to Construction and Demolition Materials Recovery (CalRecycle 2002) were broken down from the 72 percent of demolition materials remaining after subtracting 20 percent mixed debris and 8 percent trash. For example, the percent waste by material for concrete was generated by multiplying 72 percent by 7 percent (the concrete composition in commercial wood structures) to yield 5 percent of the total waste generated during demolition.

<sup>2</sup> Table information subject to field verification during demolition.

<sup>3</sup> For estimation purposes, wood waste materials are split 50 percent clean, and 50 percent treated to conservatively account for inability to recycle treated wood.

CY = cubic yard

It is assumed that treated wood, in addition to approximately eight percent of demolition waste, would not be recyclable. These materials would be disposed of at the Miramar Landfill at a zero percent diversion rate. The additional 20 percent of “mixed debris” demolition materials would be disposed of at a City-approved mixed debris materials recycling facility at a minimum 68 percent diversion rate (City 2019; Appendix A).

### **3.2.2 Pavement Demolition**

Pavement demolition involves the removal of asphalt and cement surfaces. Pavement demolition is anticipated to include approximately 4.3 miles of golf cart paths, five tennis courts, and paved storage areas. Based on aerial imagery, approximately 295,152 SF of golf cart paths, 34,500 SF of tennis courts, and 24,500 SF of additional pavement area would be removed. The golf cart paths are approximately 13 feet wide and were measured at an approximate 5-inch thickness. Demolition estimates for these materials have been calculated based on the following assumptions:

- Demolition estimate for golf cart path asphalt assumes 5 inches thickness and 142 pounds (lbs) per cubic foot. This would equate to approximately 17,463,157 lbs, or 8,732 tons, based on the 295,152 SF of existing on-site asphalt.
- Demolition estimate for tennis court asphalt assumes 3 inches thickness and 142 lbs per cubic foot. This would equate to approximately 1,224,750, or 612 tons, based on the 34,500 SF of existing on-site pavement.

- Demolition estimate for concrete pavement assumes 4 inches thickness and 150 lbs per cubic foot. This would equate to approximately 1,225,000 lbs, or 613 tons, based on the 24,500 SF of existing on-site concrete.

Asphalt and pavement demolition would require a total of approximately 9,956 tons of materials to be removed from the site.

### **3.2.2.1 Salvage**

Asphalt and concrete may have the potential to be salvaged and reused on-site as fill material. As a conservative estimate, it is assumed that all pavement material will be removed from the site.

### **3.2.2.2 Recycling**

Pavement demolition materials are estimated to total approximately 9,956 tons. The diversion rate for asphalt and concrete is 100 percent (City 2019; Appendix A). Therefore, the quantity diverted and recycled is estimated to total 9,956 tons.

### **3.2.3 Utilities Demolition**

At this point in project planning, an unknown number of on-site utilities are to be removed. To approximate utilities requirements, it was estimated that water pipelines for irrigation and other uses would be the same length as the golf cart paths. Existing on-site utilities were therefore estimated to total approximately 22,704 feet of 3-inch-diameter asbestos cement pipeline, and 22,704 feet of 8-inch diameter asbestos cement pipeline. Demolition estimates for these materials have been calculated based on the following assumptions:

- 3-inch-diameter concrete cement water pipes weigh approximately 4.6 lbs per linear foot of pipe (Logard Asbestos Cement 2005). Assuming 22,704 linear feet of pipeline, approximately 104,438 lbs, or 52 tons, would be removed.
- 8-inch-diameter concrete cement water pipes weigh approximately 21.2 lbs per linear foot of pipe (Logard Asbestos Cement 2005). Assuming 22,704 linear feet of pipeline, approximately 481,324 lbs, or 241 tons, would be removed.

Utilities demolition would require a total of approximately 293 tons of pipeline materials to be removed from the site.

#### **3.2.3.1 Salvage**

Concrete pipe may have the potential to be ground up and reused on-site as fill material. As a conservative estimate, it is assumed that all pavement material will be removed from the site.

#### **3.2.3.2 Recycling**

There is no potential for recycling of existing utilities material.

### **3.3 GRADING**

Grading is anticipated to require 820,000 CY of cut and 820,000 CY of fill. No fill will be imported to the site, and no soil or fill is anticipated to require disposal off-site. In the event that soil is required for removal, it would be diverted at a rate of 100 percent to one of the facilities from the City's Certified Construction & Demolition Recycling Facility Directory (City 2019; Appendix A).

Negligible amounts of other waste materials would also likely be generated by contractors working on site during the grading process.

### **3.4 SUMMARY OF PRE-CONSTRUCTION WASTE GENERATION AND DIVERSION**

As discussed above, the waste materials to be generated during clearing and grubbing, demolition and grading for project implementation would be source-separated for recycling or reuse at City-certified facilities specializing in each material type, as applicable. A summary of anticipated waste generation volumes and diversion rates for pre-construction activities is provided in Table 4, *Pre-Construction Solid Waste Generation, Diversion Rates, and Facilities*. As shown in the table, the pre-construction phase of the project is estimated to generate 23,083 tons and divert 22,588 tons of waste.

#### **3.4.1 Summary of Salvaged Material**

Demolition of the existing structures, utilities, and pavement would generate salvageable materials. However, no specific inventory of reusable items has been conducted at this preliminary stage and no salvage plan has been prepared. No salvage is proposed.

#### **3.4.2 Summary of Recycled Material**

Materials generated during the pre-construction phase designated for recycling would be source-separated on site during these activities. The City's Certified Construction & Demolition Recycling Facility Directory, updated quarterly, states the diversion rate for these materials shall be 100 percent, except mixed C&D debris which achieves a maximum 88 percent diversion rate at the EDCO CDI Recycling and Buy Back Center (City 2019; Appendix A). As shown in the table, an overall 99 percent diversion rate is targeted for the project's pre-construction materials.

**Table 4**  
**PRE-CONSTRUCTION SOLID WASTE GENERATION, DIVERSION RATES, AND FACILITIES**

Source of Material	Material	Volume (CY)	Tons/Unit Conversion Factor	Tons	Diversion Rate (Percent)	Facility/ Destination of Materials	Tons Diverted	Tons Disposed
Clearing/Grubbing	Vegetation	80,665	0.15	12,100	100	B	12,100	0
Building Demolition	Concrete	78	1.2	94	100	A	94	0
	Brick	31	0.7	22	100	A	22	0
	Clean Wood	405	0.15	61	100	B	61	0
	Treated Wood	405	0.15	61	0	C	0	61
	Metal	203	0.51	103	100	A	103	0
	Mixed Debris	312	1.19	371	68	A	252	119
	Trash	125	0.18	22	0	C	0	23
Pavement Demolition	Asphalt/Concrete	--	--	9,956	100	A	9,956	0
Utilities	Pipeline	--	--	293	0	C	0	293
Grading	Earth/Soil	0	1.30	--	100	A	0	0
<b>TOTAL</b>				<b>23,083</b>	<b>98</b>	--	<b>22,588</b>	<b>495</b>

Sources: City's Certified Construction & Demolition Recycling Facility Directory (City 2019; Appendix A), City's C&D Debris Conversion Rate Table (City 2016c; Appendix C)  
 Facility/Destination Key:

A. Appropriate facility on City's Certified Construction & Demolition Recycling Facility Directory

B. Miramar Greenery, 5180 Convoy Street, San Diego, CA 92111

C. Miramar Landfill, 5180 Convoy Street, San Diego, CA 92111

Notes:

- Table information subject to field verification during pre-construction.
- The Applicant would contract with source separating recycling facilities listed in the City's Certified Construction & Demolition Recycling Facility Directory (City 2019) with an equal or greater diversion rate to ensure diversion rates meet those estimated in this table.
- The Tons/Unit Conversion Factor for concrete/steel was not provided in the City's C&D Debris Conversion Rate Table; therefore, concrete's factor of 1.2 was used in the estimates.
- Total diversion rate based on the percentage of total tons of waste diverted over the total tons of waste generated.
- Columns may not total due to rounding

CY = cubic yards

## 4.0 CONSTRUCTION WASTE

In order to estimate the quantity of waste generated during construction, City ESD staff recommends assuming each material type (carpet, ceiling tiles, etc.) would approximately equal the square footage of each structure. This square footage can then be multiplied by the weight of the material and divided by 10 (percent) to account for waste generated during the construction process. A ten percent construction waste generation rate is a very conservative figure, used here for analysis based on the following reasoning:

- The costs of purchasing construction materials in excess of the quantity required are prohibitive.
- Many materials, such as metal studs, come prefabricated in specific sizes, such that the contractor can accurately predict and purchase the specific quantity that would be required.
- Contractors can return unused and unneeded items (such as metal studs, appliances, fixtures, etc.) and/or utilize materials (such as brick or drywall) on other projects.
- Not all materials would be utilized throughout project square footage, so generation rates based on the total square footage are bound to be overestimated.

No specific construction materials or quantities are available at this preliminary planning level. The project proposes Type VB construction for all structures. These construction types typically consist of wood-framed structures. Floor coverings are anticipated to consist carpeting, and ceramic tiling. Based on the proposed structures, the following building materials that may generate waste are likely to be used during construction:

- |                    |                         |
|--------------------|-------------------------|
| • Metals           | • Carpet/Carpet padding |
| • Concrete/Asphalt | • Ceramic tile          |
| • Wood             | • Ceiling tile          |
| • Drywall          | • Roofing materials     |

Other waste would consist of packaging materials from construction material, appliances, windows, etc., including the following:

- Corrugated cardboard (packaging)
- Industrial plastics (plastic wrap, fasteners, etc.)
- Styrofoam (appliance packaging)

### 4.1 ESTIMATED CONSTRUCTION WASTE GENERATION AND DIVERSION

The City uses a rule of thumb of 3 lbs/SF of waste materials generated during construction (City 2013). Material quantities are based on City guidance as follows:

- Total Project SF x each material type = Total quantity of construction materials required
- Total construction material required x 10 percent = Anticipated quantity of construction waste generated

Anticipated project construction waste generation is shown in Table 5, *Construction Solid Waste Generation, Diversion Rates, and Facilities*. As shown, construction of buildings totaling 888,413 SF is estimated to generate a total of 1,226 tons of debris.

**Table 5**  
**CONSTRUCTION SOLID WASTE GENERATION, DIVERSION RATES, AND FACILITIES**

Source of Material	New Gross SF	Material	Diversion Rate (Percent) <sup>1</sup>	Tons Diverted <sup>2</sup>	Tons Disposed
Building Construction	883,413	Metals	100	133	0
		Concrete/Asphalt	100	133	0
		Wood	100	133	0
		Drywall	68	91	43
		Carpet	68	91	43
		Carpet Padding	68	91	43
		Mixed Debris	68	91	43
		Trash	0	0	133
Streets/Drives	1,064,182	Concrete/Asphalt	100	160	0
<b>TOTAL</b>			<b>75</b>	<b>922</b>	<b>304</b>

Note: Columns may not total due to rounding.

<sup>1</sup> Trash would be taken to the Miramar Landfill (5180 Convoy Street, San Diego, CA 92111) at a zero percent diversion rate. All other construction debris would be taken to an appropriate facility listed on the City's Certified Construction & Demolition Recycling Facility Directory. Facilities that process metals, concrete/asphalt, and wood all achieve a 100 percent diversion rate for these materials. Although the facility directory indicates that drywall and carpet/carpet padding would achieve a 100 percent diversion rate, City staff have indicated that applicable facilities to handle these types of construction debris may not be available and these materials should be assumed to be sent to a mixed debris facility with a 68 percent diversion rate (City 2019). Facilities that process mixed debris achieve a minimum 68 percent diversion rate, which was conservatively assumed for this project (City 2019; Appendix A).

<sup>2</sup> For each material type, construction waste quantities are calculated based on:  
Three lbs of waste per building SF (e.g., 883,413 SF for buildings x 3 lbs per SF = 2,665,239 lbs, or 1,333 tons);  
Total construction material required x 10 percent = anticipated quantity of construction waste generated (133 tons)

#### 4.1.1 Proposed Post-Consumer Content Construction Materials

In order to further minimize waste, the project would utilize recycled content construction materials, where feasible. Given the preliminary nature of the project plans, a minimum target of five percent is anticipated, with verification of purchase of materials equating to this target to be provided prior to or during the pre-construction meeting. See Section 6.1, for the construction waste management, coordination, and oversight measures that would be implemented pursuant to this WMP.

## 5.0 OCCUPANCY WASTE

### 5.1 STORAGE

The project would be managed under the Applicant or its designee(s). The City's Storage Ordinance (SDMC Section 142.0801 et. seq.) requires the provision of separate bins for recyclable waste products to be separated from non-recyclable solid waste. To comply with the Storage Ordinance, recycling containers would be provided for the individual market-rate housing units and at convenient locations within the affordable housing development, , meeting the minimums shown in Table 1.

Based on the 455 attached and detached multi-family residential units and 81 affordable multi-family units, a total of 2,131 SF of storage area would be provided throughout the project, split evenly between recycling and non-recyclable solid waste storage areas, as required by the Storage Ordinance. Market rate and affordable housing developments were calculated separately, with 384 SF of storage area required for the affordable housing development and a total of 1,748 SF required for the individual market rate units. (refer to Table 1).

### 5.2 RESIDENTIAL WASTE

The City's ESD provides a list of waste generation factors for the occupancy phase of development, (see Appendix C). The estimated waste generation for the proposed residential and non-residential uses is shown in Table 6, *Estimated Annual Solid Waste Generation Rates*.

**Table 6**  
**ESTIMATED ANNUAL SOLID WASTE GENERATION RATES**

Land Use	Unit Count/ Acreage	Waste Generation Factor	Tons Generated (per year)
Multi-Family Residential Unit	455 units	1.2 tons per year per unit	546
Multi-Family Affordable Unit	81 units	1.2 tons per year per unit	97
HOA-Maintained Landscaping Areas	43.7 acres	1.2 tons per year per acre <sup>1</sup>	52
<b>TOTAL</b>			<b>696</b>

Source: City 2012 (Appendix C); City 2013

Note: Columns may not total due to rounding.

<sup>1</sup> Based on 200 pounds per acre per month calculation for drought-tolerant landscaping areas (HELIX Construction Group 2018).

The City estimates that for large projects, approximately 40 percent of household waste would be diverted from landfills through existing ordinances and regulations (City 2013). This diversion rate includes any recyclables and landscaping trimmings from private gardens and yards. This rate does not take into consideration additional sustainability measures or large Homeowner's Association (HOA)-maintained landscaping areas at the site.

### **5.2.1 Household Food Waste**

The City conducted a Waste Characterization Study that evaluated the types and amounts of waste being disposed. The study measured waste from homes and identified the composition of the waste for multi-family residences based on 93 samples taken within the City. The study found that 41.8 percent of waste currently disposed is compostable or potentially compostable, including 20.1 percent of all multi-family residential waste is food material (City 2014; Appendix D, *City of San Diego Waste Characterization Study*).

Part of the project's design features would be to implement an on-site program to collect and compost household food waste. This waste would be collected on site, and following a composting process, it would provide mulch and compost available for the project's residents and for the HOA-maintained landscaped areas. On-site composting would be limited to the kinds of materials allowed (e.g., no dairy, meat or oils), and is anticipated to divert approximately half of household food waste from the landfill. Because food waste comprises approximately 20 percent of multi-family households' waste, this report assumes that 10 percent of the project residences' total solid waste would be composted on site.

### **5.3 HOA-MAINTAINED LANDSCAPING WASTE**

The project would include approximately 43.7 acres of landscaped areas that would provide open space, private parks, and trails. Those areas would be maintained by the HOA, which would hire landscapers to trim trees, shrubs, and other plants throughout the site. These areas are expected to produce negligible amounts of refuse material, so approximately 100 percent of waste generated in these areas would be diverted from the landfill. The Applicant would be committed to diversion of this material through the composting and mulching of vegetation on site and delivering excess material to the Miramar Greenery or an off-site private composting facility.

The project's landscaping areas would generate approximately 52 tons per year of vegetation organic material. Based on anticipated yearly tonnage, an average generation factor of approximately 200 pounds per acre per month of material was used in this analysis to calculate the weight of anticipated project-related vegetation (HELIX Construction Group 2018). This is based on the drought-tolerant landscaping that would require routine maintenance, the kinds of plant materials expected to be planted, and is expected to be a conservative (less than may occur) estimate.

### **5.4 TOTAL WASTE DIVERSION DURING OCCUPANCY**

The total waste to be diverted during occupancy of the project is shown in Table 7, *Estimated Annual Solid Waste Diversion Rates*. A total of 54 percent of all solid waste generated by the project's households and landscaping areas would be diverted from the landfill.

**Table 7**  
**ESTIMATED ANNUAL SOLID WASTE DIVERSION RATES**

<b>Land Use</b>	<b>Tons Generated (per year)</b>	<b>Diversion Rate from Ordinances and Regulations</b>	<b>Diversion Rate from Food Composting Program</b>	<b>Total Diversion Rate</b>	<b>Tons Diverted (per year)</b>	<b>Tons Disposed (per year)</b>
Multi-Family Residential Unit	546	40 percent	10 percent	50 percent	273	273
Multi-Family Affordable Unit	97	40 percent	10 percent	50 percent	48	48
HOA-Maintained Landscaping Areas	52	-	-	100 percent	52	0
<b>TOTAL</b>	<b>696</b>	<b>-</b>	<b>-</b>	<b>54 percent</b>	<b>374</b>	<b>322</b>

Note: Columns may not total due to rounding.

## **6.0 WASTE REDUCTION, RECYCLING, AND DIVERSION MEASURES**

The Applicant is committed to waste reduction during all aspects of project demolition, clearing, grading, construction, and operation, and would incorporate the Waste Diversion Measures (WDM) described below to ensure compliance with applicable solid waste disposal and waste reduction regulations and ordinances. Mandatory compliance with these measures shall be included in all project contractor agreements, clearly reflected on project plans, and verifiable by City ESD staff through written submittals and/or site inspections as described below.

### **6.1 CONSTRUCTION WASTE MANAGEMENT COORDINATION AND OVERSIGHT**

#### **6.1.1 Contractor Agreements and City Coordination**

All WDM described herein shall be included as part of contractor agreements and clearly reflected on project plans identifying activities required to be undertaken during clearing, grading, and construction. These measures shall also be provided in checklist format to City ESD staff prior to the initiation of any activities identified in the WMP. ESD staff shall be allowed access to the project site, project plans, and contractor education program meetings and materials (described below) to verify conformance with these measures.

#### **6.1.2 Designation of a Solid Waste Management Coordinator**

Prior to initiation of any construction, clearing, grading, or grubbing activities on site, the Applicant shall designate a Solid Waste Management Coordinator (SWMC) for the construction operation with the authority to provide guidelines and procedures for contractor(s) and staff to implement waste reduction and recycling efforts. These responsibilities shall include, but are not limited to, the following:

- Prepare a Contractor Education Program on the waste separation and diversion/disposal procedures specified in this WMP. The Contractor Education Program shall contain, at a minimum, the following information:
  - Written and visual description of each waste type required to be source-separated;
  - Written and graphic description of how each waste type must be treated prior to and during source separation;
  - Direction on which waste types go to mixed-debris facilities;
  - Direction on which waste types go to Miramar Landfill;
  - Direction on materials requiring special handling, such as hazardous materials;
  - Contact for designated contractor in case of questions or emergency;
  - Contact at City ESD in case of questions or emergency; and
  - Phone number, address, and telephone contact information for each contracted hauler and disposal/diversion facility to be utilized.
- Ensure the correct number and signage of bins, as specified in this WMP.
- Ensure a maximum 5 percent contamination by different waste types/non-recyclable materials by weight in the bins.
- Ensure no overtopping of bins occurs.
- Work with contractor(s) to refine estimated quantities of each type of material that would be recycled, reused, or disposed of as waste, then assist contractor(s) with documentation of that waste through receipts at each recycling and landfill facility identified in this WMP, or as otherwise agreed to by ESD staff.
- Issue stop work orders if procedures and standards specified in this WMP are not being followed/met.
- Coordinate with ESD and/or Mitigation Monitoring staff, including regular communication and invitations to the work site, and ensure appropriate staff members are involved at every stage.
- Ensure ESD staff attendance at the contractor education meeting and pre-construction meetings of each phase of the development.

### **6.1.3 Contractor Waste Management Training**

The project's SWMC or an ESD-approved contractor designee shall carry out Contractor Education Program presentations ensuring all project personnel are trained regarding content and requirements of this WMP. Prior to beginning work on any portion of the project, each member of the team, including all

workers, subcontractors, and suppliers, shall be provided with a copy of the WMP, and undergo training on proper waste management procedures applicable to the project.

- The project's SMWC, or ESD-approved Contractor-designee shall carry out contractor waste management training presentations for each new group or individual hired, contracted, or assigned to work on the project.
- The SMWC and/or Contractor-designee shall ensure that each person working on the project has completed the waste management training by maintaining a written log to be signed and dated by each trainee upon completion of the training program. Copies of this written log, along with a list of all applicable personnel, shall be provided to City ESD staff for verification during each phase of project activities.

#### **6.1.4 Daily Site Inspections by Contractor(s)**

The project contractor(s) shall conduct daily inspections of the construction site to ensure compliance with the requirements of this WMP and with all other applicable laws and ordinances. Daily inspections shall include verifying the availability and number of dumpsters based on amount of debris being generated, verifying trash and recycled materials dumpsters are correctly labeled, ensuring proper sorting and segregation of materials, and ensuring excess materials are properly salvaged. The project contractor(s) shall report the results of the daily site inspections to the SWMC.

#### **6.1.5 Regular Removal of Waste Materials**

The project contractor(s) shall ensure removal of construction waste materials in sufficient frequency to prevent over-topping of bins. The accumulation and burning of on-site grading/ land-clearing and construction waste materials shall be prohibited.

#### **6.1.6 City Verification**

The Applicant shall ensure a representative of the City's ESD attends pre-construction meetings prior to clearing, grading, and construction to ensure that the following items are verified:

- Material segregation, recycling, and reuse is occurring per the WMP;
- Soil is being transported to an appropriate facility for reuse;
- Grubbed materials are sent to a suitable green waste recycling facility;
- Contract documents have appropriate estimates and constraints to avoid "overbuying" construction materials;
- Contract documents specify methods to achieve five percent post-consumer content goal;
- Contamination levels (i.e., different waste types/non-recyclable materials) do not exceed five percent by weight;
- An appropriate diversion rate (as specified in this WMP) has been included on the deposit form;

- Contract documents specify agreements for each recyclable/reusable material type to be taken to an appropriate recycling/reuse facility, as specified in this WMP; and
- Minimum exterior refuse and recyclable material storage areas have been incorporated into project plans, as a requirement of the City of San Diego Storage Ordinance (Municipal Code Section 142.0801 et. seq.).

## **6.2 CONSTRUCTION WASTE REDUCTION, DIVERSION COMPLIANCE, AND VERIFICATION**

### **6.2.1 Identification, Separation, and Diversion of Recyclable/Reusable Materials**

The Applicant shall ensure that:

- Throughout project activities, waste materials shall be source-separated on site into the appropriate bin based on materials type, according to the categories in this WMP. Materials generated during clearing, grading, and construction that would be source-separated and recycled, if present on-site, are listed below:
  - Mixed C&D (wood, dirt, concrete, drywall, brick, metals, rock, asphalt, tile, cardboard)
  - Metals
  - Concrete/Asphalt
  - Brick/Masonry
  - Wood
  - Drywall
  - Carpet/Carpet padding
  - Clean fill dirt
  - Green waste
- A separate bin for each clean waste material type to be generated during each phase of clearing, grading, and construction activity shall be provided on the site, subject to the following requirements:
  - Containers shall be clearly labeled, with a list of acceptable and unacceptable materials. The list of acceptable materials must be the same as the materials recycled at the receiving material recovery facility or recycling processor.
  - The collection containers for recyclable grading/land-clearing and construction waste shall contain no more than five percent non-recyclable materials, by weight.
  - Regular visual inspections of dumpsters and recycling bins shall be conducted to remove contaminants.

- Recycling areas shall be clearly identified with large signs. Lists of acceptable and unacceptable materials shall be posted on recycling bins and throughout the project site and all recycled material signage shall be visible on at least two sides of haul containers.
- Recycling bins shall be placed in areas that would be readily accessible and would minimize misuse or contamination. The SWMC shall be responsible for these efforts and they shall be reviewed at pre-construction meetings and/or during contractor education meetings, if conducted separately.
- Recyclable and/or reusable waste materials collected in source-separated bins shall be diverted to recycling/reuse facilities as designated in Tables 4 through 6 of this WMP, or to another facility listed on the City's Certified Construction & Demolition Recycling Facility Directory, should the designated facilities not be available.

### **6.2.2 Source Reduction Measures**

Project contractors and subcontractors, in cooperation with the project's SWMC and ESD staff, as applicable, shall coordinate to minimize the over-purchasing of construction materials to lower the amount of materials taken to recycling and disposal facilities. The project shall minimize over-purchasing through purchase of pre-cut materials, whenever feasible. The following steps shall be undertaken:

- Detailed material estimates shall be used to reduce risk of unplanned and potentially wasteful material cuts.
- Contractor and subcontractor material purchasing agreements shall include a waste reduction provision requesting that: materials and equipment be delivered in packaging made of recyclable material; vendors reduce the amount of packaging; packaging be taken back by vendors for reuse or recycling; and vendors take back all unused product. Contracts containing this language shall be made available to ESD staff during ESD site visits for inspection.
- Post-consumer content products shall be employed in the design and construction of the new facilities with the goal of achieving five percent post-consumer content materials. Efforts to use post-consumer content may include using products manufactured with post-consumer content materials (i.e., products that were bought, used, and recycled by consumers), such as natural textiles, aggregate, or concrete. Receipts demonstrating post-consumer content shall be provided to ESD staff at or prior to the pre-construction meetings.
- Prior to submittal, final project plans shall indicate the anticipated source and quantity of materials to be reused on site, and the source, quantity, and percentage of post-consumer content waste products anticipated to be utilized for project construction.
- Contractors shall include the anticipated source and quantity of post-consumer content products proposed for reuse or purchase in their project bid.
- Final project plans inclusive of the information above shall be provided to ESD for verification.

## **6.3 OPERATIONAL WASTE MANAGEMENT AND DIVERSION MEASURES**

### **6.3.1 Contracts and Agreements**

The Applicant shall undertake and/or shall specify in contract language and/or sales/lease agreements with any tenant, operator, and/or future owner, a list of recycling and diversion requirements with which the Applicant or future tenants, operators, and/or owners shall be obligated to comply, including, but not limited to, the following:

- Recycling areas shall be clearly identified with large signs.
- Lists of acceptable and unacceptable materials shall be posted on recycling bins.
- All recycled material signage shall be visible on at least two sides of recycling containers.
- Recycling bins shall be placed in areas that would be readily accessible and would minimize misuse or contamination.
- Prepare and distribute recycling educational materials for inspection by ESD prior to certificate of occupancy.
- After materials are approved, distribute to all project site owners/occupants.
- Green waste generated by ongoing landscaping and landscape maintenance activities from private yards and/or HOA-maintained areas shall be source-separated by the landscaping contractor and diverted to the Miramar Greenery or composting/mulching facility.
- Food waste bins shall be placed in areas that would be readily accessible to homeowners and would minimize misuse or contamination
- Food waste would be collected by a contractor and diverted to an on-site composting/mulching area.
- The on-site composting area shall be no larger than 500 SF in area, and shall be maintained by a designated contractor.

Prior to issuance of any certificate of occupancy/tentative certificate of occupancy, the Applicant shall invite a representative of the City ESD to:

- Inspect and approve storage areas that have been provided consistent with the City's Storage Ordinance;
- Ensure that a hauler has been retained to provide recyclable materials collection, and, if applicable, landscape waste collection; and
- Inspect and approve education materials for building tenants/owners that are required pursuant to the City's Recycling Ordinance.

For specialized product purchasing (e.g., with recycled content) to be used during occupancy, the Applicant shall provide for inspection by ESD the documentation that would be used to carry out this requirement.

## 7.0 CONCLUSION

As discussed under Regulatory Framework, a project may result in a significant direct impact under the City CEQA Significance Thresholds if it generates more than 1,500 tons of solid waste materials during construction and demolition. Projects that include the construction, demolition, and/or renovation of 40,000 SF or more of building space or generate approximately 60 tons of waste or more are considered to have potentially significant cumulative impacts on solid waste services. Further, AB 341 requires the diversion of 75 percent of solid waste and mandatory provision of recycling collection service during occupancy.

### 7.1 SUMMARY OF WASTE GENERATION AND DIVERSION

During the pre-construction phase, the project would produce an estimated 23,083 tons of green waste, asphalt/concrete, and other C&D waste, and divert 22,588 tons, of these materials from the landfill, as identified in Table 4. Approximately 495 tons of solid waste material generated during pre-construction is anticipated to be disposed of as non-recyclable/non-reusable waste at Miramar Landfill, for an overall pre-construction diversion rate of 98 percent.

During construction, the project over both phases would produce an estimated 1,226 tons of solid waste (metal, concrete, concrete/steel, asphalt, brick/masonry, wood, drywall, carpet/carpet padding, mixed debris, and trash), and divert approximately 922 tons of solid waste materials from the landfill, as identified in Table 5. The diverted material would consist of clean, source-separated (segregated) recyclable and/or reusable material, as well as mixed debris, to be deposited at the recycling/reuse facilities identified in the City's Certified Construction & Demolition Recycling Facility Directory (Appendix B). Approximately 304 tons of solid waste material generated during construction is anticipated to be disposed of as non-recyclable/non-reusable waste at Miramar Landfill, for an overall diversion rate during construction of approximately 75 percent.

With the combined pre-construction and construction phases, the project would produce 24,308 tons of solid waste and would divert 23,537 tons. This would be an overall diversion rate during pre-construction and construction of 97 percent.

During occupancy, it is been estimated that the project over both phases would generate approximately 696 tons of waste per year and would divert approximately 374 tons per year to recycling/reuse facilities, resulting in an estimated 54 percent diversion of waste from the landfill, as identified in Table 7. These materials would consist of clean, recyclable materials, gathered in on-site recycling bins, as well as compostable materials from both households and HOA-maintained landscaping areas. Approximately 322 tons per year, or 46 percent of occupancy material generated, are estimated to be disposed of as non-recyclable/non-reusable waste at Miramar Landfill.

## 7.2 COMPLIANCE WITH STATE REGULATIONS

Based on the quantified waste generation and diversion rates discussed above, the project would exceed the 75 percent solid waste diversion rate for waste produced during each of the construction phases. It is anticipated that the project would fail to meet the 75 percent waste reduction target annually once the buildings are occupied. This shortcoming is overcome by the following factors:

- The segregation proposed during pre-construction and construction would achieve an overall 97 percent diversion rate, exceeding the 75 percent target.
- The project would incorporate mandatory waste reduction, recycling, and diversion measures as identified in Sections 6.1 and 6.2 of this WMP during pre-construction and construction, to further reduce solid waste impacts.
- Ongoing diversion of green waste (landscaping debris) to Miramar Greenery would avoid unnecessary contributions to Miramar Landfill.

In addition to the measures implemented during pre-construction and construction activities, the Applicant would commit to the recycling requirements identified in Section 6.3 of this WMP, to further reduce solid waste impacts during occupancy.

## 7.3 COMPLIANCE WITH CITY REGULATIONS

Based on the quantified waste generation and diversion rates discussed above, the project would result in a significant impact regarding the City's CEQA Significance Determination Threshold for direct impacts to solid waste facilities during demolition and construction. The project would be above the City's threshold (generation of more than 1,500 tons of solid waste materials) for direct impacts to solid waste facilities during demolition and construction.

Regarding cumulative impacts, the project proposes greater than 40,000 SF of building space, and the project would be above the City's CEQA Significance Determination Threshold of 60 tons for disposal of waste during C&D. During occupancy, the project would achieve an average 54 percent diversion of waste via source-separated recycling and would dispose of approximately 322 tons of waste per year once the buildings are occupied. This would exceed the City's CEQA Significance Determination Threshold for cumulative impacts to solid waste services.

As mitigation, the City requires implementation of this document, a project-specific WMP, to identify measures for waste reduction. These waste exceedances would be overcome by the waste reduction achieved during construction through measures described in Sections 6.1 and 6.2 of this WMP. Through the quantified waste generation and diversion rates discussed in this document, the project would exceed the 75 percent solid waste diversion rate for waste produced during pre-construction and construction phases by achieving an overall 97 percent diversion rate. In addition, the measures specified for operation in Section 6.3 of this WMP would provide adequate waste management. Regarding trash and recycling storage space during operation, the project would provide at least 2,131 SF of trash and recycling storage space, per the City Storage Ordinance (Table 1). The project would comply with the City Recycling Ordinance by providing adequate space, bins, and educational materials for recycling during occupancy.

Through compliance with waste diversion measures included in this WMP, plus implementation of sustainability and efficiency features including the on-site composting of food waste and HOA-maintained area plant trimmings, the project's direct solid waste impact would be less than significant. The project's contribution to a cumulative solid waste generation also would be reduced to a level that is less than cumulatively considerable.

## 8.0 LIST OF PREPARERS

Jason Runyan	Environmental Planner
Tammy Ching	Project Manager
Lisa Capper	Assistant Project Manager

## 9.0 REFERENCES

- California Department of Resources Recycling and Recovery (CalRecycle). 2002. Military Base Closure Handbook – A Guide to Construction and Demolition Materials Recovery. As amended, January (prepared under former agency name “California Integrated Waste Management Board”).
- City of San Diego (City). 2019. 2019 Certified Construction & Demolition Recycling Facility Directory. Environmental Services Department. April. [https://www.sandiego.gov/sites/default/files/2018\\_certified\\_construction\\_demolition\\_recycling\\_facility\\_directory.pdf](https://www.sandiego.gov/sites/default/files/2018_certified_construction_demolition_recycling_facility_directory.pdf)
- 2016a. California Environmental Quality Act Significance Determination Thresholds. Development Services Department. Available at: [https://www.sandiego.gov/sites/default/files/july\\_2016\\_ceqa\\_thresholds\\_final\\_0.pdf](https://www.sandiego.gov/sites/default/files/july_2016_ceqa_thresholds_final_0.pdf). July, as amended.
- 2016b. Construction and Demolition (C&D) Debris Recycling Fact Sheet. June 29. Available at: [https://www.sandiego.gov/sites/default/files/legacy/development-services/pdf/industry/infobulletin/cd\\_fact\\_sheet\\_6\\_29\\_16.pdf](https://www.sandiego.gov/sites/default/files/legacy/development-services/pdf/industry/infobulletin/cd_fact_sheet_6_29_16.pdf).
- 2016c. City of San Diego Construction & Demolition C&D Debris Conversion Rate Table. June 6.
2015. City of San Diego Zero Waste Plan. July. Available at: <https://www.sandiego.gov/sites/default/files/legacy/mayor/pdf/2015/ZeroWastePlan.pdf>.
2014. City of San Diego Waste Characterization Study. January. Available at: <https://www.sandiego.gov/environmental-services/recycling#Waste%20Characterization>
2013. California Environmental Quality Act: Guidelines for a Waste Management Plan. June. Available at: <http://www.sandiego.gov/environmental-services/pdf/recycling/wmpguidelines.pdf>.
2012. City of San Diego Waste Generation Factors – Occupancy Phase. October 1.
2008. Construction and Demolition Debris Deposit Ordinance (Municipal Code Chapter 6, Article 6, Division 6). January 1.
2007. Recycling Ordinance (Municipal Code Chapter 6, Article 6, Division 7). November.
1997. Refuse and Recyclable Materials Storage Regulations (Municipal Code Chapter 14, Article 2 Division 8). December 9.
- Federal Emergency Management Agency (FEMA). 2010. Debris Estimating Field Guide (FEMA 329). Federal Emergency Management Agency, U.S. Department of Homeland Security. September. Available at: [http://www.fema.gov/pdf/government/grant/pa/fema\\_329\\_debris\\_estimating.pdf](http://www.fema.gov/pdf/government/grant/pa/fema_329_debris_estimating.pdf).
- HELIX Construction Group. 2018. Personal communication with Construction Group Director of Operations Michael Maryniewski. December 6.

Hunsaker & Associates. 2019. Vesting Tentative Map/Site Development Drawings. July 15.

IS Architecture. 2017. The Junipers Project: Former Carmel Highlands Golf Course Built Environment Assessment. November 13.

Logard Asbestos Cement. 2005. Pipe Weight With or Without Water. Available at:  
<http://www.logard.com/en/Supports/weight.aspx>. Accessed on January 13, 2018.

State of California (State). 1989. California Integrated Waste Management Act of 1989. State of California Assembly Bill 939.

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## Appendix A

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### Certified Construction & Demolition Recycling Facility Directory



## 2019 Certified Construction & Demolition (C&D) Recycling Facility Directory

These facilities are certified by the City of San Diego to accept materials listed in each category. Hazardous materials are not accepted. The diversion rate for these materials shall be considered 100 percent, except mixed C&D debris, which update quarterly. The City is not responsible for changes in facility information. Please call ahead to confirm details such as accepted materials, days and hours of operation, limitations on vehicle types, and cost. For more information visit: [www.recyclingworks.com](http://www.recyclingworks.com).

<p><b><i>*Transfer Stations offer both recycling and trash disposal services. In order to receive recycling credit, you must:</i></b></p> <p><i>-Notify the weighmaster your load is subject to the City of San Diego C&amp;D Ordinance.</i></p> <p><i>-If your load is mixed Construction and Demolition (C&amp;D) debris, ensure it is coded correctly on the receipt. Tickets coded as "MSW, trash or refuse" will receive 0% credit.</i></p> <p><i>-Ensure the project address and Permit number are added to the receipt.</i></p> <p><b><i>Please note: Miramar Landfill and other landfills DO NOT recycle mixed C&amp;D debris.</i></b></p>	Mixed C&D Debris	Asphalt/Concrete	Brick/Block/Rock	Building Materials for Reuse	Cardboard	Carpet	Carpet Padding	Ceiling Tile	Ceramic Tile/Porcelain	Clean Fill Dirt	Clean Wood/Green Waste	Drywall	Industrial Plastics	Lamps/Light Fixtures	Metal	Mixed Inerts	Styrofoam Blocks	Trash
<p><b>*EDCO Recovery &amp; Transfer*</b></p> <p>3660 Dalbergia St, San Diego, CA 92113</p> <p>619-234-7774   <a href="http://www.edcodisposal.com">www.edcodisposal.com</a></p>	68%											•						•
<p><b>*EDCO Station Transfer Station &amp; Buy Back Center*</b></p> <p>8184 Commercial St, La Mesa, CA 91942</p> <p>619-466-3355   <a href="http://www.edcodisposal.com">www.edcodisposal.com</a></p>	68%				•							•			•			•
<p><b>*EDCO CDI Recycling &amp; Buy Back Center*</b></p> <p>224 S. Las Posas Rd, San Marcos, CA 92078</p> <p>760-744-2700   <a href="http://www.edcodisposal.com">www.edcodisposal.com</a></p>	88%				•										•			•
<p><b>Escondido Resource Recovery</b></p> <p>1044 W. Washington Ave, Escondido</p> <p>760-745-3203   <a href="http://www.edcodisposal.com">www.edcodisposal.com</a></p>	68%																	
<p><b>*Fallbrook Transfer Station &amp; Buy Back Center*</b></p> <p>550 W. Aviation Rd, Fallbrook, CA 92028</p> <p>760-728-6114   <a href="http://www.edcodisposal.com">www.edcodisposal.com</a></p>	68%				•										•			•
<p><b>Otay C&amp;D/Inert Debris Processing Facility</b></p> <p>1700 Maxwell Rd, Chula Vista, CA 91913</p> <p>619-421-3773   <a href="http://www.sd.disposal.com">www.sd.disposal.com</a></p>	78%																	
<p><b>*Ramona Transfer Station &amp; Buy Back Center*</b></p> <p>324 Maple St, Ramona, CA 92065</p> <p>760-789-0516   <a href="http://www.edcodisposal.com">www.edcodisposal.com</a></p>	68%				•										•			•
<p><b>SANCO Resource Recovery &amp; Buy Back Center</b></p> <p>6750 Federal Blvd, Lemon Grove, CA 91945</p> <p>619-287-5696   <a href="http://www.edcodisposal.com">www.edcodisposal.com</a></p>	68%				•										•			
<p><b>Allan Company</b></p> <p>6733 Consolidated Wy, San Diego, CA 92121</p> <p>858-578-9300   <a href="http://www.allancompany.com/facilities">www.allancompany.com/facilities</a></p>					•										•			
<p><b>Allan Company Miramar Recycling</b></p> <p>5165 Convoy St, San Diego, CA 92111</p> <p>858-268-8971   <a href="http://www.allancompany.com/facilities">www.allancompany.com/facilities</a></p>					•										•			
<p><b>AMS</b></p> <p>8515 Miramar Pl, San Diego, CA 92121</p> <p>858-541-1977   <a href="http://www.a-m-s.com">www.a-m-s.com</a></p>								•										

<p><b><i>*Transfer Stations offer both recycling and trash disposal services. In order to receive recycling credit, you must:</i></b></p> <p>-Notify the weighmaster your load is subject to the City of San Diego C&amp;D Ordinance.</p> <p>-If your load is mixed Construction and Demolition (C&amp;D) debris, ensure it is coded correctly on the receipt. Tickets coded as <b><i>"MSW, trash or refuse"</i></b> will receive 0% credit.</p> <p>-Ensure the project address and Permit number are added to the receipt.</p> <p><b><i>Please note: Miramar Landfill and other landfills DO NOT recycle mixed C&amp;D debris.</i></b></p>	Mixed C&D Debris	Asphalt/Concrete	Brick/Block/Rock	Building Materials for Reuse	Cardboard	Carpet	Carpet Padding	Ceiling Tile	Ceramic Tile/Porcelain	Clean Fill Dirt	Clean Wood/Green Waste	Drywall	Industrial Plastics	Lamps/Light Fixtures	Metal	Mixed Inerts	Styrofoam Blocks	Trash
<p><b>Armstrong World Industries, Inc.</b> 300 S. Myrida St, Pensacola, FL 32505 877-276-7876 (Press 1, Then 8) <a href="http://www.armstrong.com/commceilingsna">www.armstrong.com/commceilingsna</a></p>								•										
<p><b>Cactus Recycling</b> 2225 Avenida Costa Este Suite 1600, San Diego, CA 92154 619-446-7093   <a href="http://www.cactusrecycling.com">www.cactusrecycling.com</a></p>					•								•		•		•	
<p><b>DFS Flooring</b> 10178 Willow Creek Rd, San Diego, CA 92131 858-630-5200   <a href="http://www.dfsflooring.com">www.dfsflooring.com</a></p>						•	•											
<p><b>Duco Metals</b> 220 Bingham Dr Suite 100, San Marcos, CA 92069 760-747-6330   <a href="http://www.ducometals.com">www.ducometals.com</a></p>															•			
<p><b>Enniss Incorporated</b> 12421 Vigilante Rd, Lakeside, CA 92040 619-443-9024   <a href="http://www.ennissinc.com">www.ennissinc.com</a></p>		•	•						•	•								
<p><b>Escondido Sand and Gravel</b> 500 N. Tulip St, Escondido, CA 92025 760-432-4690   <a href="http://www.weirasphalt.com">www.weirasphalt.com</a></p>		•																
<p><b>Habitat for Humanity ReStore</b> 8101 Mercury Ct, San Diego, CA 92108 619-516-5267   <a href="http://www.sandiegohabitat.org">www.sandiegohabitat.org</a></p>				•														
<p><b>Hanson Aggregates West – Lakeside Plant</b> 12560 Highway 67, Lakeside, CA 92040 858-547-2141</p>		•																
<p><b>Hanson Aggregates West – Miramar</b> 9229 Harris Plant Rd, San Diego, CA 92126 858-974-3849</p>		•								•								
<p><b>HVAC Exchange</b> 2675 Faivre St, Chula Vista, CA 91911 619-423-1564   <a href="http://www.hvacx.com">www.hvacx.com</a></p>															•			
<p><b>IMS Recycling Services</b> 2740 Boston Ave, San Diego, CA 92113 619-423-1564   <a href="http://www.imsrecyclingservices.com">www.imsrecyclingservices.com</a></p>					•								•					
<p><b>Inland Pacific Resource Recovery</b> 12650 Slaughterhouse Canyon Rd, Lakeside, CA 92040 619-390-1418   <a href="http://www.iprrgreen.com">www.iprrgreen.com</a></p>											•							
<p><b>Los Angeles Fiber Company</b> 4920 S. Boyle Ave, Vernon, CA 90058 323-589-5637   <a href="http://www.lafiber.com">www.lafiber.com</a></p>						•	•											

<p><b><i>*Transfer Stations offer both recycling and trash disposal services. In order to receive recycling credit, you must:</i></b></p> <p>-Notify the weighmaster your load is subject to the City of San Diego C&amp;D Ordinance.</p> <p>-If your load is mixed Construction and Demolition (C&amp;D) debris, ensure it is coded correctly on the receipt. Tickets coded as <b><i>"MSW, trash or refuse"</i></b> will receive 0% credit.</p> <p>-Ensure the project address and Permit number are added to the receipt.</p> <p><b><i>Please note: Miramar Landfill and other landfills DO NOT recycle mixed C&amp;D debris.</i></b></p>	Mixed C&D Debris	Asphalt/Concrete	Brick/Block/Rock	Building Materials for Reuse	Cardboard	Carpet	Carpet Padding	Ceiling Tile	Ceramic Tile/Porcelain	Clean Fill Dirt	Clean Wood/Green Waste	Drywall	Industrial Plastics	Lamps/Light Fixtures	Metal	Mixed Inerts	Styrofoam Blocks	Trash
<p><b>Miramar Greenery, City of San Diego</b> 5180 Convo St, San Diego, CA 92111 858-694-7000   <a href="http://www.miramargreenery.com">www.miramargreenery.com</a></p>											•							
<p><b>Moody's</b> 3210 Oceanside Blvd, Oceanside, CA 92056 760-433-3316   <a href="http://www.moodyselfcorazonrecycling.com">www.moodyselfcorazonrecycling.com</a></p>		•								•						•		
<p><b>Planet Recycling</b> 187 Mace St, Chula Vista, CA 91911 888-258-7755   <a href="http://www.planetrecyclingphoenix.com">www.planetrecyclingphoenix.com</a></p>						•												
<p><b>Reclaimed Aggregates Chula Vista</b> 855 Energy Way, Chula Vista, CA 91913 619-656-1836</p>		•														•		
<p><b>Robertson's Ready Mix</b> 2094 Willow Glen Dr, El Cajon, CA 92019 619-593-1856   <a href="http://www.rrmca.com">www.rrmca.com</a></p>		•								•						•		
<p><b>RAMCO</b> 8354 Nelson Way, Escondido, CA 92026 760-205-1797   <a href="http://www.ramco.us.com">www.ramco.us.com</a></p>		•																
<p><b>SA Recycling</b> 3055 Commercial St, San Diego, CA 92113 619-238-6740   <a href="http://www.sarecycling.com">www.sarecycling.com</a></p>															•			
<p><b>SA Recycling</b> 1211 S. 32<sup>nd</sup> St, San Diego, CA 92113 619-234-6691   <a href="http://www.sarecycling.com">www.sarecycling.com</a></p>															•			
<p><b>Universal Waste Disposal</b> 8051 Wing Avenue, El Cajon, CA 92020 619-438-1093   <a href="http://www.universalwastedisposal.com">www.universalwastedisposal.com</a></p>														•				
<p><b>Vulcan Carol Canyon Landfill and Recycle Site</b> 10051 Black Mountain Rd, San Diego, CA 92126 858-530-9465   <a href="http://www.vulcanmaterials.com">www.vulcanmaterials.com</a></p>		•	•							•						•		
<p><b>Vulcan Materials Company</b> 2275 Hard Rock Rd, Chula Vista, CA 91913 858-530-9472   <a href="http://www.vulcanmaterials.com">www.vulcanmaterials.com</a></p>		•																
<p><b>Vulcan Otay Asphalt Recycle Center</b> 7522 Paseo de la Fuente, San Diego, CA 92154 619-571-1945   <a href="http://www.vulcanmaterials.com">www.vulcanmaterials.com</a></p>		•																

## Appendix B

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### City of San Diego C&D Debris Conversion Rate Table



# CITY OF SAN DIEGO

## Construction & Demolition (C&D) Debris

### Conversion Rate Table

This worksheet lists materials typically generated from a construction or demolition project and provides formulas for converting common units (i.e. cubic yards, square feet, and board feet) to tons. It is a tool that should be used for preparing your Waste Management Form - Part I, which requires that quantities be provided in tons.

**Note: Weigh receipts are required for your refund request.**

**Step 1:** Enter the estimated quantity for each applicable material in Column I, based on units

**Step 2:** Multiply by Tons/Unit figure listed in Column II. Enter the result for each material in Column III.

If using Excel version, column III will automatically calculate tons.

**Step 3:** Enter quantities for each separated material from Column III on this worksheet into the corresponding section of your Waste Management Form - Part I.

Category	Material	Column I		Column II		Column III
		Volume	Unit	Tons/Unit		Tons
Asphalt/Concrete	Asphalt (broken)		cy	x	0.70	=
	Concrete (broken)		cy	x	1.20	=
	Concrete (solid slab)		cy	x	1.30	=
Brick/Masonry/Tile	Brick (broken)		cy	x	0.70	=
	Brick (whole, palletized)		cy	x	1.51	=
	Masonry Brick (broken)		cy	x	0.60	=
	Tile		sq ft	x	0.00175	=
Building Materials (doors, windows, cabinets, etc.)			cy	x	0.15	=
Cardboard (flat)			cy	x	0.05	=
Carpet	By square foot		sq ft	x	0.0005	=
	By cubic yard		cy	x	0.30	=
Carpet Padding/Foam			sq ft	x	0.000125	=
Ceiling Tiles	Whole (palletized)		sq ft	x	0.0003	=
	Loose		cy	x	0.09	=
Drywall (new or used)	1/2" (by square foot)		sq ft	x	0.0008	=
	5/8" (by square foot)		sq ft	x	0.00105	=
	Demo/used (by cubic yd)		cy	x	0.25	=
Earth	Loose/Dry		cy	x	1.20	=
	Excavated/Wet		cy	x	1.30	=
	Sand (loose)		cy	x	1.20	=
Landscape Debris (brush, trees, etc)			cy	x	0.15	=
Mixed Debris	Construction		cy	x	0.18	=
	Demolition		cy	x	1.19	=
Scrap metal			cy	x	0.51	=
Shingles, asphalt			cy	x	0.22	=
Stone (crushed)			cy	x	2.35	=
Unpainted Wood & Pallets	By board foot		bd ft	x	0.001375	=
	By cubic yard		cy	x	0.15	=
Garbage/Trash			cy	x	0.18	=
Other (estimated weight)			cy	x	estimate	=
			cy	x	estimate	=
			cy	x	estimate	=
Total All						

## Appendix C

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### Waste Generation Factors – Occupancy Phase

## Waste Generation Factors – Occupancy Phase

The following factors are used by the City of San Diego Environmental Services Department to estimate the expected waste generation in a new residential or commercial development.

### **Residential Uses**

Residential Unit = 1.6 tons/year/unit

Multi-family Unit = 1.2 tons/year/unit

**Example:** To calculate the amount of waste that will be generated from a project with 100 new homes, multiply the number of homes by the generation factor.

100 single family homes x 1.6 = 160 tons/year

100 multi-family units x 1.2 = 120 tons/year

### **Commercial/Industrial Uses**

General Retail	0.0028
Restaurants & Bars	0.0122
Hotels/Motels	0.0045
Food Stores	0.0073
Auto/Service/Repair	0.0051
Medical Offices	0.0033
Hospitals	0.0055
Office	0.0017
Transp/Utilities	0.0085
Manufacturing	0.0059
Education	0.0013
Unclassified Services	0.0042

**Example:** To calculate the amount of waste that could be generated from a new building with 10,000 square feet for offices and 10,000 square feet for manufacturing, multiply the square footage for each use by the generation factor.

10,000 square feet x 0.0017 = 17 tons/year

10,000 square feet x 0.0059 = 59 tons per year

Total estimated waste generation for building = 76 tons/year

## Appendix D

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City of San Diego Waste  
Characterization Study

## Franchise-collected Multifamily Substream

The field crew hand sorted 93 samples from the City's franchise-collected multifamily substream. The tonnage associated with this substream is shown in Table 21.

Table 21. Included Substream and Tons,  
Franchise-collected Multifamily

Included Substreams	Tons
Franchise Collected Multifamily	250,661
<b>Total Disposal in Substream</b>	<b>250,661</b>

### Key Findings

The key recoverability and material class findings for the multifamily substream are shown in Figure 22 and Figure 23, respectively. Approximately 79% of the multifamily substream is recoverable (42% is Compostable/Potentially Compostable, 21% is Recyclable, and 16% is Potentially Recoverable). **Organics** (43%) and **Paper** (22%) are the two most prevalent material classes.

Figure 22. Composition by Recoverability Group,  
Franchise-collected Multifamily

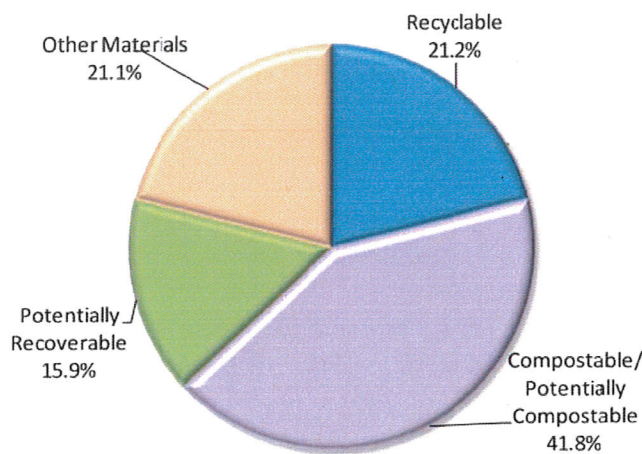
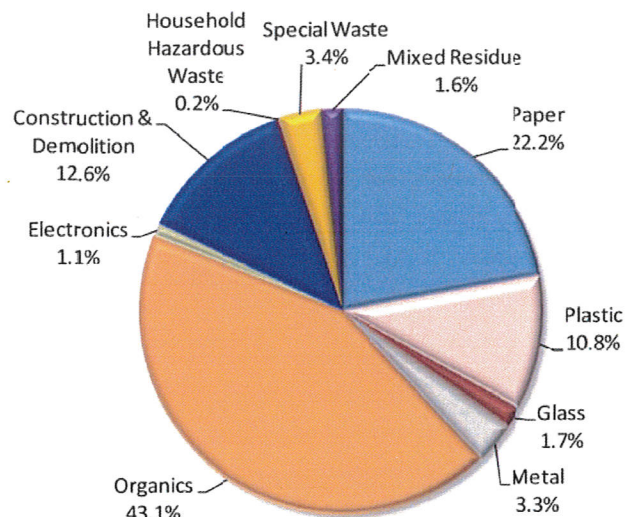


Figure 23. Composition by Material Class,  
Franchise-collected Multifamily



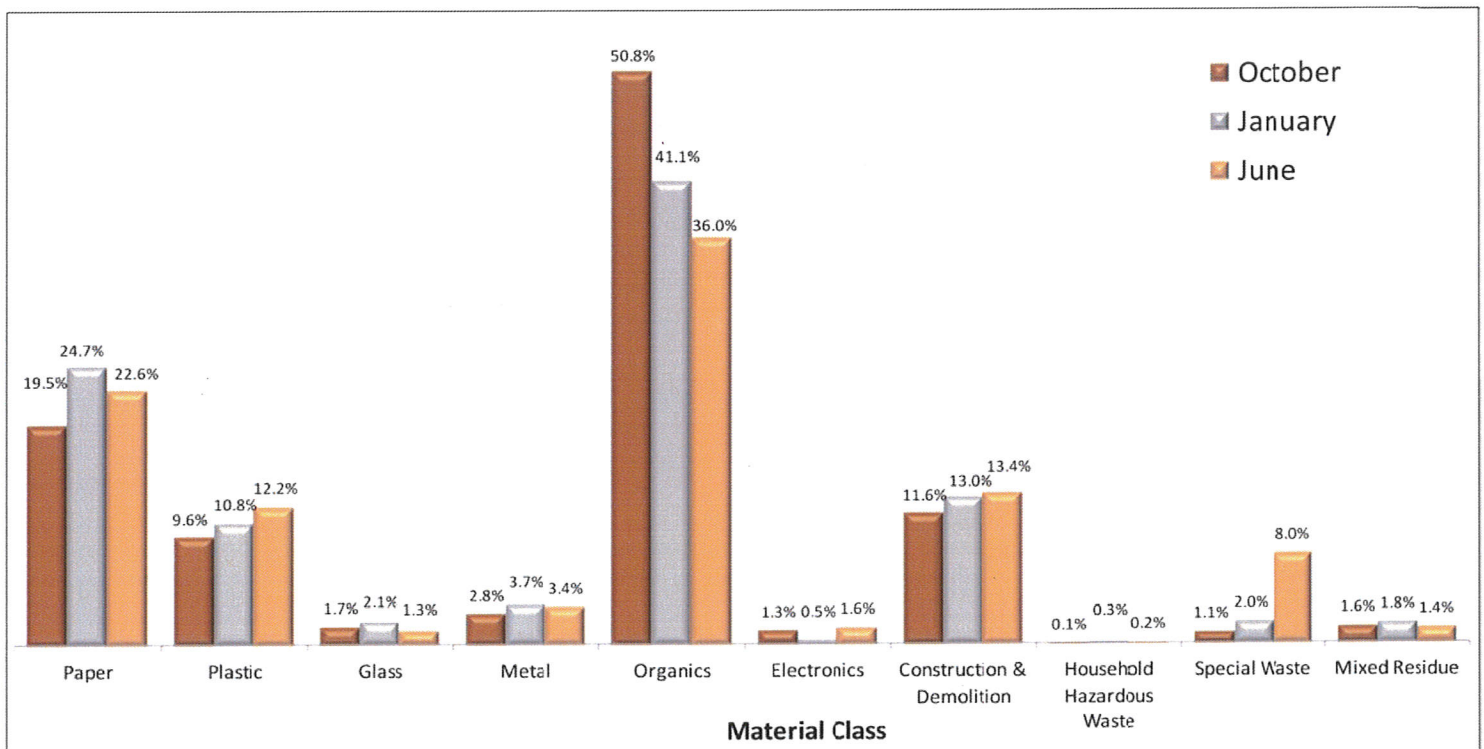
The ten most prevalent disposed materials can be found in Table 22. *Food* (20%), *leaves and grass* (7%), and *compostable/soiled paper* (7%) are the three most prevalent material types; together they represent approximately 34% of franchise-collected multifamily substream.

Table 22. Ten Most Prevalent Disposed Material Types,  
Franchise-collected Multifamily, 2012

Material Type	Estimated Percent	Cumulative Percent	Estimated Tons
Food	20.1%	20.1%	50,450
Leaves and Grass	7.0%	27.1%	17,539
Compostable/Soiled Paper	6.9%	34.0%	17,266
Uncoated Corrugated Cardboard	6.2%	40.2%	15,520
Textiles	4.1%	44.3%	10,319
Diapers	3.9%	48.2%	9,753
Mixed Waste Paper	3.8%	52.0%	9,553
Other Wood Waste	3.6%	55.7%	9,095
Prunings and Trimmings	3.1%	58.7%	7,712
Dirty Film Plastic	3.1%	61.8%	7,704
All other material types	38.2%		95,751
<b>Total</b>	<b>100.0%</b>		<b>250,661</b>

As illustrated in Figure 24, the prevalence of the **Organics** material class within the franchise-collected multifamily substream declined from October (51%) to June (36%).

Figure 24. Seasonal Composition by Material Class, Franchise-collected Multifamily, 2012



The detailed composition of the multifamily substream is shown in Table 23.

Table 23. Detailed Waste Composition, Franchise-collected Multifamily, 2012

Material	Estimated Percent	+ / -	Estimated Tons	Material	Estimated Percent	+ / -	Estimated Tons
<b>Paper</b>	<b>22.2%</b>		<b>55,761</b>	<b>Electronics</b>	<b>1.1%</b>		<b>2,728</b>
Uncoated Corrugated Cardboard	6.2%	1.1%	15,520	Brown Goods	0.5%	0.5%	1,376
Waxed Corrugated Cardboard	0.2%	0.1%	517	CRT	0.2%	0.3%	597
Paper Bags	0.5%	0.2%	1,270	Computer-Related Electronics	0.0%	0.0%	32
Newspaper	1.3%	0.3%	3,344	Other Consumer Electronics	0.3%	0.2%	724
White Ledger Paper	1.0%	0.3%	2,594	Video Display Devices (non-CRT devices)	0.0%	0.0%	0
Mixed Waste Paper	3.8%	0.4%	9,553				
Magazines	0.7%	0.2%	1,661	<b>Construction &amp; Demolition</b>	<b>12.6%</b>		<b>31,641</b>
Phone Books and Directories	0.1%	0.1%	254	Concrete	1.4%	1.0%	3,611
Compostable/Soiled Paper	6.9%	0.8%	17,266	Asphalt Paving	0.0%	0.0%	0
Aseptic/Milk Containers	0.2%	0.0%	409	Asphalt Composition Shingles	0.0%	0.0%	0
Remainder/Composite Paper	1.3%	0.4%	3,373	Roofing Tar Paper/Felt	0.0%	0.0%	0
				Roofing Mastic	0.0%	0.0%	0
<b>Plastic</b>	<b>10.8%</b>		<b>27,062</b>	Built-Up Roofing	0.0%	0.0%	0
CRV HDPE Containers	0.0%	0.0%	90	Other Asphalt Roofing Material	0.0%	0.1%	107
Non-CRV HDPE Containers	0.8%	0.2%	1,963	Clean Dimensional Lumber	0.6%	0.4%	1,592
CRV PETE Containers	0.3%	0.0%	766	Clean Engineered Wood	0.4%	0.3%	989
Non-CRV PETE Containers	0.4%	0.1%	900	Clean Pallets and Crates	0.6%	0.6%	1,584
Compostable Biodegradable Plastic Containers	0.0%	0.0%	23	Other Wood Waste	3.6%	1.2%	9,095
Miscellaneous Plastic Containers	0.8%	0.1%	1,901	Clean Gypsum Board	0.3%	0.3%	738
Plastic Grocery and Merchandise Bags	0.4%	0.1%	941	Painted/Demolition Gypsum Board	0.4%	0.4%	1,048
Clean Film Plastic	0.4%	0.2%	1,093	Carpet & Carpet Padding	2.5%	1.4%	6,299
Dirty Film Plastic	3.1%	0.4%	7,704	Rock, Soil and Fines	0.5%	0.2%	1,134
Durable Plastic Items	2.8%	0.7%	7,091	Contaminated Soil, Street Sweepings, Drain Cleaning	0.3%	0.4%	641
Expanded Polystyrene	0.6%	0.1%	1,383	Remainder/Composite C&D	1.9%	0.9%	4,802
Remainder/Composite Plastic	1.3%	0.5%	3,206				
				<b>Household Hazardous Waste</b>	<b>0.2%</b>		<b>428</b>
<b>Glass</b>	<b>1.7%</b>		<b>4,252</b>	Oil-Based Paint	0.0%	0.0%	0
CRV Clear Glass Bottles	0.3%	0.1%	658	Water-Based Paint	0.0%	0.0%	24
Non-CRV Clear Glass Bottles and Containers	0.5%	0.1%	1,373	Vehicle and Equipment Fluids	0.0%	0.0%	0
CRV Brown Glass Bottles	0.3%	0.1%	734	Used Oil	0.0%	0.0%	0
Non-CRV Brown Glass Bottles and Containers	0.0%	0.0%	109	Lead-Acid Batteries	0.0%	0.0%	0
CRV Other Colored Glass Bottles	0.1%	0.0%	211	Household Batteries	0.0%	0.0%	35
Non-CRV other Colored Glass Bottles and Containers	0.3%	0.1%	665	Sharps	0.0%	0.0%	2
Flat Glass	0.0%	0.0%	38	Pharmaceuticals	0.0%	0.0%	37
Remainder/Composite Glass	0.2%	0.1%	466	CFL, Fluorescent Tube and Other Mercury-Containing	0.0%	0.0%	3
				Remainder/Composite Household Hazardous	0.1%	0.1%	328
<b>Metal</b>	<b>3.3%</b>		<b>8,211</b>				
Tin/Steel Cans	0.6%	0.1%	1,493	<b>Special Waste</b>	<b>3.4%</b>		<b>8,598</b>
Major Appliances	0.0%	0.0%	67	Ash	0.0%	0.0%	0
Other Ferrous Metal	1.0%	0.3%	2,427	Sewage Solids	0.0%	0.0%	0
CRV Aluminum & Tin Cans	0.2%	0.0%	386	Industrial Sludge	0.0%	0.0%	0
Non-CRV Aluminum Cans	0.1%	0.1%	145	Treated Medical Waste	0.0%	0.0%	29
Used Oil Filters	0.0%	0.0%	0	Bulky Items	2.7%	1.1%	6,656
Other Non-Ferrous Metal	0.4%	0.2%	1,021	Tire	0.7%	0.5%	1,706
Remainder/Composite Metal	1.1%	0.4%	2,673	Remainder/Composite Special Waste	0.1%	0.1%	207
<b>Organics</b>	<b>43.1%</b>		<b>107,924</b>	<b>Mixed Residue</b>	<b>1.6%</b>		<b>4,055</b>
Food	20.1%	2.2%	50,450	Mixed Residue	1.6%	0.5%	4,055
Palm, Succulent, Coral Tree	2.7%	0.9%	6,891				
Leaves and Grass	7.0%	2.0%	17,539	<b>Total</b>	<b>100.0%</b>		<b>250,661</b>
Prunings and Trimmings	3.1%	1.3%	7,712	Curbside Residential Recycling Processing Residuals			0
Branches and Stumps	0.4%	0.4%	1,121	C&D Processing Residuals			0
Agricultural Crop Residues	0.0%	0.0%	0				
Grass Sod	0.0%	0.0%	3	<b>Total Including Residuals</b>			<b>250,661</b>
Manures	0.0%	0.1%	104				
Diapers	3.9%	0.9%	9,753	<b>Sample Count</b>			<b>93</b>
Textiles	4.1%	0.8%	10,319				
Remainder/Composite Organics	1.6%	0.4%	4,033				

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.