Greenhouse Gas Report

Lake Jennings Market Place

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Table of Contents

LIST OF TABLES

LIST OF FIGURES

Acronyms and Abbreviations

ADT	average daily trips
AQIA	Air Quality Impact Assessment
BAU	business as usual
C2ES	Center for Climate and Energy Solutions
CalEEMod™	California Emissions Estimator Model
CARB	California Air Resources Control Board
CAT	Climate Action Team
CEQA	California Environmental Quality Act
CFC	chlorofluorocarbon
CH_4	methane
CNRA	California Natural Resources Agency
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
ESRL	Earth System Research Laboratory
GHG	greenhouse gas
GHGA	Greenhouse Gas Assessment
GWP	global warming potential
HFC	hydrofluorocarbon
IPCC	International Panel on Climate Change
KWh	kilowatt hours
LCFS	Low Carbon Fuel Standard
LJMP	Lake Jennings Market Place
M	Million or 10^6
mph	miles per hour
$MtCO_2e$	million tonnes of carbon dioxide equivalents
MWh	megawatt hours
N_2O	nitrous oxide
NO	nitric oxide
NOAA	National Oceanic and Atmospheric Administration
PPV	percent by volume
SDG&E	San Diego Gas and Electric
SF_6	sulfur hexafluoride
t	abbreviation for tonne (or metric ton)
tCO_2e	tonne of carbon dioxide equivalents
UNFCCC	United Nations Framework Convention on Climate Change
VMT	Vehicle miles traveled
WRI	World Resources Institute
yd^3	cubic yards

SECTION 1.0 – INTRODUCTION

1.1. Report Purpose

The purpose of this Greenhouse Gas Assessment (GHGA) is to analyze the potential climate change impacts that could occur with the construction and operation of the Lake Jennings Market Place Project (LJMP), in San Diego County, California. This assessment was conducted within the context of the California Environmental Quality Act (CEQA, California Public Resources Code Sections 21000 et seq.).

1.2. Project Location

The LJMP project site consists of approximately 13.1 gross acres located within the eastern portion of San Diego County, as shown in Figure 1. More specifically, the project site is located on the extreme eastern border of the USGS 7.5' El Cajon Quadrangle, can be seen in Figure 2. The site parallels an approximately 1,000-foot stretch of Olde Highway 80 adjacent to the north, and is bordered on the west by Ridge Hill Road and on the east by Rios Canyon Road. The Los Coches Creek flood line marks the southern boundary of the project area. The site and surrounding community consists of semi-rural land with the immediate project vicinity consisting of vacant undisturbed land, two vacant residential structures, and several local businesses north of the site. The LJMP project site is currently zoned Village Residential (Vr-15) and is directly adjacent to commercial zoning, which can be seen in Figure 3. Land uses to the east and south of the project site include the Pecan Park Mobile Home Park and the Rio Vista housing development, respectively.

1.3. Project Description

The proposed LJMP project would consist of a mix of commercial uses. Applicant improvements to the site would include infrastructure such as sewer, road improvements and utilities, the vacation of an existing paved road, and dedication of a biological open space easement, on the aforementioned 13.1 acre site. Specifics of the plan are detailed below as follows:

1.3.1 Project Access

The proposed LJMP project requires four access points for proper traffic flow. These ingress/egress points are from Ridge Hill Road located on the west side of the project, a right-in (only) approximately 200 feet east of the intersection of Olde Highway 80 and Lake Jennings Park Road, a full signalized project entry half-way along the project frontage of Olde Highway 80, and a second non-signalized project entry (right in – right out only) near the northeast corner of the property.

1.3.2 Commercial Shopping Center

The project proposes to construct a commercial shopping center with 76,100 square feet (ft^2) of building area. The project would include six structures, all of which will be located on individually parceled lots according to the breakdown shown in Table 1.

1.3.3 Trail Component / Walls and Signage

The project will construct a multi-use trail suitable for pedestrians and equestrian users. The trail will be 10 feet wide and constructed of decomposed granitic material. The trail segments are proposed as standard pathways per the Park Lands Dedication Ordinance. The trail segment within the open space lot will run along the southern edge of the development area footprint within a 20-foot-wide trail easement.

There will be a comprehensive sign program for the project. It would include a Freeway Pylon Display, Monument Center ID Displays, Monument Signage at the signalized entrance on Olde Highway 80, and a State of California Gas Pricing Sign.

Table 1 – Lake Jennings Market Place Project Components

Structure	Indicated on Site Plan As	Size	Location
Market Building	Building A	43,000 ft^2	Along the east side of the project site adjacent to Rios Canyon Road
Financial Building	Building B	4,500 ft^2	On the northeast intersection of Olde Highway 80 at the proposed signalized project entrance.
Restaurant	Building C	3,500 ft^2	Same as Building B above.
Restaurant-Retail Building	Building D	9,600 ft^2	Along the southern boundary of the project's developed area
Gas Station with convenience store and car wash	Building E	3,000 ft^2	At the intersection of Olde Highway 80 and Lake Jennings Park Road.
Restaurant-Retail Building	Building F	12,500 ft^2	Along the southern boundary of the developed area.

1.3.4 Parking and Landscaping

The project proposes 389 parking spaces in accordance with the County of San Diego Zoning Ordinance located almost entirely within the central portion of the site, and out of the casual view of surface street traffic. Therefore, the project meets the parking requirements of the County of San Diego Zoning Ordinance.

Finally, a landscape plan has been prepared for the project that incorporates a variety of species intended to provide a visual buffer from Interstate 8, and be compatible with the Los Coches Creek riparian zone. The plant palette reflects a selection of Southern California native plant material.

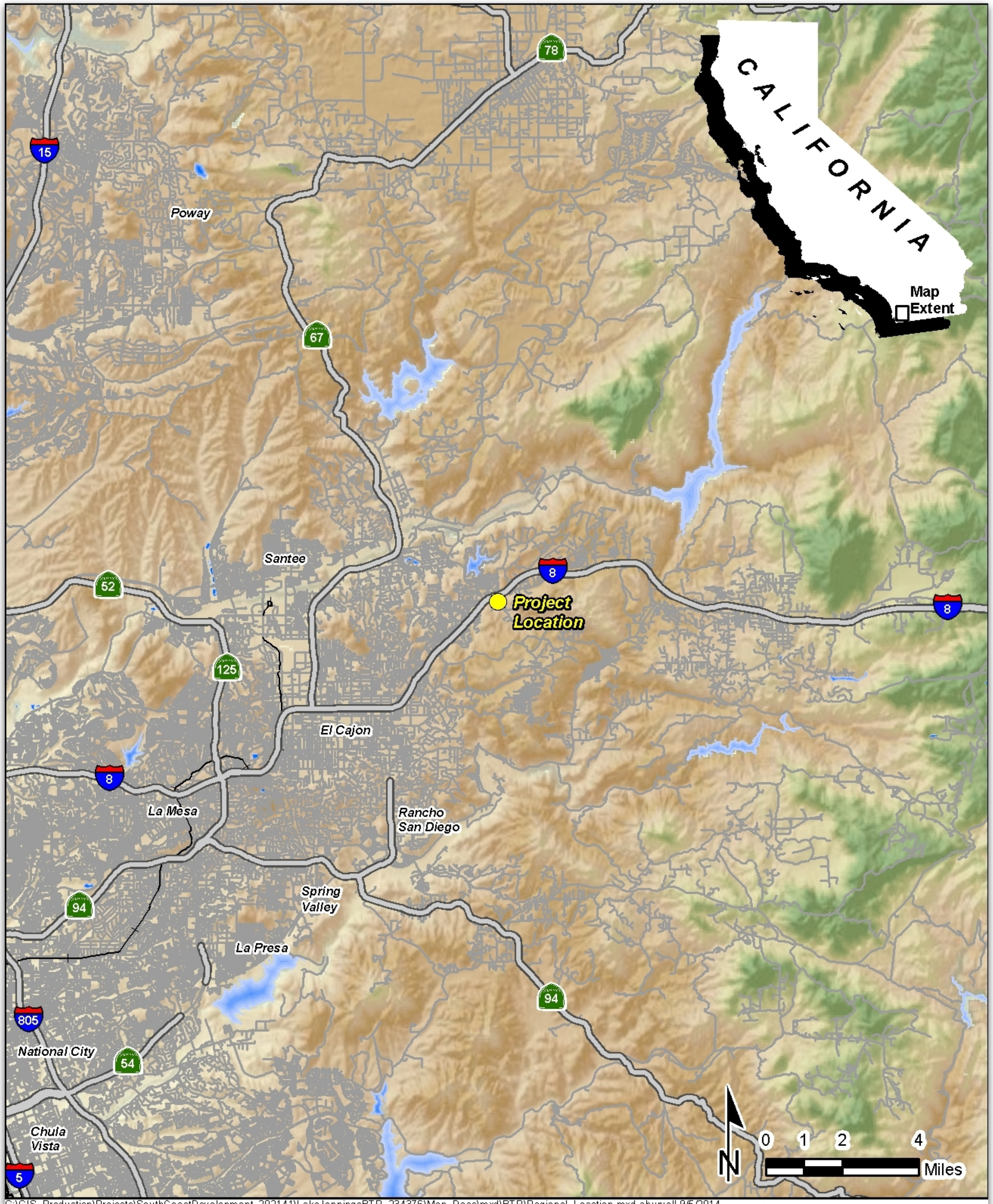

Figure 1 - Vicinity Map

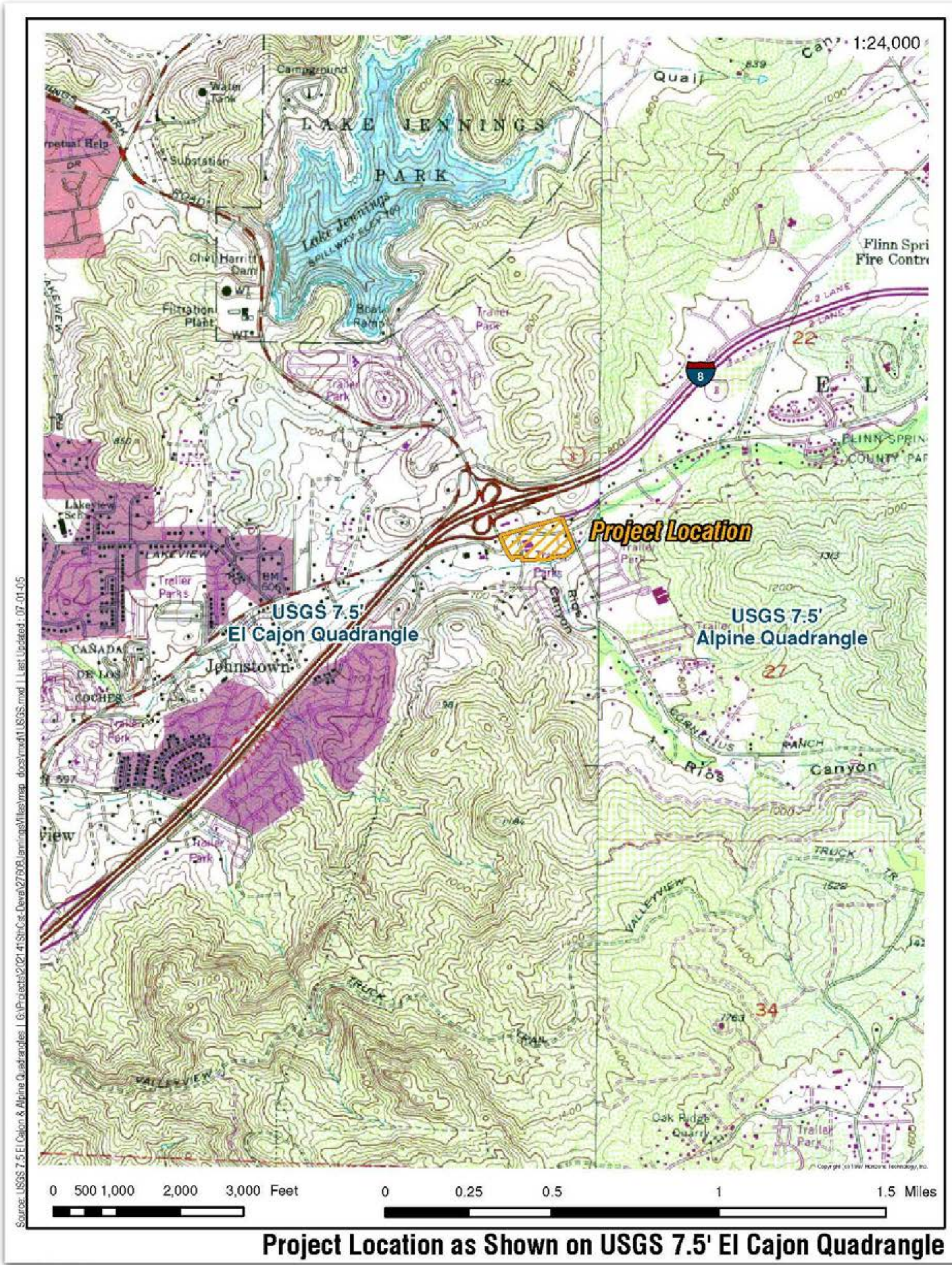

Figure 2 – Project Location Map

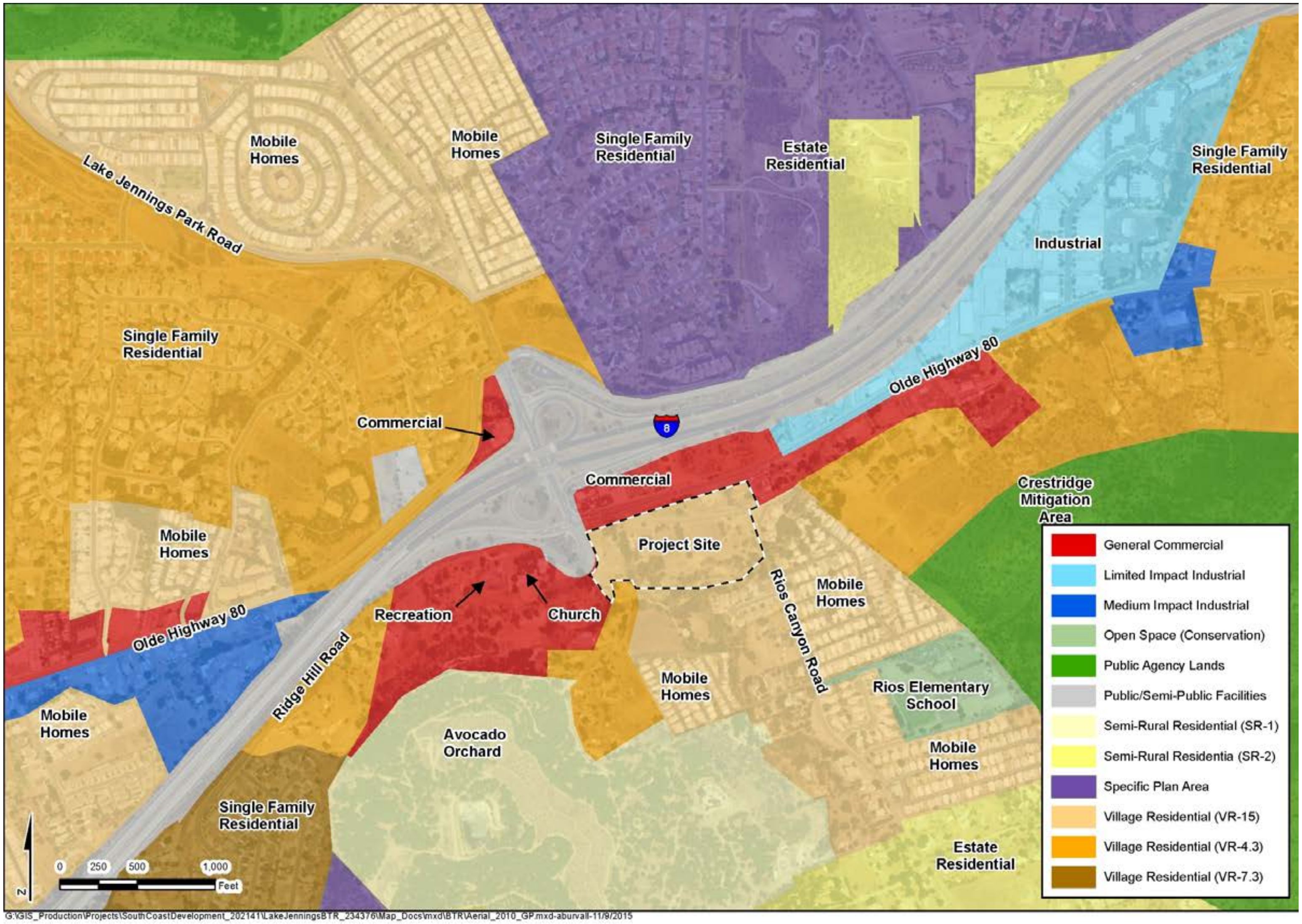

Figure 3 - Surrounding Land Uses

SECTION 2.0 – EXISTING CONDITIONS

2.1. Greenhouse Gases

Constituent gases that trap heat in the Earth's atmosphere are called greenhouse gases (GHGs), analogous to the way a greenhouse retains heat. GHGs play a critical role in the Earth's radiation budget by trapping infrared radiation emitted from the Earth's surface, which would otherwise have escaped into space. Prominent GHGs contributing to this process include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and chlorofluorocarbons (CFCs). Without the natural heat-trapping effect of GHG, the earth's surface would be about 34 °F cooler[1]. This is a natural phenomenon, known as the "Greenhouse Effect," is responsible for maintaining a habitable climate. However, anthropogenic emissions of these GHGs in excess of natural ambient concentrations are responsible for the enhancement of the "Greenhouse Effect", and have led to a trend of unnatural warming of the Earth's natural climate known as global warming or climate change, or more accurately Global Climate Disruption. Emissions of these gases that induce global climate disruption are attributable to human activities associated with industrial/manufacturing, utilities, transportation, residential, and agricultural sectors.

The global warming potential (GWP) is the potential of a gas or aerosol to trap heat in the atmosphere. Individual GHG compounds have varying GWP and atmospheric lifetimes. The reference gas for the GWP is CO_2; CO_2 has a GWP of one. The calculation of the CO_2 equivalent (CO_2e) is a consistent methodology for comparing GHG emissions since it normalizes various GHG emissions to a consistent metric. CH_4's warming potential of 25 indicates that CH_4 has a 25 times greater warming affect than CO_2 on a molecular basis. The larger the GWP, the more that a given gas warms the Earth compared to CO_2 over that period. The period usually used for GWPs is 100 years. GWPs for the three GHGs produced by the LJMP are presented in Table 2. A CO_2e is the mass emissions of an individual GHG multiplied by its GWP. GHGs are often presented in units called tonnes (t) (i.e. metric tons) of CO_2e (tCO_2e).

Table 2 – Global Warming Potentials[2]

Pollutant	GWP for 100-year time horizon	
	Second assessment report[3]	4th assessment report[4]
Carbon dioxide (CO_2)	1	1
Methane (CH_4)	21	25
Nitrous oxide (N_2O)	310	298

Note: Current protocol is to use the 4th assessment values, however, the second assessment report values are also provided since they are the values used by many inventories and public documents.

1 Climate Action Team Report to Governor Schwarzenegger and the California Legislature. California Environmental Protection Agency, Climate Action Team. March 2006.

2 Global Warming Potentials. Greenhouse Gas Protocol. World Resources Institute and World Business Council on Sustainable Development. http://www.ghgprotocol.org/files/ghgp/tools/Global-Warming-Potential-Values.pdf. Accessed May 2015.

3 Second Assessment Report. Climate Change 1995: WG I - The Science of Climate Change. Intergovernmental Panel on Climate Change. 1996

4 Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. 2007

Carbon Dioxide (CO_2) is a colorless, odorless gas consisting of molecules made up of two oxygen atoms and one carbon atom. CO_2 is produced when an organic carbon compound (such as wood) or fossilized organic matter, (such as coal, oil, or natural gas) is burned in the presence of oxygen. CO_2 is removed from the atmosphere by CO_2 "sinks", such as absorption by seawater and photosynthesis by ocean-dwelling plankton and land plants, including forests and grasslands. However, seawater is also a source of CO_2 to the atmosphere, along with land plants, animals, and soils, when CO_2 is released during respiration. Whereas the natural production and absorption of CO_2 is achieved through the terrestrial biosphere and the ocean, humankind has altered the natural carbon cycle by burning coal, oil, natural gas, and wood. Since the industrial revolution began in the mid-1700s, each of these activities has increased in scale and distribution. Prior to the industrial revolution, concentrations CO_2 were stable at a range of 275 to 285 ppm[5]. The National Oceanic and Atmospheric Administration (NOAA's) Earth System Research Laboratory (ESRL)[6] indicates that global concentration of CO_2 were 396.72 ppm in April 2013. In addition, the CO_2 levels at Mauna Loa[7] averaged over 400 ppm for the first time during the week of May 26, 2013. These concentrations of CO_2 exceed by far the natural range over the last 650,000 years (180 to 300 ppm) as determined from ice cores.

Methane (CH_4) is a colorless, odorless non-toxic gas consisting of molecules made up of four hydrogen atoms and one carbon atom. CH_4 is combustible, and it is the main constituent of natural gas-a fossil fuel. CH_4 is released when organic matter decomposes in low oxygen environments. Natural sources include wetlands, swamps and marshes, termites, and oceans. Human sources include the mining of fossil fuels and transportation of natural gas, digestive processes in ruminant animals such as cattle, rice paddies and the buried waste in landfills. Over the last 50 years, human activities such as growing rice, raising cattle, using natural gas, and mining coal have added to the atmospheric concentration of CH_4. Other anthropogenic sources include fossil-fuel combustion and biomass burning.

Nitrous Oxide (N_2O) is a colorless, non-flammable gas with a sweetish odor, commonly known as "laughing gas", and sometimes used as an anesthetic. N_2O is naturally produced in the oceans and in rainforests. Man-made sources of N_2O include the use of fertilizers in agriculture, nylon and nitric acid production, cars with catalytic converters and the burning of organic matter. Concentrations of N_2O also began to rise at the beginning of the industrial revolution.

Chlorofluorocarbons (CFCs) are gases formed synthetically by replacing all hydrogen atoms in CH_4 or ethane with chlorine and/or fluorine atoms. CFCs are nontoxic, nonflammable, insoluble, and chemically un-reactive in the troposphere (the level of air at the Earth's surface). CFCs have no natural source but were first synthesized in 1928. It was used for refrigerants, aerosol propellants, and cleaning solvents. Because of the discovery that they are able to destroy stratospheric ozone, an ongoing global effort to halt their production was undertaken and has been extremely successful, so much so that levels of the major CFCs are now remaining steady or declining. However, their long atmospheric lifetimes mean that some of the CFCs will remain in the atmosphere for over 100 years.

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5 Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, 2007. Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.). Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

6 Trends in Atmospheric Carbon Dioxide. Earth System Research Laboratory. National Oceanic and Atmospheric Administration. http://www.esrl.noaa.gov/gmd/ccgg/trends/global.html. Accessed June 2013.

7 ibid

Hydrofluorocarbons (HFCs) are synthesized chemicals that are used as a substitute for CFCs. Out of all of the GHGs; HFCs are one of three groups with the highest GWP. HFCs are synthesized for applications such as automobile air conditioners and refrigerants.

Perfluorocarbons (PFCs) have stable molecular structures and do not break down through the chemical processes in the lower atmosphere. High-energy ultraviolet rays about 60 kilometers above Earth's surface are able to destroy the compounds. Because of this, PFCs have very long lifetimes, between 10,000 and 50,000 years. The two main sources of PFCs are primary aluminum production and semiconductor manufacture.

Sulfur Hexafluoride (SF_6) is an extremely potent greenhouse gas. SF_6 is very persistent, with an atmospheric lifetime of more than a thousand years. Thus, a relatively small amount of SF_6 can have a significant long-term impact on global climate change. SF_6 is human-made, and the primary user of SF_6 is the electric power industry. Because of its inertness and dielectric properties, it is the industry's preferred gas for electrical insulation, current interruption, and arc quenching (to prevent fires) in the transmission and distribution of electricity. SF_6 is used extensively in high voltage circuit breakers and switchgear, and in the magnesium metal casting industry.

2.1.1 GHG Emission Levels

According to the World Resources Institute[8] (WRI) in 2005, total worldwide GHG emissions were estimated to be 37,797 million (M) t of CO_2e ($MtCO_2$e) and GHG emissions per capita worldwide was 5.9 tCO_2e. These emissions exclude GHG emissions associated with the land use, land-use change, and forestry sector and bunker fuels. The WRI reports that in 2009, total GHG emissions in the U.S. were 6,469 $MtCO_2$e, with average GHG emissions per capita of 21.09 tCO_2e and total GHG emissions in California were 446.07 $MtCO_2$e, with average GHG emissions per capita of 12.07 tCO_2e.

California has a larger percentage of its total GHG emissions coming from the transportation sector (50%) than the U.S. emissions (29%) and a smaller percentage of its total GHG emissions from the electricity generation sector, i.e. California have 11 percent but the U.S. has 32 percent.

2.1.2 Potential Environmental Effects

Worldwide, average temperatures are likely to increase by 3 °F to 7 °F by the end of the 21^{st} century[9]. However, a global temperature increase does not directly translate to a uniform increase in temperature in all locations on the earth. Regional climate changes are dependent on multiple variables, such as topography. One region of the Earth may experience increased temperature, increased incidents of drought, and similar warming effects, whereas another region may experience a relative cooling. According to the International Panel on Climate Change's (IPCC's) Working Group II Report[10], climate change impacts to North America may include diminishing snowpack, increasing evaporation, exacerbated shoreline erosion, exacerbated inundation from sea level rising, increased risk and frequency of wildfire, increased risk of insect outbreaks, increased experiences of heat waves, and rearrangement of ecosystems, as species and ecosystem zones shift northward and to higher elevations.

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[8] Climate Analysis Indicators Tool. International Dataset. World Resources Institute. http://www.wri.org/tools/cait/. Accessed June 2013.

[9] Climate Change 2007: Impacts, Adaptation, and Vulnerability. Website http://www.ipcc.ch/ipccreports/ar4-wg2.htm. Accessed March 2013.

[10] ibid

2.1.3 California Implications

Even though climate change is a global problem and GHGs are global pollutants, the specific potential effects of climate change on California have been studied. The third assessment produced by the California Natural Resources Agency (CNRA)[11] explores local and statewide vulnerabilities to climate change, highlighting opportunities for taking concrete actions to reduce climate-change impacts. Projected changes for the remainder of this century in California include:

- **Temperatures** – By 2050, California is projected to warm by approximately 2.7 °F above 2000 averages, a threefold increase in the rate of warming over the last century and springtime warming — a critical influence on snowmelt — will be particularly pronounced.
- **Rainfall** – Even though model projections continue to show the Mediterranean pattern of wet winters and dry summers with seasonal, year-to-year, and decade-to-decade variability, improved climate models shift towards drier conditions by the mid-to-late 21st century in Central, and most notably, Southern California.
- **Wildfire** - Earlier snowmelt, higher temperatures, and longer dry periods over a longer fire season will directly increase wildfire risk. Indirectly, wildfire risk will also be influenced by potential climate-related changes in vegetation and ignition potential from lightning, with human activities continuing to be the biggest factor in ignition risk. Models are showing that estimated that property damage from wildfire risk could be as much as 35 percent lower if smart growth policies were adopted and followed than if there is no change in growth policies and patterns.

The third assessment by CNRA not only defines projected vulnerabilities to climatic changes but analyzes potential impacts from adaptation measures used to minimize harm and take advantage of beneficial opportunities that may arise from climate change.

The report highlights important new insights and data, using probabilistic and detailed climate projections and refined topographic, demographic, and land use information. The findings include:

- The state's electricity system is more vulnerable than was previously understood.
- The Sacramento-San Joaquin Delta is sinking, putting levees at growing risk.
- Wind and waves, in addition to faster rising seas, will worsen coastal flooding.
- Animals and plants need connected "migration corridors" to allow them to move to habitats that are more suitable to avoid serious impacts.
- Native freshwater fish are particularly threatened by climate change.
- Minority and low-income communities face the greatest risks from climate change.

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11 Our Changing Climate 2012: Vulnerability & Adaptation to the Increasing Risks from Climate Change in California. California Natural Resources Agency. July 2012 / CEC-500-2012-007

SECTION 3.0 – REGULATORY CONTEXT

3.1. Climate Change

3.1.1 Federal Climate Change Legislation

In June of 2013, the President enacted a national Climate Action Plan[12] (Plan) that consisted of a wide variety of executive actions and had three pillars; 1) cut carbon in America, 2) prepare the U.S. for impacts of climate change, and 3) lead international efforts to combat global climate change and prepare for its impacts. The Plan outlines 75 goals within the three main pillars.

3.1.1.1 Cut Carbon in America

The Plan consists of actions to help cut carbon by deploying clean energy such as cutting carbon from power plants, promoting renewable energy, and unlocking long-term investment in clean energy innovation. In addition, the Plan includes actions designed to help build a 21st century transportation sector; cut energy waste in homes, businesses, and factories; and reducing other GHG emissions, such as HFCs and methane. The Plan commits to lead in clean energy and energy efficiency at the federal level.

3.1.1.2 Prepare the U.S. for Impacts of Climate Change

The Plan consists of actions to help prepare for the impacts through building stronger and safer communities and infrastructure by supporting climate resilient investments, supporting communities and tribal areas as they prepare for impacts, and boosting resilience of building and infrastructure; protecting the economy and natural resources by identifying vulnerabilities, promoting insurance leadership, conserving land and water resources, managing drought, reducing wildfire risks, and preparing for future floods; and using sound science to manage climate impacts.

3.1.1.3 Lead International Efforts

The Plan consists of actions to help the U.S. lead international efforts through working with other countries to take action by enhancing multilateral engagements with major economies, expanding bilateral cooperation with major emerging economies, combating short-lived climate pollutants, reducing deforestation and degradation, expanding clean energy use and cutting energy waste, global free trade in environmental goods and services, and phasing out subsidies that encourage wasteful use of fossil fuels and by leading efforts to address climate change through international negotiations.

In June of 2014, the Center for Climate and Energy Solutions (C2ES) published a one-year review of progress in implementation of the Plan. The C2ES found that the administration had made marked progress in its initial implementation. The administration made at least some progress on most of the Plan's 75 goals; many of the specific tasks outlined had been completed. Notable areas of progress included steps to limit carbon pollution from power plants; improve energy efficiency; reduce CH_4 and HFC emissions; help communities and industry become more resilient to climate change impacts; and end U.S. lending for coal-fired power plants overseas.

3.1.2 State Climate Change Legislation

3.1.2.1 Executive Order S 3-05

On June 1, 2005, the Governor issued Executive Order S 3-05 which set the following GHG emission reduction targets:

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12 Presidents Obama's Climate Action Plan: One Year Later. Center for Climate and Energy Solutions. June 2014.

- By 2010, reduce GHG emissions to 2000 levels;
- By 2020, reduce GHG emissions to 1990 levels;
- By 2050, reduce GHG emissions to 80 percent below 1990 levels.

To meet these targets, the Climate Action Team (CAT) prepared a report to the Governor in 2006 that contains recommendations and strategies to help ensure the targets in Executive Order S-3-05 are met.

3.1.2.2 Assembly Bill 32 (AB 32)

In 2006, the California State Legislature enacted the California Global Warming Solutions Act of 2006, also known as AB 32. AB 32 focuses on reducing GHG emissions in California. GHGs, as defined under AB 32, include CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6. AB 32 requires that GHGs emitted in California be reduced to 1990 levels by the year 2020. The California Air Resources Board (CARB) is the state agency charged with monitoring and regulating sources of emissions of GHGs that cause global warming in order to reduce emissions of GHGs. AB 32 also requires that by January 1, 2008, the CARB must determine what the statewide GHG emissions level was in 1990, and it must approve a statewide GHG emissions limit so it may be applied to the 2020 benchmark. CARB approved a 1990 GHG emissions level of 427 $MtCO_2e$, on December 6, 2007 in its Staff Report. Therefore, in 2020, emissions in California are required to be at or below 427 $MtCO_2e$.

Under the "business as usual or (BAU)" scenario established in 2008, Statewide emissions were increasing at a rate of approximately 1 percent per year as noted below. It was estimated that the 2020 estimated BAU of 596 $MtCO_2e$ would have required a 28 percent reduction to reach the 1990 level of 427 $MtCO_2e$.

3.1.2.3 Climate Change Scoping Plan

The Scoping Plan[13] released by CARB in 2008 outlined the State's strategy to achieve the AB-32 goals. This Scoping Plan, developed by CARB in coordination with the CAT, proposed a comprehensive set of actions designed to reduce overall GHG emissions in California, improve the environment, reduce dependence on oil, diversify our energy sources, save energy, create new jobs, and enhance public health. It was adopted by CARB at its meeting in December 2008. According to the Scoping Plan, the 2020 target of 427 $MtCO_2e$ requires the reduction of 169 $MtCO_2e$, or approximately 28.3 percent, from the State's projected 2020 BAU emissions level of 596 $MtCO_2e$.

However, in August 2011, the Scoping Plan was re-approved by the Board and includes the Final Supplement to the Scoping Plan Functional Equivalent Document[14]. This document includes expanded analysis of project alternatives as well as updates the 2020 emission projections in light of the current economic forecasts. Considering the updated 2020 BAU estimate of 507 $MtCO_2e$, only a 16 percent reduction below the estimated new BAU levels would be necessary to return to 1990 levels by 2020. The 2011 Scoping Plan expands the list of nine Early Action Measures into a list of 39 Recommended Actions contained in Appendices C and E of the Plan.

However, in May 2014, CARB developed; in collaboration with the CAT, the First Update to California's Climate Change Scoping Plan[15] (Update), which shows that California is on track to meet the near-term 2020 greenhouse gas limit and is well positioned to maintain and continue reductions beyond 2020 as required by AB-32. In accordance with the United Nations Framework Convention on Climate Change (UNFCCC), CARB is beginning to transition to

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[13] Climate Change Scoping Plan: a framework for change. California Air Resources Board. December 2008.

[14] Final Supplement to the AB 32 Scoping Plan Functional Equivalent Document. California Air Resources Board. August 19, 2011.

[15] First Update to the Climate Change Scoping Plan, Building on the Framework. California Air Resources Board. May 2014.

the use of the AR4's 100-year GWPs in its climate change programs. CARB has recalculated the 1990 GHG emissions level with the AR4 GWPs to be 431 $MtCO_2e$, therefore the 2020 GHG emissions limit established in response to AB-32 is now slightly higher than the 427 $MtCO_2e$ in the initial Scoping Plan.

3.1.2.4 Senate Bill 375 (SB 375)

Senate Bill (SB) 375 passed the Senate on August 30, 2008 and was signed by the Governor on September 30, 2008. According to SB 375, the transportation sector is the largest contributor of GHG emissions and contributes over 40 percent of the GHG emissions in California, with automobiles and light trucks alone contributing almost 30 percent. SB 375 indicates that GHGs from automobiles and light trucks can be reduced by new vehicle technology. However, significant reductions from changed land use patterns and improved transportation also are necessary. SB 375 states, "Without improved land use and transportation policy, California will not be able to achieve the goals of AB 32." SB 375 does the following: (1) requires metropolitan planning organizations to include sustainable community strategies in their regional transportation plans for reducing GHG emissions, (2) aligns planning for transportation and housing, and (3) creates specified incentives for the implementation of the strategies.

3.1.3 County of San Diego

The County's General Plan Update[16] includes smart growth and land use planning principles designed to reduce vehicle miles traveled (VMT) and result in a reduction in GHG emissions. As discussed in the General Plan Update, climate change and GHG reduction policies are addressed in plans and programs in multiple elements of the General Plan. The strategies for reduction of GHG emissions in the General Plan Update are as follows:

- Strategy A-1: Reduce vehicle trips generated, gasoline/energy consumption, and greenhouse gas emissions.
- Strategy A-2: Reduce non-renewable electrical and natural gas energy consumption and generation (energy efficiency).
- Strategy A-3: Increase generation and use of renewable energy sources.
- Strategy A-4: Reduce water consumption.
- Strategy A-5: Reduce and maximize reuse of solid wastes.
- Strategy A-6: Promote carbon dioxide consuming landscapes.
- Strategy A-7: Maximize preservation of open spaces, natural areas, and agricultural lands.

The General Plan Update also includes climate adaptation strategies to deal with potential adverse effects of climate change. The climate adaptation strategies include the following:.

- Strategy B-1: Reduce risk from wildfire, flooding, and other hazards resulting from climate change.
- Strategy B-2: Conserve and improve water supply due to shortages from climate change.
- Strategy B-3: Promote agricultural lands for local food production.
- Strategy B-4: Provide education and leadership.

The County has also implemented a number of outreach programs such as the Green Building Program, lawn mower trade-in program, and reduction of solid waste by recycling to reduce air quality impacts as well as GHG emissions.

In addition to the County's General Plan Update and other programs described above, the County's Department of Planning and Development Services issued "2015 GHG Guidance: Recommended Approach to Addressing Global

[16] San Diego County General Plan: A Plan for Growth, Conservation, and Sustainability. San Diego County Planning and Development Services. August 2011.

Climate Change in CEQA Documents" (2015 GHG Guidance; dated January 2015) in an effort to bring a degree of consistency and objectivity to the CEQA analyses prepared for pending projects. The analysis provided below considers the 2015 GHG Guidance, in conjunction with other identified methodologies.

SECTION 4.0 – SIGNIFICANCE CRITERIA

4.1. California Environmental Quality Act (CEQA)

The State of California has developed guidelines to address the significance of climate change impacts based on Appendix G of the CEQA Guidelines, which provides guidance that a project would have a significant environmental impact if it would:

- Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment or
- Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.

Neither the State of California nor the SDAPCD has adopted emission-based thresholds for GHG emissions under CEQA. OPR's Technical Advisory titled CEQA and Climate Change: Addressing Climate Change through CEQA Review states, "public agencies are encouraged, but not required to adopt thresholds of significance for environmental impacts. Even in the absence of clearly defined thresholds for GHG emissions, the law requires that such emissions from CEQA projects must be disclosed and mitigated to the extent feasible whenever the lead agency determines that the project contributes to a significant, cumulative climate change impact".[17] Furthermore, the advisory document indicates, "in the absence of regulatory standards for GHG emissions or other scientific data to clearly define what constitutes a 'significant impact,' individual lead agencies may undertake a project-by-project analysis, consistent with available guidance and current CEQA practice."

4.1.1 County Climate Change Analysis Criteria

The proposed project was analyzed using the San Diego County Recommended Approach for Addressing Climate Change, which uses a screening threshold of 900 tCO_2e per year.[18] A project that exceeds the 900 tCO_2e per year screening threshold would be required to conduct a more detailed GHG analysis. Screening thresholds are recommended based on various land use densities and project types. Projects that meet or fall below the screening thresholds are expected to result in 900 tonnes per year of GHG emissions or less and would not require additional analysis and the climate change impacts would be considered less than significant.

This GHG analysis has been based on the County's 2015 GHG Guidance, which requires an evaluation of whether the project would conform with the GHG reduction targets set forth in the 2011 Final Supplement to the AB 32 Scoping Plan Functional Equivalent Document. Based on the County's Guidance and the 2011 Supplement, a 16% reduction in GHG emissions would be required to meet the target of reducing emissions to 1990 levels by 2020.

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17 Technical Advisory – CEQA and Climate Change: Addressing Climate Change through California Environmental Quality Act (CEQA) Review. California Governor's Office of Planning and Research. 2008.

18 2015 GHG Guidance: Recommended Approach to Addressing Climate Change in CEQA Documents. County of San Diego Department of Planning and Development Services. January 21, 2015.

SECTION 5.0 – IMPACT ANALYSIS

5.1. Analysis Methodology

GHG impacts associated with the proposed LJMP project are related to emissions from short-term construction and long-term operations. Construction may generate GHG emissions because of construction equipment emissions and emissions from vehicles driven to/from the Project site by construction workers and material and water delivery trucks. Construction emissions may be amortized over the expected (long-term) operational life of a project, which can conservatively be estimated at 20 years, unless evidence is provided demonstrating a longer or shorter project life.

Operational emissions would result primarily from both direct and indirect sources. Direct emissions refer to emissions produced from onsite combustion of energy, such as natural gas used in furnaces and boilers, emissions from industrial processes, and fuel combustion from mobile sources. Indirect emissions are emissions produced offsite from energy production and water conveyance due to a project's energy use and water consumption. Operational GHG emissions should include energy use (including electricity, natural gas and water and wastewater), transportation VMT, area sources, and solid waste.

5.1.1 Construction GHG Emissions

Construction of the LJMP project would result in temporary emissions associated with diesel engine combustion from mass grading and site preparation construction equipment will be assumed to occur for engines running at the correct fuel-to-air ratios.[19] Of principal interest are the emission factors for CO_2 and NO_X[20]. For a four-stroke diesel-cycle engine, the combustion byproducts are approximately 1.5-percent-by-volume (PPV) O_2, 0.5 PPV CO, and 13.5 PPV CO_2.[21] Thus, the ratio of CO_2 to CO production in a properly mixed diesel stroke would be 13.5/0.5, or 27:1.

The County Department of Planning and Development Service recommend that the construction emissions be amortized over 20 years and added to operational emissions, as appropriate.

The proposed LJMP project site would be cleared and graded over the course of approximately eight months (240 days) as shown in Table 3. The LJMP's Air Quality Impact Assessment (AQIA) [22] estimated criteria emissions from the construction equipment and concluded that the construction of the LJMP project would be without any deleterious air quality impacts, therefore requiring no mitigation, per SDAPCD guidelines.

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19 The ratio whereby complete combustion of the diesel fuel occurs.

20 It will be assumed that the project would generate trace, if not negligible, levels of CH_4 and/or constituent compounds. NO_X emissions are stoichiometrically composed of roughly 30-percent nitrous oxide (N_2O) by volume and 70-percent nitric oxide (NO), which is the free radical form that immediately combines with ozone to form nitrogen dioxide more commonly known as smog.

21 Holtz, J.C., Elliott, M.A., The Significance of Diesel-Exhaust-Gas Analysis, Transactions of the ASME, Vol. 63, February 1941.

22 Air Quality Impact Assessment, Lake Jennings Market Place, San Diego, CA, ISE Project #14-003, 4/30/15

Table 3 – Anticipated Construction Grading Phasing Plan

Phase	Operation	Duration (Months)	Activities Completed
1	Clearing and Grubbing of Site	0.5	Removal of all site debris. Demolition of existing structures and infrastructure. Removal of all vegetation.
2	Alluvial Excavation	3.0	Excavate center section of project site to a depth of 18-feet to remove unconsolidated alluvial materials. Stockpile materials in southern portion of project site. Cover sensitive paleontological area with GeoGrid material, and backfill to approximately three feet.
3	Drill, Blast, and Excavate Existing Rock	1.0	Drill and blast at eastern rock removal locations. Mechanical excavation of rock material at western locations.
4	Backfill Excavation Areas with Rock	1.0	Backfill alluvial excavation area with oversized rock spoils.
5	Finish Rough Grading Operations and Underground Work	2.5	Complete rough grading operations by removal of alluvial excavation and placement onsite. Bring final site to rough pad elevation. Complete underground utility placement and terminations.

In order to estimate GHG emissions, this GHGA uses stoichiometric formulas that derive the CO_2 emissions by multiplying the CO emissions estimated in the AQIA by 27. In addition, NO_X emissions are stoichiometrically composed of roughly 30% N_2O, and 70% nitric oxide (NO). Therefore, N_2O emissions ware estimated by multiplying the estimated NO_X emissions by 0.3. Table 4 quantifies the expected GHG emissions from construction activities.

Table 4 – Construction Vehicle GHG Emissions

Equipment Type Model	Daily pounds from AQIA		Duration (days)	Total pounds		Direct Stoichiometric GHG Emissions (tonnes)		
	CO	NO_X		CO	NO_X	CO_2	N_2O	CO_2e
Push Dozer D11T w/ Breaker	23.4	62.1	240	5,613	14,896	68.7	2.027	672.8
Push Dozer D10T	10.6	28.2	240	2,553	6,776	31.3	0.922	306.0
Dozer D9R	9.4	24.9	240	2,256	5,987	27.6	0.815	270.4
Dozer D6T LGP	3.7	9.7	240	880	2,337	10.8	0.318	105.5
Scraper- 657G Tractor	14.4	38.3	240	3,467	9,200	42.5	1.252	415.5
Motor Grader 120K	8.2	15.2	240	1,958	3,651	24.0	0.497	172.0
Water Truck	3.7	9.7	240	880	2,337	10.8	0.318	105.5
Hydraulic Excavator 349EL	11.0	29.2	240	2,641	7,010	32.3	0.954	316.6
ECM 590 Rock Drill	10.1	26.8	240	2,421	6,426	29.7	0.874	290.2
TOTALS	**94.5**	**244.2**		**22,670**	**58,619**	**277.6**	**7.977**	**2,654.7**
Amortized over 20 years								**132.7**

5.1.2 <u>Motor Vehicles</u>

To calculate emissions associated with vehicle trips generated by the proposed project, the trip generation rates from the project's AQIA were used. To evaluate project trips, the total trip generation rate of 4,683 average daily trips (ADT) for buildout conditions was used. The average vehicle trip length would be 3.5 miles, with a median running speed of 45 miles per hour (mph). For the current analysis, the EMFAC 2011 was run using input conditions specific to the San Diego air basin to predict operational vehicle emissions from the project, based upon a project completion scenario year of 2020.[23] Of principal interest are the emission factors for CO_2 and NO_X. Again, N_2O is stoichiometrically determined by multiplying NO_X by 0.3. GHG emissions estimates are presented in Table 5. A vehicle fleet mix ratio consistent with the 2010 Caltrans ITS Transportation Project-Level Carbon Monoxide Protocol was used.[24]

Table 5 – Unmitigated Scenario Operational Vehicle GHG Levels

Vehicle Classification	Trip ADT	Annual VMT	Pounds per Year		GHG Emissions in tonnes		
			Direct CO_2	Calc N_2O	Direct CO_2	Calc N_2O	CO_2e
Light Duty Auto (LDA)	3,231	4,127,603	2,577,521	239.8	1,169.1	0.109	1,201.6
Light Duty Truck (LDT1)	909	1,161,248	838,624	117.2	380.4	0.053	396.2
Medium Duty Truck (LHD1)	300	383,250	381,571	99.6	173.1	0.045	186.5
Heavy Duty Truck Gasoline (MH GAS)	56	71,540	71,540	26.3	32.4	0.012	36.0
Heavy Duty Truck Diesel (MH DSL)	169	215,898	508,372	823.4	230.6	0.374	341.9
Motorcycle (MCY)	19	24,273	7,337	18.6	3.3	0.008	5.8
TOTALS	**4,683**	**5,983,810**	**4,384,964**	**1,325.0**	**1,989.0**	**0.601**	**2,168.08**

Additionally, it should be noted that using the SANDAG "adopted" land use for the LJMP, gives an aggregate VMT of 1,611,546 VMT per day, while the proposed capture of the project site would generate 1,602,394 VMT per day. Thus, by virtue of constructing the proposed project, a net reduction of 9,152 VMT per day is achieved (i.e., the proposed project reduces overall vehicle travel, and commensurate aggregate air quality/GHG emissions, by capturing local traffic that would otherwise travel a further distance to go shopping).

5.1.3 Energy Consumption

The LJMP project site would require a maximum load demand of 1.0 megawatt-hours (MWh) to account for peak usage, startup transients, and a requisite margin of safety.[25] The steady-state average continuous load would be roughly 40% of this value or 400 kilowatt-hours (KWh). At 8,760 hours per year, this would equate to a yearly energy consumption of 3,504,000 kWh/year, or approximately 46 kWh/ft^2/year for the LJMP project. Using San Diego Gas and Electric (SDG&E's) intensity factor of 641.86 lb CO_2/MWh, which was derived by scaling the SDG&E 2009 CO_2 intensity factor to account for a State required 20% RPS. Using this intensity factor would give an annual CO_2e GHG load for the LJMP site due to electrical usage of **1,020.2 tonnes/year.**

Natural gas combustion is another source of energy-related emissions. Different from the electricity energy sources, natural gas sources are direct emissions, taking place onsite. Natural gas consumption (typically due to usage of water heaters, stoves, and central heating units for this type of proposed use) would produce the CO_2 and N_2O

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23 This is a worst-case assumption, since implementation of cleaner vehicle controls ultimately reduces emissions under future year conditions. By applying near-term emission factors to the complete project, an upper bound on project-related emissions is obtained.

24 This consisted of the following air standard Otto-Cycle engine vehicle distribution percentages: Light Duty Auto (LDA) = 69.0%, Light Duty Truck (LDT1) = 19.4%, Medium Duty Truck (LHD1) = 6.4%, Heavy Duty Truck Gasoline (MH GAS) = 1.2%, Heavy Duty Truck Diesel (MH DSL) = 3.6%, Motorcycle (MCY) = 0.4%.

25 Electrical Service Standards & Guide Manual, Section 5300 (Load Density), San Diego Gas & Electric Company, 2015.

emissions. GHG emissions related to natural gas combustion was estimated using the formula shown as Figure 4.

$$GHG_{combustion} = ER \times \left[\frac{NU \times UR}{30} \right] \times 10^{-6}$$

Figure 4 - Formula for GHG Emissions from Natural Gas Combustion

In the formula presented above:

- GHG = The greenhouse gas under examination (i.e., CO_2 or N_2O)
- ER = Emissions rate of criteria pollutant per million-cubic-feet ($10^6 ft^3$) of natural gas consumed (e.g., CO_2 = 116,765 pounds/$10^6 ft^3$, N_2O = 28.2 pounds/$10^6 ft^3$),
- NU = Total number of units per land use type (i.e., residential/commercial)
- UR = Specific natural gas usage rate per development type (Single-Family = 6,665 ft^3/month, Multi-family = 4,011.5 ft^3/month, Retail Space = 2.9 ft^3/ft^2/month).

The free and complete burning of natural gas, which is primarily composed of methane (CH_4). From a mass balance standpoint, one pound of CH_4 can produce 2.75 pounds of CO_2 by the above chemical equation. Since, one cubic-foot of CH_4 weighs 0.04246 pounds, the amount of CO_2 produced per ft^3 of natural gas burned would therefore be 0.1167 pounds. N_2O generation will be assumed to be a fractional component of total NO_X generation as previously discussed (i.e., $N_2O = 0.3NO_X$).

The commercial ER for CO_2 is 116,765 lbs/$10^3 ft^2$ and for N_2O it is 26.2 lbs/$10^3 ft^{2.}$ Annual CO_2e emissions from natural gas combustion is **151.72 CO_2e**.

5.1.4 Solid Waste Disposal

The disposal of solid waste produces GHG emissions from anaerobic decomposition in landfills, incineration, transportation of waste, and disposal. The LJMP project site would have an onsite solid trash waste storage capacity of 33 cubic yards (yd^3), with an average weight of 200 pounds per yd^3. Assuming three trash pickups per week in accordance with commercial site requirements, the aggregate total solid waste removed from the site would be 1,029,600 pounds per year (or 514.8 short tons).

According to the IPCC, landfill CO_2 generation due to trash is approximately 0.1450 kilograms (or 0.3196 pounds) per pound of trash per year. Thus, with the estimated 1,029,600 pounds of trash per year generated by the site, the landfill CO_2e contribution level would be **149.3 tonnes per year.**

5.1.5 Water and Wastewater GHG Emissions

The amount of water used and wastewater generated by a project has indirect GHG emissions associated with it. These emissions are a result of the energy used to supply, distribute, and treat the water and wastewater. It will often be the case that the water treatment and wastewater treatment occur outside of the project area. In this case, it is still important to quantify the energy and associated GHG emissions attributable to the water use. In addition to the indirect GHG emissions associated with energy use, wastewater treatment can directly emit both methane and nitrous oxide.

Water and wastewater electrical intensity is presented in California Emissions Estimator Model (CalEEMod™) User Guide, Appendix D, Table 9.2. In San Diego County, it is estimated that electricity needed to supply water to the

County is 9,727 kWh/ 10^6 gallons. An additional 1,272 kWh/10^6 gallons is required for the distribution of water and 1,911 kWh/10^6 gallons is used for wastewater treatment. An additional 111 kWh/10^6 gallons is used to treat the water. The combined energy intensity for the system of water and wastewater is 13,021 kWh/10^6 gallons.

Water use rates for commercial and industrial land uses are presented in Table 9.1 of CalEEMod User Guide, Appendix D. These use rates were mostly obtained from Appendices E and F of the Pacific Institute's "Waste Not Want Not" report.[26] Total gallons of water used per day per metric were reported but the total daily water use was converted to annual water use based on the number of days of operation for that land use. The water use rates for the individual components of the LJMP site are presented in Table 6, along with CO_2e estimate based on the intensity factor for SDG&E of 641.9 lbs of CO_2e/MWh.

Table 6 – Unmitigated Scenario Water & Wastewater GHG Emissions

Proposed Use	Size	Metric	Use Rate Factor (gal/metric)		Water Use (gal/yr)			CO_2e (tonnes/yr)
			Indoor	Outdoor	Indoor	Outdoor	total	
Bank w/ drive thru	4.5	10^3ft^2	39,622.92	24,285.01	178,303.1	109,282.5	287,586	1.09
Convenience market w/ pumps	3.0	10^3ft^2	74,072.52	45,399.29	222,217.6	136,197.9	358,415	1.36
Fast food rest w/ drive thru	3.5	10^3ft^2	303,533.71	19,374.49	1,062,368.0	67,810.7	1,130,179	4.28
Strip Mall	22.1	10^3ft^2	74,072.52	45,399.29	1,637,002.7	1,003,324.3	2,640,327	10.01
Supermarket	43.0	10^3ft^2	123,268.21	3,812.42	5,300,533.0	163,934.1	5,464,467	20.72
Drive thru car wash	102,200	gal.yr			102,200	0	102,200	0.39
				TOTALS	**8,502,624**	**1,480,549**	**9,983,174**	**37.85**

5.1.6 Area Sources

Landscape maintenance includes fuel combustion emissions from equipment such as lawn mowers, roto tillers, shredders/grinders, blowers, trimmers, chain saws, and hedge trimmers, as well as air compressors, generators, and pumps. Landscaping equipment utilized in the course of maintenance of the LJMP lots typically would consist of five-horsepower, four-stroke lawnmowers, and small weed trimmers having two-stroke engines with an approximate 30 to 50 cubic-centimeter displacement. Assuming the ultimate user purchases cleaner burning engines new from the store, the emissions rates specified by CARB. For the purposes of assessment, the project site will be treated as a {CARB-classified} commercial area consisting of an aggregate of 15 retail business spaces. The emission factors for commercial land uses are 33.99111 lbs of CO_2/unit/day and 0.00150 lbs of N_2O/unit/day. Therefore the retail use of landscaping operations would generate **42.76 tCO_2e per year**.

5.2. Summary of GHG Emissions

As shown in Table 7, total annual GHG emissions from construction and operation of the proposed project would be approximately **3,702.7 tCO_2e per year.**

[26] Gleick, P.H.; Haasz, D.; Henges-Jeck, C.; Srinivasan, V.; Cushing, K.K.; Mann, A. 2003. Waste Not, Want Not: The Potential for Urban Water Conservation in California. Published by the Pacific Institute for Studies in Development, Environment, and Security. Full report available online at: http://www.pacinst.org/reports/urban_usage/waste_not_want_not_full_report.pdf. And appendices re available online at: http://www.pacinst.org/reports/urban_usage/appendices.htm.

Table 7 – Estimated Unmitigated Scenario Total GHG Emissions

Sector	CO_2e Emissions (tonnes/yr)
Amortized Construction	132.7
Motor Vehicles	2,168.1
Electricity	1,020.2
Natural Gas	151.7
Solid Waste	149.3
Water & Wastewater	37.9
Area Sources	42.8
TOTAL	**3,702.7**

The projected greenhouse gas emission budget for the proposed project would be the summation of the individual sources previously identified and summarized in Table 7. The baseline BAU emissions due to the proposed project action (i.e., traffic generation, onsite uses including maintenance, natural gas and electricity consumption, waste generation, and water consumption) would equate to 3,702.7 tCO_2e per year, which exceeds the 900 tonnes per year screening level.

As a result, to avoid the project having a cumulatively considerable contribution to climate change impacts, the following measures are proposed to provide a minimum 16% reduction in GHG emissions (i.e. 592.4 tonnes per year) compared to unmitigated BAU emissions under a year 2020 scenario.

5.2.1 Proposed BAU Reduction Strategies

5.2.1.1 BAU Reduction Strategy #1: Pavley II + LCFS Implementation (CO_2 Running Emissions)

The LJMP project site would be eligible to take credit for the State of California implementation of the Pavley II Clean Car Standards (AB 1493 *et. seq*.). These standards, also known as the LEV III standards, and applied only to automobile and light truck classes for model years 2017 through 2025, would reduce overall vehicle emissions by an additional 3.0 percent above the 2009 Pavley I standards. Additionally, the project would also be eligible for credit, due to the CARB proposed Low Carbon Fuel Standard (LCFS), pursuant to the California Assembly Bill AB-32 and the Governor's Executive Order S-01-07.[27] Table 8 presents estimated percent reductions that can be expected with the implementation of Pavley II and LCFS.

Table 8 – Percent Reduction from Mitigated Scenario Strategy #1

Vehicle Classification	Standard Year 2020 Emission Rates (g/mi)	Pavley II + LCFS Year 2020 Emission Rates (g/mi)	Percentage Reduction (Standard vs. Pavley I + LCFS)
Light Duty Auto (LDA)	283.23	194.62	31.3%
Light Duty Truck (LDT)	327.75	237.41	27.6%
Medium Duty Trucks (MDT)	452.06	406.85	10.0%
Heavy Duty Trucks (HDT)	452.06	406.85	10.0%
Buses (UBUS)	1070.66	963.60	10.0%
Motorcycle (MCY)	138.86	124.97	10.0%

27 These adjusted emission factors are obtained from the CARB EMFAC 2011 model.

Table 9 shows the effect of Pavley II and LCFS implementation on the proposed vehicular emissions. As a result, the total vehicular CO_2e emission levels can be reduced to 1,942.7 tonnes per year (or roughly 10.4%), for an overall reduction of 5.5% of BAU.

Table 9 – Mitigated Scenario Vehicular Emissions (Pavley II + LCFS)

Vehicle Classification	Annual VMT	CO_2e Emissions in tonnes
Light Duty Auto (LDA)	4,127,603	1,064.6
Light Duty Truck (LDT1)	1,161,248	351.9
Medium Duty Truck (LHD1)	383,250	166.6
Heavy Duty Truck Gasoline (MH GAS)	71,540	33.1
Heavy Duty Truck Diesel (MH DSL)	215,898	321.0
Motorcycle (MCY)	24,273	5.5
TOTALS	**5,983,810**	**1,942.7**

5.2.1.2 BAU Reduction Strategy #2: Previous + Energy Sector 33% RPS Standard

The LJMP project site would be eligible to take credit for the ultimate 33% Renewable Portfolio Standard (RPS) mandated by the State of California for the year 2020.[28] As previously stated, the LJMP project site would have a yearly energy consumption of 3,504,000 KWh/year; thus, using the 33% RPS brings the effective CO_2 reduction to 83.8% of unmitigated levels, or an annual equivalent CO_2e GHG load for the LJMP project site, due to electrical usage, of 826.4 tonnes per year, a reduction of 193.8 tonnes per year. Electricity-related emissions associated with water demand and wastewater treatment would be reduced to 32 tonnes of CO_2e per year, a reduction of 6 tonnes per year from the Unmitigated Scenario.

5.2.1.3 BAU Reduction Strategy #3: All Previous + 2013 CCR Title 24 Efficiency

Finally, the LJMP project site would be eligible to take credit for utilizing the latest efficiency reductions available through implementation of the 2013 CCR Title 24 standards. These reductions are in addition to previously mentioned RPS reductions, as they would be implemented by the applicant at the project level. Currently, the 2013 CCR Title 24 provides improved electrical energy reductions of 21.8%, and an improved natural gas efficiency of 16.8%.[29]

Given this, the final mitigated CO_2e for electrical consumption at the project site under 2013 CCR Title 24 standards would be 668.1 tonnes per year, while the mitigated natural gas consumption would be 126.8 tonnes per year. The overall combined BAU reduction obtained by all the above strategies would be 16.5% from the Unmitigated Scenario, or a total reduction in emissions of 609.1 tonnes per year.

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[28] The energy conversion factor is 537.56 lb-CO_2/MWh for the baseline case. This is derived by scaling the unmitigated 20% RPS CO_2 intensity factor to account for the State required 33% RPS by the year 2020.

[29] Impact Analysis Report, California 2013 Building Energy Efficiency Standards, California Energy Commission, 2013.

5.2.2 Compliance with Future Reduction CO_2 Targets

Application of the above three BAU reduction strategies was found to produce an effective 16.5% reduction (609.1 tonnes per year) in GHG emissions, compared to Business as Usual under a year 2020 scenario.

As a result, no long-term GHG impacts from the project are expected, and the project would be classified incompliance with the intent of both AB-32 and Executive Order S-3-05.