Appendix D Greenhouse Gas Technical Memorandum, SDSU Plaza Linda Verde EIR Addendum, DUDEK, March 2014

DUDEK

MAIN OFFICE
605 THIRD STREET
ENCINITAS, CALIFORNIA 92024
T 760.942.5147 T 800.450.1818 F 760.632.0164

TECHNICAL MEMORANDUM

To:	Laura Shinn, Director, Facilities Planning, San Diego State University
From:	David Deckman, Director of Air Quality Services
Cc:	Michael Haberkorn, Gatzke, Dillon & Ballance
Subject:	San Diego State University Plaza Linda Verde EIR Addendum – Greenhouse Gas Analysis
Date:	March 25, 2014
Attachments:	Figures 1–4

This memorandum provides the greenhouse gas (GHG) analysis for proposed revisions to the previously approved San Diego State University (SDSU) Plaza Linda Verde project located in San Diego, California, and is prepared as part of an Addendum to the Plaza Linda Verde Final Environmental Impact Report (EIR) (May 2011).

The memorandum is intended to (1) briefly summarize the GHG impacts and significance conclusions identified in the May 2011 SDSU Plaza Linda Verde Final EIR and (2) discuss whether the proposed revisions would result in new significant environmental effects or a substantial increase in the severity of significant effects previously identified in the May 2011 Final EIR.

1 PROJECT LOCATION AND DESCRIPTION

The proposed project site is located on the SDSU campus, within the College Area of the City of San Diego (City), San Diego County, California (see Figure 1, Regional Map, and Figure 2, Vicinity Map). Specifically, the project site is located generally between Aztec Walk and Montezuma Road in the southeastern portion of campus (see Figure 3, Project Area).

The proposed project consists of a mixed-use project that would straddle both the east and west sides of College Avenue between the SDSU Transit Center/Pedestrian Bridge and Montezuma Road (see Figure 4, Proposed Site Plan). The proposed project would include commercial/retail uses on the first floor of several buildings and residential uses on the upper floors. A stand-alone parking structure would also be constructed west of College Avenue. The project was analyzed in the Plaza Linda Verde EIR, which was finalized and certified in May 2011. Table 1 provides a summary of all buildings proposed and analyzed in the May 2011 Final EIR.

As SDSU has proceeded with preliminary project planning and design, several modifications to the approved project are being proposed. These changes include modifications to Buildings 1, 2, and 3 (all located west of College Avenue) and are summarized in Table 2. No changes to Buildings 4, 5, 6, or 7 would occur; however, details related to these buildings have been provided in Tables 1 and 2 for informational purposes. Additionally, no changes to the building footprints or project area are proposed.

Table 1
Approved – May 2011 Plaza Linda Verde Final EIR

Project Components	Total Size (GSF)	Retail Square Feet (GSF)	Rentable Square Feet (SF)	Residential Square Feet (GSF)	Housing Units		Beds	Parking Spaces	Building Stories
					Apartment Style	*Dormitory Style*			
Building 1	118,550	25,000	24,340	93,550	84	0	352	0	5
Building 2	85,640	20,000	17,975	65,640	60	0	264	0	5
Building 3 (Parking Structure)	128,925	2,000	1,815	0	0	0	0	342	5*
Building 4	123,004	23,000	13,445	100,004	63	0	256	69–110	5
Building 5	157,971	20,000	19,634	137,971	87	0	344	91–110	5
Building 6	48,070	0	0	48,070	44	0	192	0	4
Building 7	55,300	0	0	55,300	52	0	224	0	4
Total	**717,460**	**90,000**	**77,209**	**500,535**	**390**	**0**	**1,632**	**502–562**	**n/a**

Notes: GSF = gross square feet.
* The approved parking structure consisted of one subterranean story and four aboveground stories.

Table 2
Revised – March 2014 Addendum to the May 2011 Plaza Linda Verde Final EIR

Project Components	Total Size (GSF)	Retail Square Feet (GSF)	Rentable Square Feet (SF)	Residential Square Feet (GSF)	Housing Units		Beds	Parking Spaces	Building Stories
					Apartment Style	*Dormitory Style*			
Building 1*	139,329	20,553	19,902	119,329	85**	187	359	0	6
Building 2*	117,387	14,868	14,056	102,519	68**	158	300	0	6
Building 3 (Parking Structure)*	143,693	0	0	0	0	0	0	392	7
Building 4	123,004	23,000	13,445	100,004	63	0	256	69–110	5
Building 5	157,971	20,000	19,634	137,971	87	0	344	91–110	5
Building 6	48,070	0	0	48,070	44	0	192	0	4
Building 7	55,300	0	0	55,300	52	0	224	0	4
Total	**784,754**	**78,421**	**67,037**	**563,193**	**399**	**345**	**1,675**	**552–612**	**n/a**

Notes: GSF = gross square feet.
* Buildings that have changed since the May 2011 Final EIR and are the subject of the March 2014 Addendum analysis
** Apartment equivalent has been calculated. The total housing units planned for Buildings 1 and 2 should be conveyed in either "apartment style" or "dormitory style" numbers, not both. For example, Building 1 would include 85 apartment style units ***OR*** 187 dormitory style units, not both.

As indicated in Table 2, the proposed changes to the previously approved project would include a change in residential units from apartment-style units to dormitory-style rooms. Table 2 shows the number of dormitory-style rooms (345) that now would be built in Buildings 1 and 2 and their associated apartment-style equivalent (153). Other changes include an increase in total gross square footage from 717,460 to 784,754; a decrease in retail gross square footage from 90,000 to 78,421; an increase in residential gross square footage from to 500,535 to 563,193; an increase in overall bed count from 1,632 to 1,675; and the addition of 50 parking spaces to Building 3. The increased square footage is associated with an increase in one additional floor to Buildings 1 and 2, and two additional stories to Building 3. The additional floor would add approximately 11 feet in height to Buildings 1 and 2. The additional three aboveground floors to Building 3 would result in a building height of 100 feet.

2 METHODS

The May 2011 Plaza Linda Verde Final EIR air quality and global climate change section was reviewed, and the GHG impacts and significance conclusions identified from the original project are briefly summarized below. This technical memorandum will discuss GHG impacts that would result from implementation of project modifications to the originally approved project and describe the modified project's consistency with GHG plans, policies, and regulations.

3 SUMMARY OF PLAZA LINDA VERDE FINAL EIR IMPACTS AND CONCLUSIONS

3.1 Greenhouse Gas Emissions

Construction-Related Emissions

Table 3 (reproduced Final EIR Table 3.2-12) presents the emissions inventory results for the originally approved project's construction-related activities.

Table 3
Construction Greenhouse Gas Emissions

Construction Phase	CO_2 Emissions (metric tons)
Phase I Construction	1,712
Phase II Construction	1,864
Total	**3,576**

Source: SDSU 2011
CO_2 – carbon dioxide

As shown in Table 3, the originally approved project construction activities would generate approximately 3,576 metric tons of CO_2 emissions.[1] The originally approved project's total emissions from construction would be less than the draft significance threshold of 7,000 metric tons CO_2 equivalent (CO_2E) for industrial projects proposed by the California Air Resources Board (CARB). Since the construction emissions associated with the originally approved project would be temporary and below the 7,000-metric-ton threshold, the May 2011 Plaza Linda Verde Final EIR concluded that the construction-related emissions would not be significant under the CARB's draft significance threshold.

Additionally, amortizing the emissions from construction of the originally approved project over a 30-year period would result in an annual contribution of 119 metric tons of CO_2E. Since the construction emissions are temporary and would be below the CARB's draft recommend threshold, emissions from construction would be less than significant.

Operational-Related Emissions

The Plaza Linda Verde Final EIR evaluated consistency of the proposed project with the goal of Assembly Bill (AB) 32; specifically, whether the proposed project would reduce operational GHG by 28.35% relative to a "business-as-usual" (BAU scenario) to achieve the statewide goal of AB 32. GHG emissions were estimated for the BAU and proposed project scenarios using the methodologies discussed below, and the two values were compared.

Business as Usual

Energy Use Emissions

Annual electricity use for BAU conditions for the originally approved project was based on usage factors of 3.413 kilowatt hour (kWh) per square foot (kWh/sf) for residential uses and 14.06 kWh/sf for retail uses. Annual natural gas usage for BAU conditions for the originally approved project was based on 0.18 therms/sf for residential uses and 0.5 therms/sf for retail uses.

[1] The May 2011 Plaza Linda Verde Final EIR reported construction emissions in units of metric tons of CO_2, rather than units of metric tons of CO_2 equivalent (CO_2E), which is more commonly used in GHG analysis and used to evaluate the project's operational emissions. The difference between CO_2 and CO_2E reflects the contributions of methane (CH_4) and nitrous oxide (N_2O), which are generally small (less than 5%) compared to the CO_2 emissions for construction emissions. Thus, the CO_2E emissions would not have been substantially different than the CO_2 emissions previously reported.

Water Emissions

Based on the May 2011 Final Plaza Linda Verde EIR, the estimated delivered water for the originally approved project would have an embodied energy of 3,519 kWh/acre-foot, or 0.0108 kWh/gallon, and the estimated water demand is 68,050 gallons per day, or 24,838,250 gallons per year.

Solid Waste Emissions

Based on the May 2011 Final Plaza Linda Verde EIR, the proposed uses for the originally approved project were estimated to generate a total of 216.9 tons per year of solid waste.

Mobile Source Emissions

The Traffic Impact Analysis prepared for the Plaza Linda Verde EIR concluded that the total gross projected average daily traffic generated by the originally approved project would be 5,509 with the assumption that the average trip length would be 5.8 miles.

Table 4 (reproduced Final EIR Table 3.2-13) presents the summary of estimated BAU operational GHG emissions.

Table 4
Summary of Estimated Business-as-Usual Operational Greenhouse Gas Emissions

Emission Source	Annual Emissions (Metric tons/year)			
	CO_2	CH_4	N_2O	CO_2E
Electricity Use	1,062	0.0081	0.0045	1,064
Natural Gas Use	630	0.070	0.0012	632
Water Use	107	0.0008	0.0005	107
Solid Waste Handling	(6)	—	—	(6)
Vehicle Emissions	6,326	0.24	0.32	4,286
Global Warming Potential Factor	1	21	310	
CO_2E Emissions	8,119	9	154	8,282
Total CO_2E Emissions	**8,282**			

Source: SDSU 2011
CO_2 = carbon dioxide
CH_4 = methane
N_2O = nitrous oxide
CO_2E = carbon dioxide equivalent

Proposed Project

Table 5 (reproduced Final EIR Table 3.2-14) presents the estimated GHG emissions for the originally approved project with implementation of the GHG reduction measures, including Leadership in Energy and Environmental Design (LEED) silver rating (20% reduction in energy usage); the federal and state mobile source regulatory framework for Corporate Average Fuel Economy (CAFE)/Pavley fuel efficiency and motor vehicle standards, and CARB's low carbon fuel standard (30% reduction in motor vehicle emissions); and 20% renewable portfolio standard (RPS) (14% reduction in electricity-related emissions).

Table 5
Summary of Estimated Project Operational Greenhouse Gas Emissions

Emission Source	Annual Emissions (metric tons/year)			
	CO_2	CH_4	N_2O	CO_2E
Electricity Use	731	0.0056	0.0031	732
Natural Gas Use	504	0.0561	0.0010	506
Water Use	107	0.0008	0.0005	107
Solid Waste Handling	6	—	—	6
Vehicle Emissions	4,428	0.25	0.34	4,539
Global Warming Potential Factor	1	21	310	
CO_2E Emissions	5,764	7	107	5,878
Total CO_2E Emissions, with GHG Reductions	**5,878**			
BAU Emissions	**8,282**			
Percent Reduction Below BAU	**28.8%**			
Existing Emission Levels on the Project Site	**4,171**			
Net Increase in Emission Levels	**1,707**			

Source: SDSU 2011
CO_2 – carbon dioxide
CH_4 – methane
N_2O - nitrous oxide
CO_2E - carbon dioxide equivalent

As shown in Table 5, the originally approved project's GHG emissions would be approximately 29% below BAU conditions; therefore, the project would be consistent with AB 32. Since the project-related emissions would be consistent with AB 32, impacts would be less than significant.

Additionally, as shown in Table 5, the originally approved project would result in a net increase of 1,707 metric tons CO_2E per year in GHG emissions when compared to existing annual emission levels associated with the project site, which is below the South Coast Air

Quality Management District's draft significance threshold for mixed-use projects of 3,000 metric tons CO_2E.

Cumulative Impacts

As discussed in the May 2011 Final Plaza Linda Verde EIR, since the originally approved project would not impede California's achievement of reductions mandated by AB 32, the project's incremental GHG emissions was determined not to have a "cumulatively considerable" increase on GHG emissions.

3.2 Consistency with GHG Plans, Policies, and Regulations

The May 2011 Plaza Linda Verde Final EIR evaluated the originally approved project's GHG emissions against AB 32's reduction mandate. As discussed previously and shown in Table 5, the originally approved project-related emissions would be consistent with AB 32. No other plans, policies, or regulations applicable to the originally approved project existed.

4 ANALYSIS OF PROJECT CHANGES

4.1 Greenhouse Gas Emissions

Construction GHG Emissions

As previously mentioned, the originally approved project construction activities would generate approximately 3,576 metric tons CO_2E emissions. The modified project would result in the addition of 67,294 total gross square footage from the construction of Buildings 1 through 7, which could lengthen the construction period. The increased square footage is associated with an increase in one additional floor to Buildings 1 through 3. The approximately 9% increase in square footage in the modified project would not double the generation of GHG emissions. Therefore, the modified project would not exceed the CARB draft significance threshold of 7,000 metric tons CO_2E for industrial projects. Because the construction emissions are temporary and would remain below the CARB's draft recommend threshold, emissions from construction would remain less than significant. No change in significance determination would occur as a result of the modified project.

Operational GHG Emissions

Similar to the originally approved project, the modified project would still incorporate LEED silver ratings and the federal and state mobile source regulatory framework and 20% RPS (currently 33% RPS), thus surpassing existing efficiency requirements and reducing the project's

demand for electricity, natural gas, and water—all of which would reduce the GHG emissions associated with the project.

Additionally, similar to the originally modified project, redevelopment of the project site would result in the development of more energy efficient buildings and structures than currently exist on the project site. Furthermore, the increase in the number of student beds would allow more students to live on campus and would result in fewer vehicle trips coming in and out of the College Area as students are able to have better walking and biking accessibilities to campus facilities and classes compared to living off-campus. The decrease in the amount of retail space also would result in a corresponding decrease in the number of retail-related vehicle trips and associated emissions.

The percent reductions for these measures would apply proportionately to the modified project's GHG emissions, and it is anticipated that the project would still achieve a minimum of 28.35% below BAU conditions; therefore, the modified project would remain consistent with the goal of AB 32. Since the modified project-related emissions would be consistent with AB 32, GHG impacts would still remain less than significant. No change in significance determination would occur as a result of the modified project.

Additionally, as previously mentioned, the originally approved project would result in an increase in GHG emissions of 1,707 metric tons CO_2E per year when compared to existing annual emission levels associated with the project site, which is below the South Coast Air Quality Management District's draft significance threshold for mixed-use projects of 3,000 metric tons of CO_2E. An approximately 9% increase in overall project square footage with implementation of the modified project would not result in 40% increase in GHG emissions. No change in significance determination would occur as a result of the modified project.

4.2 Consistency with GHG Plans, Policies, and Regulations

As discussed previously, the modified project-related emissions would likely be consistent with AB 32. No other plans, policies, or regulations applicable to the originally approved project existed at the time.

At present, neither California State University (CSU), SDSU, nor the San Diego Air Pollution Control District has adopted any GHG reduction measures that would apply to the GHG emissions associated with the modified project. Further, no mandatory and applicable GHG regulations or finalized agency guidelines would apply to implementation of this modified project, and no conflict would occur. Therefore, this impact would be less than significant. No change in significance determination would occur as a result of the modified project.

5 CONCLUSIONS

Based on a review of the Plaza Linda Verde Final EIR and the modifications now proposed to the approved project, the proposed revisions would not result in any new significant effects, nor would the revisions result in a substantial increase in the severity of significant effects previously identified in the Final EIR. Because no new significant impacts would occur, and there would be no substantial increase in the severity of previously identified significant effects, no additional mitigation measures beyond those identified in the May 2011 Plaza Linda Verde Final EIR would be required.

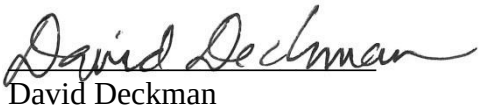
6 REFERENCES

SDSU (San Diego State University). 2011. *Final Environmental Impact Report. Plaza Linda Verde. State Clearinghouse No. 2009011040*. Prepared for Board of Trustees of the California State University. Prepared by San Diego State University. May 2011.

7 LIST OF PREPARERS

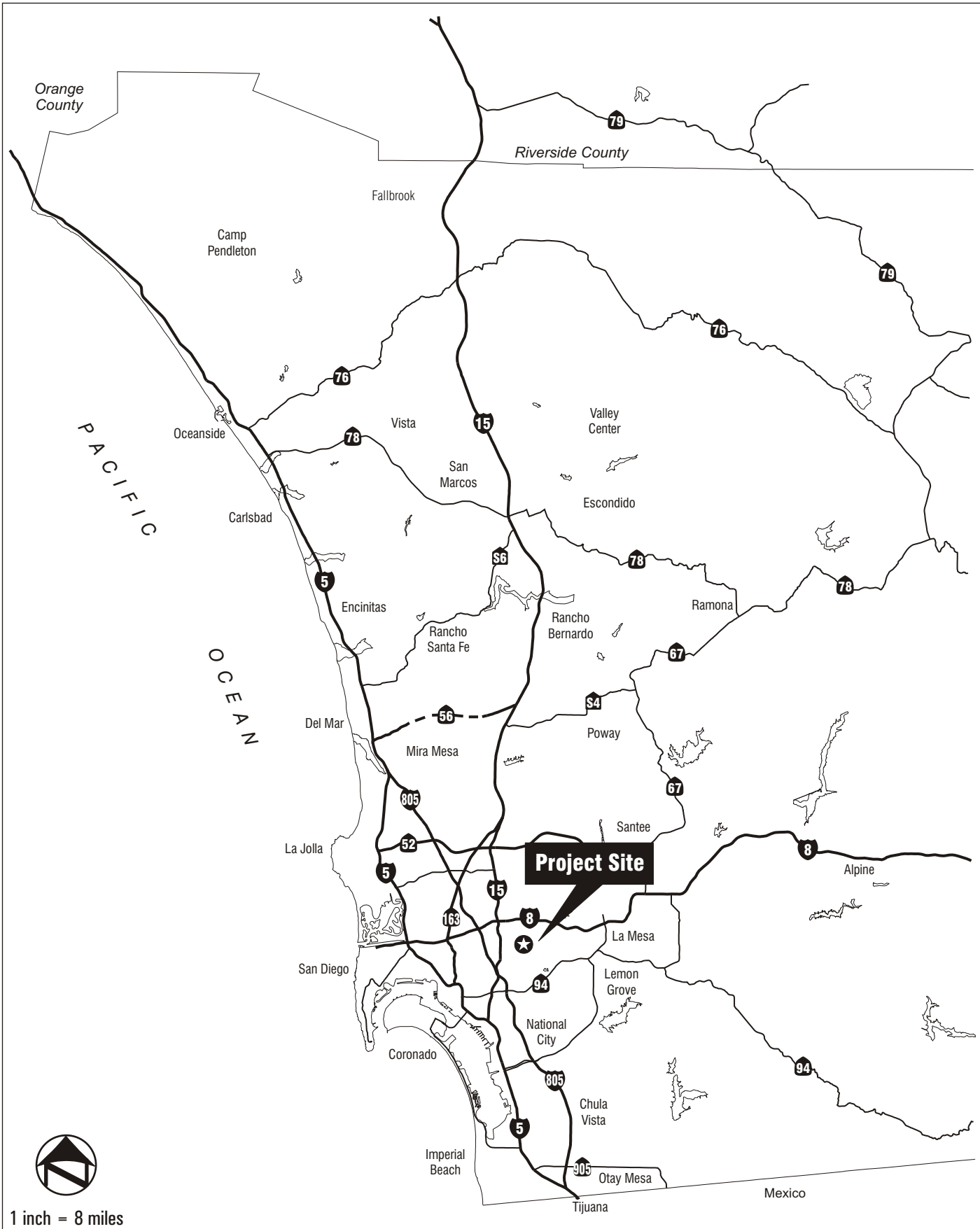
David Deckman, Director of Air Quality Services (Dudek)
Stephanie Tang, Environmental Planner (Dudek)
Jennifer Longabaugh, LEED AP ND, Environmental Planner (Dudek)
Sarah Lozano, AICP, Principal (Dudek)
Lesley Terry, GIS Analyst (Dudek)
Steve Taffolla, Editor (Dudek)
Hannah DuBois, Publications Assistant (Dudek)

Sincerely,



David Deckman
Director of Air Quality Services

cc: Sarah Lozano, AICP, Principal
Jennifer Longabaugh, LEED AP ND, Environmental Planner



1 inch = 8 miles

SDSU Plaza Linda Verde

Greenhouse Gas Analysis

SAN DIEGO STATE UNIVERSITY

Figure 1

Regional Map

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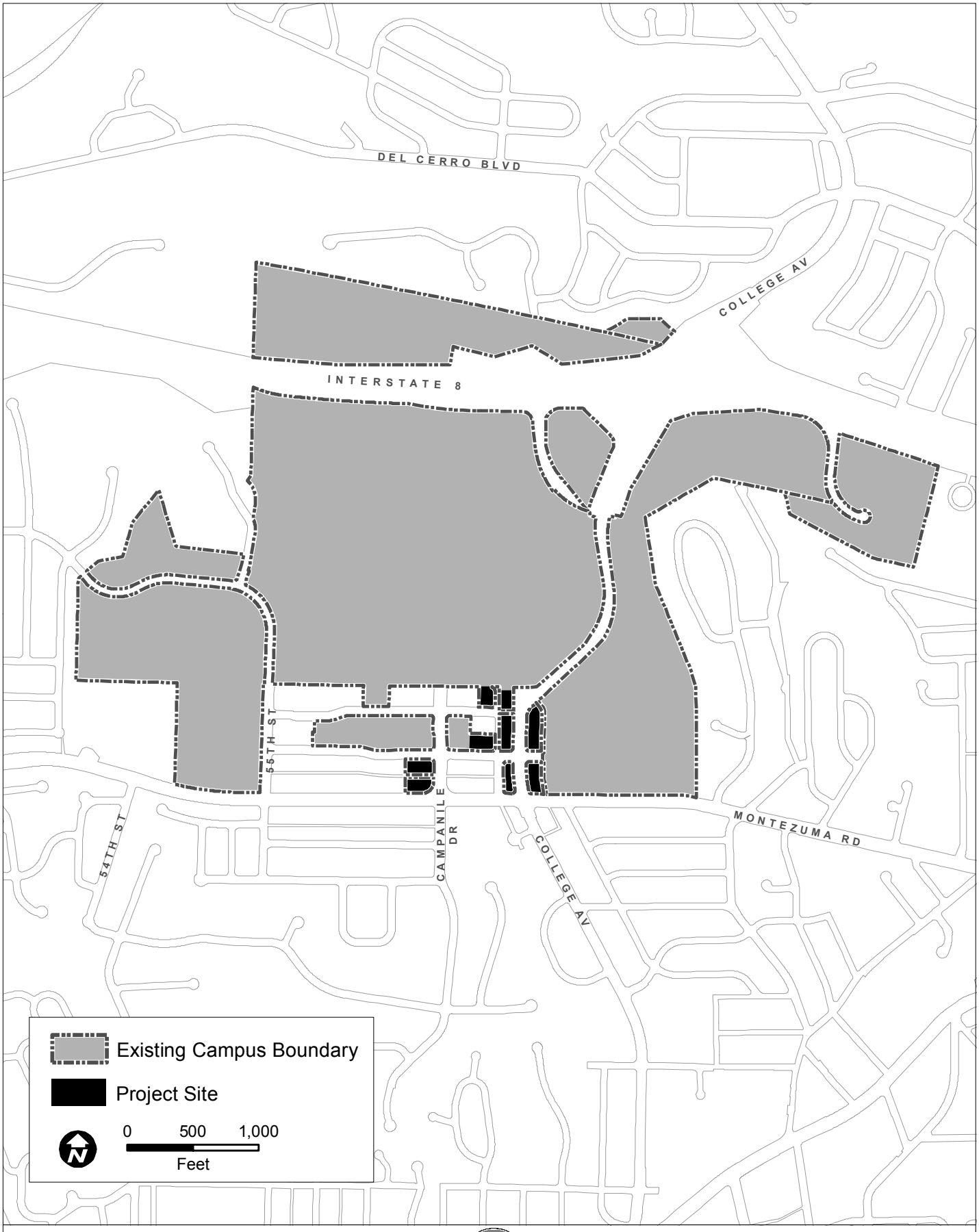

SDSU Plaza Linda Verde
Greenhouse Gas Analysis

SAN DIEGO STATE UNIVERSITY

Figure 2
Vicinity Map

Hardy Ave

Lindo Paseo

Campanile Dr

College Ave

Montezuma Rd

Area of Focus

Existing Campus Boundary

SOURCES:
Aerial - Digital Globe 2008
Campus Boundary - SANGIS Parcels 2008

0 100 200
Feet

Z:\Projects\J830001\MAPDOC\

SDSU Plaza Linda Verde
Greenhouse Gas Analysis

SAN DIEGO STATE UNIVERSITY

Figure 3
Project Area

SDSU Plaza Linda Verde
Greenhouse Gas Analysis

SAN DIEGO STATE UNIVERSITY

Figure 4
Proposed Site Plan