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07-AFC-6
DATE APR 17 2008
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Carlsbad Energy Center Project
(07-AFC-6)

Offsite Alternatives Analysis

Submitted to

California Energy Commission

Submitted by

Carlsbad Energy Center LLC

April 2008

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Acronyms and Abbreviations

AFC	Application for Certification
CCR	California Code of Regulations
CDFG	California Department of Fish and Game
CEC	California Energy Commission
CECP	Carlsbad Energy Center Project
CEQA	California Environmental Quality Act
CNDDB	California Natural Diversity Data Base
CNEL	Community Noise Equivalent Level
CNPS	California Native Plant Society
dBA	decibel
EIR	Environmental Impact Report
FEIR	Final Environmental Impact Report
HMP	Habitat Management Plan
IA	Implementing Agreement
kV	kilovolt
LFMZ	Local Facilities Management Zone
MHCP	Multiple Habitat Conservation Plan
MVA	megavolt-ampere
P-U	Public Utility
SDG&E	San Diego Gas and Electric
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

Carlsbad Energy Center Project
Offsite Alternatives Analysis

1.0 Introduction

This offsite alternatives analysis for the proposed Carlsbad Energy Center Project (CECP) expands upon the discussion provided in Section 6.0 Alternatives (specifically, Section 6.4.2) of the CECP Application for Certification (AFC) [07-AFC-6]. This supplemental analysis evaluates two alternative sites for the CECP, suggested by the City of Carlsbad: the Maerkle site and the Carlsbad Oaks North site, described below. The basis for determining whether an alternative site is a viable location is based upon whether or not the CECP could be feasibly permitted, constructed and operated at the alternative location and if the alternative location meets the CECP project objectives. These objectives are listed in Section 6.0 of the AFC.

As described in Section 6.0 of the AFC, the California Energy Commission (CEC) requires that the alternatives analysis as required by California Code of Regulations (CCR), Title 20, Appendix B, which is similar to the California Environmental Quality Act (CEQA) requirement, be conducted to analyze alternatives. Under CEQA Guidelines, Section 15126.6, Consideration and Discussion of Alternatives to the Proposed Project, an adequate alternatives analysis is based on the following principles:

- An alternatives analysis shall describe a reasonable range of alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives.
- The range of alternatives required is governed by a 'rule of reason' that requires the analysis to set forth only those alternatives necessary to permit informed decision making and public participation.
- Among the factors that may be taken into account when addressing the feasibility of alternatives are site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries (projects with a regionally significant impact should consider the regional context), and whether the proponent can reasonably acquire, control or otherwise have access to the alternative site (or the site is already owned by the proponent).

Additionally, Section 30260 of the California Coastal Act has requirements related to siting industrial facilities, including power plants, in the coastal zone. Section 30264 allows for construction of new or expanded power plants in the coastal zone when no alternative sites have greater relative merit to the proposed site.

2.0 Selection of Offsite Alternatives

As discussed above, CEQA requires consideration of "a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project, but would avoid or substantially lessen any of the significant effects of the project, and [an evaluation of] the comparative merits of the alternatives." For the purpose of this analysis, two sites identified by the City of Carlsbad are discussed. In addition, similar information regarding the proposed CECP site (i.e., the site located within the existing Encina Power Station [Proposed Site]) is also presented and compared with information on the alternatives sites.

2.1 Proposed Site

The Proposed Site is located on approximately 23 acres of land at the existing Encina Power Station. The Proposed Site is located in an area designated in the City of Carlsbad General Plan and Zoning Ordinance as Public Utility (P-U). The P-U zone designation allows for electrical generation and transmission facilities. The land uses surrounding the CECP site include the Agua Hedionda Lagoon to the north, commercial and open space uses to the south, Interstate 5 and San Diego Gas and Electric (SDG&E) property to the east, additional SDG&E property and substation to the southwest, and Carlsbad Boulevard, another portion of the Agua Hedionda Lagoon, and the Pacific Ocean to the west. The Encina Power Station site has been used for electrical generation since 1952.

The CECP will use existing Encina Power Station infrastructure, thereby reducing environmental impacts and costs associated with offsite alternatives and supplemental infrastructure requirements. The infrastructure at the Encina Power Station will support the CECP with only minor new connections, including expanding connections to an existing high pressure natural gas pipeline, industrial/sanitary sewer line, potable water line, and onsite electrical connections to the existing or expanded SDG&E 138-kilovolts (kV) and 230-kV switchyards at the Encina Power Station.

The only new infrastructure requirement for CECP will be a conveyance to allow the use of CCR Title 22 reclaimed water or other alternative water supplies as the CECP's raw water source. The CECP will require the construction of a 3,700-foot CCR Title 22 reclaimed water supply pipeline to connect with the existing City of Carlsbad reclaimed water delivery pipeline. The use of reclaimed water by CECP represents a significant Project benefit as use of potable water will be limited to sanitary uses and fire protection.

2.2 Alternative Sites

As discussed in Section 6.4.2 of the AFC, the Applicant evaluated whether sites other than the Proposed Site for the CECP could potentially attain most of the basic project objectives of the CECP. As part of the prior analysis in Section 6.4.2 of the AFC, the alternative site evaluation was limited to only those sites that are designated in the City's General Plan and Zoning Ordinance as Public Utility, which allows electrical generation and transmission facilities such as those described in the CECP AFC. The analysis in Section 6.4.2 of the AFC determined that there are no available parcels within the City of Carlsbad with the required General Plan and Zoning Ordinance designation of Public Utility. Additionally, the prior analysis concluded that potential sites outside the City of Carlsbad do not meet or satisfy

most of the project objectives and therefore, no specific alternative sites were analyzed in depth.

However, as part of the CEC licensing process, and in consultation with the City of Carlsbad, the City requested that the Applicant review two additional sites in areas of Carlsbad that are designated/zoned something other than P-U. These sites are the Maerkle site located adjacent to the Maerkle Reservoir and a site within the Carlsbad Oaks North Business Park. The locations of the two alternative sites, in relation to the Proposed Site, as well as existing roadways, and jurisdictional boundaries for the cities of Carlsbad, Oceanside, and Vista are shown on Figure 1A.

2.2.1 Alternative Site Description

Alternative Site #1: Maerkle. This is an approximately 55-acre site located immediately north of the Carlsbad Municipal Water District-owned Maerkle Reservoir. As shown on Figure 1A, this site is located in the City of Carlsbad adjacent to existing residential development in the cities of Oceanside and Vista, and northeast of areas that are approved for new residential development in the City of Carlsbad (Cantarini and Holly Springs developments, as well as a possible new public high school facility). As shown on Figure 2, the Maerkle site is designated as Open Space under the City of Carlsbad General Plan and Zoning Ordinance.)

Alternative Site #2: Carlsbad Oaks North Business Park. This is an approximately 400-acre approved development consisting of a new business park and a habitat conservation area located north of Faraday Avenue at the intersection with El Fuerte Street. Approximately 160 acres of the site will be developed into a privately owned industrial park, which is presently under construction. As shown on Figure 2, the business park portion of this site is designated Planned Industrial under the City of Carlsbad's General Plan and Zoning Ordinance, and its allowed uses and development is controlled by the Carlsbad Oaks North Specific Plan. As of the end of March 2008, rough grading and installation of roads, drainage improvements, and street lighting had been completed. Due to these recent site improvements, the aerial photography used for the figures in this analysis is outdated and does not reflect the current status of this site. Figure 1B shows the approved tentative map for the Carlsbad Oaks North Business Park as well as several context photos taken at the site on March 27, 2008. As shown on Figure 1A, this site will be accessed from the newly installed Whiptail Loop off of Faraday Avenue. The northeast portion of this site is located adjacent to existing residential development in the City of Vista.

All but 26.2 acres located in the eastern portion of the site on lots 13 (13.1 acres), 17 (8.0 acres), and 18 (5.1 acres), as shown on Figure 1B, are within a proposed McClellan-Palomar Airport safety zone boundary, as shown on Figure 4, which is presently under consideration by the San Diego Regional Airport Authority acting as the San Diego County Airport Land Use Commission. If adopted as proposed, new electrical generation power plant facilities in excess of 100 MW would be prohibited in Safety Zones 1-6, inclusive. Thus, the 26-acre area in the northeast portion of the Park (i.e., the area evaluated as Site #2 for this alternatives analysis) is the only portion outside of the proposed Safety Zones 1-6. There is also an approximately 40 feet difference in elevation among these three lots, as shown on Figure 1B.

2.2.2 Alternative Site Selection Criteria

The following criteria were applied to evaluate the alternative sites' suitability for the CECP. These criteria include the following:

- **Proximity to energy-related infrastructure—** The site needs to be located in close proximity to SDG&E's Encina substation (or another suitable connection to the SDG&E system), a high-pressure major gas transmission system (with 75 pounds per square inch gauge minimum), a potable water source, a reclaimed water source, public road access, storm water discharge and a sewer system.
- **Environmental viability—** the site should have few or no environmentally sensitive areas and should allow development with no significant environmental impacts (e.g., no sensitive habitats, wetlands or grasslands).
- **Compatibility with surrounding community—** the site should be suitable for the development of a power plant and compatible with the surrounding uses designated under the General Plan and Zoning Ordinance.
- **Site Control -** The site should be of sufficient land area (approximately 23+ acres to accommodate the area required for the power block and electrical interconnection facilities), void of any site encumbrances (physical or administrative obstructions to using the property), close to available linear corridor right-of-ways (roads, electrical transmission, natural gas pipeline, potable and reclaimed water, and sewer), close to a construction laydown area that would require additional area above the 23 acres for the power plant components, and available for sale or long-term lease.
- **Compliance with Laws, Ordinances, Regulations, and Standards —** the site should allow for the construction and operation of the CECP in compliance with all laws, ordinances, regulations, and standards including the City of Carlsbad and adjoining cities (Oceanside and Vista).
- **Achieve project objectives—** The site should achieve CECP project objectives including accomplishing a "Brownfield" redevelopment of an existing power plant for a net increase in electrical capacity to support electrical system and local resource supply requirements in the San Diego area (the California Public Utilities Commission has a stated preference for "Brownfield" power projects pursuant to Decision No. 04-12-048), and meet the commercial qualifications for long-term power contract opportunities in southern California (namely being a competitive power plant project achieving an online date during 2010-2012). In addition, the site should have available land to accommodate potential future expansion in order to meet future San Diego area demand.

The two alternative site locations, shown in Figure 1A, were evaluated using the above criteria. The site characteristics are summarized in Table 1 and described in the following subsections, along with additional site details that were taken into consideration when determining whether or not each site is a suitable alternative site for the expected configuration of the CECP.

TABLE 1
Comparison Using Site Selection Criteria

Site	Parcel Size (acres)	Land Use Compatibility/ Ownership/Brownfield	Linear Facilities*	Environmental Sensitivity	Distance to Residential (Approx.)
Proposed Site	23 acres	Zone/General Plan: Public Utility = Compatible Ownership: Applicant Conforms to CPUC Brownfield Preference Policy = Yes	PW: Connect at site RW: New 3700 feet connection G: Connect at site T: Connect to existing adjacent Encina Substation at both 138 kV and 230 kV S: Connect at site A: Use existing site access; railroad for large deliveries; and access from Avenida Encinas through SDG&E property to the site EWA outfall: 2-mile connection along existing easement	Low	0.33 mile
Maerkle (Alternative Site #1)	+/- 55 acres	Zone/General Plan: Open Space, will require rezone and general plan amendment Ownership: Carlsbad Municipal Water District Conforms to CPUC Brownfield Preference Policy = No	PW: Connect at site RW: New ~2-mile connection G: New 0.75-mile connection T: New 0.5-mile connection (this is limited to a 138 kV interconnect at the line shown on Figure 1A – an interconnect to the 230 kV system at the existing SDG&E substation at the Encina Power Station would require a new ~ 5-mile interconnect) S: New ~3.25-mile connection A: New ~2-mile road along proposed Cantarini residential development road alignment or possible extension from Cannon Road east of College Avenue. EWA outfall: 5+-mile connection along surfaces streets and arterial roadways	High (Noise, Visual, Air Quality)	Located adjacent to residential neighborhoods
Carlsbad Oaks North (**Alternative** Site #2)	~ 26-acre portion of Carlsbad Oaks North Business	Zone/General Plan: Planned Industrial (development portion) - will require rezone, general plan, and specific plan amendments	PW: New connection onsite RW: New connection onsite G: New 1.5-mile connection T: New 0.5-mile connection –	High (Noise, Visual, Air Quality)	Located adjacent to residential neighborhood

TABLE 1
Comparison Using Site Selection Criteria

Site	Parcel Size (acres)	Land Use Compatibility/ Ownership/Brownfield	Linear Facilities*	Environmental Sensitivity	Distance to Residential (Approx.)
	Park	Ownership: Independent Conforms to CPUC Brownfield Preference Policy = No	same as Site #1 S: New connection onsite A: Access from Whiptail Loop EWA outfall: 5+-mile connection along surfaces streets and arterial roadways		

Notes: PW: = potable water; RW: = reclaimed water; G: = natural gas; T= electric transmission (connection to Encina Substation); S: = sewer; A=Site access; EWA=process wastewater discharge line

2.3 Comparison of Alternative Sites

The information provided below has been synthesized into Tables 1 and 2 above. Table 1 presents each site against the site selection criteria and Table 2 highlights potential significant environmental issues, or constraints, for each site. In summary, siting issues for each site are as follows:

Proposed Site

- Power plant and substation can be easily accommodated using existing or expanded infrastructure.
- Located within P-U designated General Plan and zone district, also consistent with existing Specific Plan
- No significant environmental impacts are expected to occur
- All Project objectives can be achieved

Alternative Site #1 Maerkle

- Assumes that the Carlsbad Municipal Water District provides site control (long-term lease to the Applicant)
- Assumes City of Carlsbad amends the General Plan and Zoning Ordinance to change the land use designations to P-U
- Existing senior citizen-oriented residential development directly adjacent to the site in the City of Oceanside
- New offsite infrastructure required, including a new approximately 2 mile access road, and which would require easements over private property.
- Proximity to existing and proposed residential development will result in significant and unavoidable noise impacts and potentially significant visual impacts.

- Key project objectives could not be achieved at this location, including not accomplishing a "Brownfield" redevelopment of an existing power plant, nor would the location meet the commercial qualifications for long-term power contract opportunities in southern California by delaying project completion past 2012.

Alternative Site #2 Carlsbad Oaks North Business Park

- Site would need to be leased or purchased by the Applicant; due to potential Airport Authority Safety Zone, only three lots on the eastern portion of the property (lots 13, 17, and 18, as shown on Figure 1B) could be used and may be of insufficient size totaling 26.2-acres, due to individual lots sizes, lot configuration, and existing grade separations.
- Assumes City of Carlsbad amends the General Plan, Specific Plan and Zoning Ordinance to change the land use designations to P-U
- Existing residential development adjacent to east side of site
- New offsite infrastructure and easements required
- Proximity to existing residential development will result in significant and unavoidable noise impacts and potentially significant visual impacts
- Key project objectives could not be achieved at this location, including not accomplishing a "Brownfield" redevelopment of an existing power plant, nor would the location meet the commercial qualifications for long-term power contract opportunities in southern California by delaying project completion past 2012.
- Possible FAA airspace compatibility issues depending on final height, thermal plumes, and navigational safety issues.

TABLE 2
Environmental Issues Applied As Criteria

Criteria	Proposed Site	Maerkle (Site #1)	Carlsbad Oaks North (Site #2)
Airport Influence Zone	NA	NA	Yes, prevents siting on western side and possible FAA navigation hazard issues for entire site
Aesthetics	No significant change with low profile design	Significant change from present open space and significant change for nearby residential neighborhoods	Significant change for nearby residential and commercial neighborhoods
Noise	Less than significant impact	Significant impact to adjacent residential neighborhoods	Significant impact to adjacent residential neighborhood
Habitat Conservation	No undisturbed habitat affected	Infrastructure and access improvements may affect protected riparian habitat and sensitive species	Infrastructure would be located along surface streets to avoid nearby residential sensitive areas

TABLE 2
Environmental Issues Applied As Criteria

Criteria	Proposed Site	Maerkle (Site #1)	Carlsbad Oaks North (Site #2)
Land Use Compatibility	Zoned PU & consistent with existing industrial uses	Bounded by residential and zoned as open space	Inconsistent with planned light industrial uses and bounded by residential development to the east and a dedicated permanent open space protected habitat area to the north
Air Quality	Modeling demonstrates no adverse impacts	Close proximity to residential could create adverse impacts during construction	Close proximity to residential could create adverse impacts during construction

2.4 Power Plant Components

Proposed Site. The project is proposed to be located on approximately 23 acres of land at the existing Encina Power Station owned by the Applicant.

Alternative Site #1: Maerkle. This +/- 55 acre site north of the Maerkle Reservoir is owned by the Carlsbad Municipal Water District.

Alternative Site #2 Carlsbad Oaks North Business Park. The approximately 26-acre portion, located in the northeast section of the Carlsbad Oaks North Business Park is owned by a private entity. This 26-acre portion is presently split into three graded and grade-separated lots comprising 26 acres. The most significant grade-separation is 40 feet between lots. Without conducting detailed engineering studies, it cannot be concluded that the grade separation and size of the site would render the site insufficient space to accommodate the footprint of the CECP.

2.4.1 Facility Access

Proposed Site. Access would be provided through the existing Encina Power Station access on Carlsbad Boulevard, heavy loads will be transported via railroad; and additional access will be provided via Cannon Road at Avenida Encinas through an existing easement through the SDG&E training yard.

Alternative Site #1: Maerkle. Access options include extending existing public streets that run through City of Vista residential cul-de-sacs to the site or extending Cannon Road east of College Boulevard, or College Boulevard, in the City of Carlsbad. An extension of College Boulevard would require the construction of a bridge to span over existing riparian habitat and seasonal drainage at the present terminus of College Boulevard; a new road would also cross native grassland and coastal sage scrub habitat to access the site. The bridge construction would require extensive habitat impacts and permits would be required from the U.S. Army Corps of Engineers (USACE), U.S. and Wildlife Service (USFWS), and California Department of Fish and Game (CDFG).

Alternative Site #2 Carlsbad Oaks North Business Park. Options include accessing the site from Melrose Drive or El Camino Real via Faraday Avenue; or Palomar Airport Road via El Fuerte Street onto the newly constructed Whiptail Loop.

2.4.2 Electric Transmission System

Proposed Site. The Project would connect to existing SDG&E Encina Substation at this location.

Alternative Site #1 Maerkle and Alternative Site #2 Carlsbad Oaks North Business Park. Existing transmission lines are shown on Figure 1A. The closest potential point of interconnection is the Calaveras-Shadowridge (CALAVRTP-SHADOWR) segment of the existing Cannon-San Luis Rey-Shadowridge 138 kV line. One possible interconnection point could be at the Shadowridge (SHADOWR) substation, which is located approximately 3 miles from Site #1 and 0.5 mile from Site #2 on Park Center Drive, halfway between Melrose and Business Park, shown on Figure 1A. The ratings on the lines out of the SHADOWR substation are 112 megavolt-ampere (MVA), which is underrated for the capacity of the CECP and would result in normal overloads to the system if the CECP were connected to this substation. System upgrades would be required to avoid this overload situation, the extent of which are unknown without a full interconnection study that takes approximately one year to complete. Additionally, the connections to the system would likely be required to be undergrounded because they are in close proximity to residential developments. As a comparison to line ratings and power off-take capability, the San Luis Rey-Mission 230 kV transmission line south of Sites #1 and #2 is rated at 456MVA and still would create normal overloads if the CECP were connected to this line. The multiple transmission lines leaving the Encina Power Station are rated at 766MVA to 912MVA to allow for the off-take of power presently generated at the Encina Power Station. To avoid this underrating situation, the electrical interconnection from Sites #1 and #2 could be delivered to the existing 138 or 230 kV switchyards at the Encina Power Station, but that would require a new approximately 5-mile transmission line to the SDG&E switchyards at the Encina Power Station.

2.4.3 Natural Gas

Proposed Site. The Project would connect to existing SDG&E Encina Substation at this location.

Alternative Site #1 Maerkle and Alternative Site #2 Carlsbad Oaks North Business Park. There is an existing 30-inch gas line located west of these sites. In order to serve either site, the gas line would have to be extended approximate 0.75 mile to reach Site #1 and approximately 1.5 miles to reach Site #2. A new metering station would also be required for both sites. The available capacity of this line is unknown. The pipeline extension would run along residential properties and through other private properties.

2.4.4 Reclaimed Water

Proposed Site. Reclaimed water would be supplied by the existing City of Carlsbad system through a new 3,700-foot connection from the City right-of-way through an existing easement on SDG&E property.

Alternative Site #1: Maerkle. The closest existing City of Carlsbad reclaimed water line is located at the end of College Boulevard near the intersection of El Camino Real. To connect to this line, a new reclaimed water line, approximately 2 miles long, would be constructed through existing private property to the site. This route follows the proposed College Boulevard extension, previously evaluated by the City of Carlsbad (Environmental Impact Report [EIR] 98-02), residential streets and two proposed residential subdivisions (Cantarini

and Holly Springs) approved by the City of Carlsbad (EIR 02-02). This reclaimed water line would cross riparian habitat, native grasslands, and coastal sage scrub (refer to the discussion of biological resources in Section 2.5.2), as well as lands historically used for agricultural uses. The availability of system capacity to serve a power plant at this location is not known.

Alternative Site #2 Carlsbad Oaks North Business Park. There is an existing City of Carlsbad 8-inch reclaimed water line, nearing completion; at the frontage of the lots (within Whiptail Loop) that could potentially be used for this site. The availability of the reclaimed water system capacity to serve a power plant at this location is not known.

2.4.5 Potable Water

Proposed Site. The project would connect to an existing potable water line within the Encina Power Station.

Alternative Site #1: Maerkle. The project would connect to existing onsite potable water line.

Alternative Site #2 Carlsbad Oaks North Business Park. There is an existing City of Carlsbad 16-inch water line that is nearly completed at the frontage of the lots (within Whiptail Loop) that could potentially be used for this site. Available capacity of the system to serve a power plant at this location is not known.

2.4.6 Sewer

Proposed Site. The project would connect to existing sewer line within the Encina Power Station.

Alternative Site #1: Maerkle. The closest existing City of Carlsbad sewer line to serve the project is located at the intersection of El Camino Real and Cannon Road. Construction of a new sewer line along the same route as the new reclaimed water line would be required, along with an additional 1.25 miles of sewer line from College Boulevard to the planned point of connection at Cannon Road. If the sewer system capacity is not adequate to accept process wastewater, then a new approximately 5-mile effluent discharge pipeline would need to be constructed to the Encina Wastewater Authority treatment plant and outfall.

Alternative Site #2 Carlsbad Oaks North Business Park. There is an existing City of Carlsbad 8-inch sewer line, nearing completion, at the frontage of the lots (within Whiptail Loop) that could potentially be used. However, the existing lift station is not large enough to serve a power plant. New pumps, electrical panels, pipe retrofits and a larger back-up generator would be required. If the sewer capacity is not adequate to accept process wastewater, then a new approximately 5-mile effluent discharge pipeline would need to be constructed to the Encina Wastewater Authority treatment plant and outfall.

2.5 Environmental Considerations

In this section, the potential environmental impacts of the Proposed Site and two alternative sites (Sites #1 and #2) are discussed. Potential environmental impacts from use of the Proposed Site are presented in detail in the CECP AFC. Potential environmental issues for Site #1 are summarized from the Calavera Hills EIR and the Cantarini Ranch/Holly Springs

EIR. Potential environmental issues for Site #2 are summarized from the Final EIR (FEIR) for the Carlsbad Oaks North Specific Plan, dated August 2002 (Oaks FEIR).

2.5.1 Air Quality

The plant's configuration, operation, and type and quantity of operational emissions would be essentially the same at the Proposed Site and the two alternative sites. Although no air modeling was conducted to support this analysis, it is expected that even with the required demolition activities at the Proposed Site, construction-related air quality impacts would be greater for both of the alternative sites, since additional grading is required to accommodate the plant configuration, as well as to construct the project linears and access roads required for each site. As shown by the construction modeling performed for the Proposed Site (Appendix 5.1E of the CECP AFC) for impacts occurring close to the project property line, if the distance between the project boundary and receptor location is decreased by approximately 300 feet, then the corresponding modeled impacts nearly double with the maximum impacts occurring right along the project boundary line. Similar construction air quality modeling results would be expected for the two alternative sites because the meteorological conditions are similar for the Proposed Site and alternative sites. The close proximity of residential developments to the two alternative sites means that maximum modeled construction impacts would be expected to occur within these residential developments. Depending on the actual distance between the construction activities at the alternative sites and the nearby residential developments, these maximum modeled impacts within the residential developments could exceed ambient air quality standards. In particular, the proximity of Site #1 to residential developments, combined with prevailing wind patterns, could be especially problematic with respect to public health and air quality impacts, and could drive stack heights substantially higher than the current proposed level.

Additionally, the location of the plant at a site different from the location of the existing boilers could result in the new plant being subject to Federal Prevention of Significant Deterioration permit requirements.

2.5.2 Biological Resources

Overview of Biological Resource Impacts

Proposed Site. The Proposed Site, located within the existing Encina Power Station, includes associated structures, paved and disturbed areas. The disturbed areas are typically bare ground or a combination of bare ground and gravel with scattered vegetation. In addition to the sparse remnant vegetation scattered throughout the site, eucalyptus (*Eucalyptus* sp.) and other ornamentals have been planted throughout the site. Groundcover (ice plant) and eucalyptus are the most common plants and are abundant within the site. Habitat on the CECP site is considered low-quality and does not provide significant habitat for plant or wildlife species. However, there is suitable habitat within the Agua Hedionda lagoon area because the estuarine habitat provides abundant foraging and nesting opportunities, the structural diversity provides cover resources and microhabitats, and the coastal lagoon provides an important source of water for wildlife.

Alternative Site #1. This site is surrounded on two sides by residential subdivisions and the Carlsbad Municipal Water District Maerkle Reservoir. Biological resources adjacent to the site include riparian habitat, native grasslands, and coastal sage scrub. However, because

the site is presently graded on a regular basis, the biological quality of this site is compromised, but nonetheless, may require mitigation.

Alternative Site #2. Prior to the implementation of the grading activities for the Carlsbad Oaks North Business Park, this site had varied topography and drainage features. These features have now been mostly graded and contained into various new pads of differing elevations for development and infrastructure improvements. The exception are those areas still pending grading activities and the 212-acre permanent conservation habitat, owned by the Center for Natural Lands Management (a regulated and recognized natural habitat conservation organization), which is subject to recorded conservation easements in favor of City of Carlsbad, USACE, USFWS, and CDFG. The undeveloped portions of this area contain mild slopes supporting sage scrub or chaparral vegetation and drainages supporting mature canopies dominated by coast live oak, western sycamore and several species of willow. Sensitive animal species expected to occur in this area include the federally threatened California gnatcatcher; San Diego horned lizard; orange throated whiptail; Southern California rufus-crowned sparrow; northern harriers; white tailed kite; red shouldered hawk; and Coopers hawk.

Habitat Conservation and Management Plans

The Proposed Site and Sites #1 and #2 are located within the City of Carlsbad Subarea Plan (Subarea Plan) of the North County Multiple Habitat Conservation Plan (MHCP). The MHCP is a regional plan prepared under the California Natural Community Conservation Planning Act of 1991 (SANDAG, 2003), the California Endangered Species Act and the Federal Endangered Species Act. The MHCP is a long-term conservation program that addresses existing biological resources, proposed urban growth, habitat losses, and direct, indirect, and cumulative effects on sensitive species throughout the San Diego region. The MHCP requires the preparation of subarea plans in order for specific jurisdictions in the region to obtain Take Authorization. The Habitat Management Plan (HMP) for Natural Communities in the City was developed in cooperation with CDFG and the USFWS and provides the mechanism for a Federal 10(a)(1)(B) permit and a State 2835 permit (City of Carlsbad, 2004). The City has entered into an Implementing Agreement (IA) with CDFG and USFWS and the HMP and IA allow for take of Covered Species, in certain authorized areas only. The HMP, which was amended in December 1999 and received final approval in November 2004, proposes a comprehensive, citywide program to preserve the diversity of habitat and to protect sensitive biological resources while allowing for additional development consistent with the City's General Plan and its Growth Management Plan.

All three sites are located outside of existing and proposed hardline conservation boundaries identified in the HMP. However, the 1-mile buffer area for each site encroaches into existing and proposed hardline conservation areas. Figures 5A and 5B show the locations of the Local Facilities Management Zones (LFMZs), Focus Planning Areas (Core Number), and Conservation Components of the HMP and the Focused Planning Areas of the MHCP.

Proposed Site. This site is located within the existing Encina Power Station adjacent to a regionally significant biological resource, Agua Hedionda Lagoon. This site is located within LFMZ 1 and just outside of Core Area 4. LFMZs are defined by the City's Growth Management Plan and core areas are components of the preserve system established under

the HMP, consisting of large blocks of conserved habitat capable of sustaining species over time. Existing hardline conservation areas include both publicly owned land and privately owned land that has been committed to habitat conservation as a result of existing open space regulations, past development approvals, or other actions.

Although Zone 1 is almost entirely developed, it contains scattered fragments of natural vegetation primarily on slopes adjoining Buena Vista and Agua Hedionda lagoons, thus contributing to the biological value of the lagoon watersheds (City of Carlsbad, 2004).

Conservation goals within Zone 1 include conservation of the majority of sensitive habitats in, or contiguous with, biological core areas, including no net loss of wetland habitat, and preservation of coastal sage scrub and maritime succulent scrub adjacent to the lagoons. Retaining natural habitats adjacent to lagoons buffer wetland resources from adverse effects and provide upland nesting habitat for pond turtles and other HMP species. Preservation of habitat adjacent to the lagoon should be maximized.

Alternative Site #1. This site is located just above the Maerkle reservoir and is within LFMZ 15 and Core Area 5. Important core and linkage habitats comprise much of Zone 15. The northern portion of the zone includes much of Core Area 3, which is already primarily existing and proposed hardline open space. Critical blocks of coastal sage scrub in this area are densely occupied by a significant population of California gnatcatchers and other protected species. Most of the California gnatcatchers in the northernmost core population are in this block of habitat. It connects to core population areas on Camp Pendleton via core and linkage areas in Zones 7, 25, and 2 and the City of Oceanside, and to core population areas in southeast Carlsbad via stepping-stone Linkage Areas C and D, Core Area 5, and southwest San Marcos. This area also supports a critical population of thread-leaved brodiaea. Riparian scrub and oak riparian woodlands cross the large block of coastal sage scrub in the northern part of the zone and also border the zone's southern boundary. The southern portion of the zone, which includes multiple property ownerships, is a mosaic of coastal sage scrub, non-native grassland, and chaparral. Some of the natural habitat patches border the southern drainage (Agua Hedionda Creek) and add to its value as a wildlife movement corridor. Agricultural areas north of Agua Hedionda Creek support a mosaic of disturbed coastal sage scrub patches on rocky hills and ridges, along with a variety of wetland communities. These remnant natural habitat patches, surrounded by active agricultural fields, comprise part of a stepping-stone linkage (Linkage Area C) for gnatcatchers and other species. The Dawson-Los Monos Reserve in the eastern portion of the zone supports relatively undisturbed sage scrub, chaparral, and riparian communities.

Conservation goals within Zone 15 include establishing, enhancing, and maintaining a viable habitat linkage across Linkage Area C to ensure connectivity for gnatcatchers and other HMP species between Core Areas 3 and 5. A further goal is the conservation of the majority of sensitive habitats in, or contiguous with, biological core and linkage areas, including no net loss of wetland habitats and coastal sage scrub within Core Area 3 and Linkage Area C.

Alternative Site #2. This site is located within LFMZ 16 and Core Area 5. This site contains varied topography including a canyon area and a complex exposure of slopes. This site also contains Agua Hedionda Creek and its many tributaries. The hardline HMP boundaries were adjusted as part of the approval of the tentative tract map for the Carlsbad Oaks North

Business Park to include the open space portions of the development. Figure 5A reflects the City of Carlsbad's current mapping of the hardline areas which are in the process of being updated by the City to reflect the adjustments in the area of this site.

California Natural Diversity Data Base (CNDDB)/California Native Plant Society (CNPS)/USFWS Resource Classifications

Special-status Species. A database search of federal and state special-status plant and wildlife species was compiled for the two alternative site locations (Sites #1 and #2) using the CNDDB (CDFG, 2008), CNPS Electronic Inventory (CNPS, 2008), and a USFWS species list for San Diego County (USFWS, 2008). The reference information is based on known occurrences, historical records, or the presence of suitable habitat for any given life stage of particular species. The known locations of special-status species identified in a one-mile radius of the two alternative site locations are shown on Figure 5C. The special-status species reference search within CNDDB records was conducted for the Pala, Bonsall, Morro Hill, Las Pulgas Canyon, Valley Center, San Marcos, San Luis Rey, Oceanside, Escondido, Rancho Santa Fe, Encinitas, and Del Mar 7.5-minute U.S. Geological Survey (USGS) quadrangles.

No onsite field survey or habitat assessment was conducted for the two alternative site locations to determine potential occurrence of special-status species.

Special-status Plants. Information acquired from the CNDDB (species listed as endangered, threatened, or California Species of Special Concern) and CNPS (List 1 and 2), resulted in a list of 70 special-status plant species that could occur within the twelve quad search area (Pala, Bonsall, Morro Hill, Las Pulgas Canyon, Valley Center, San Marcos, San Luis Rey, Oceanside, Escondido, Rancho Santa Fe, Encinitas, and Del Mar 7.5-minute USGS quadrangles). The USFWS species list for San Diego County identified 44 additional plant species located within the County.

No field surveys or habitat assessments were conducted for the two alternative site locations to determine potential occurrence of special-status plant species. Natural habitats, however, do occur within a one-mile radius of the sites, which contain suitable habitat for a variety of special-status plant species.

According to the CNDDB results, nine special-status plant species are known to occur within a 1-mile radius of the two alternative site locations including: the San Diego thorn-mint (*Acanthomintha ilicifolia*), California adolphia (*Adolphia californica*), thread-leaved brodiaea (*Brodiaea filifolia*), Del Mar Manzanita (*Arctostaphylos glandulosa* ssp. *Crassifolia*), summer holly (*Comarostaphylis diversifolia* ssp. *Diversifolia*), Nuttall's scrub oak (*Quercus dumosa*), decumbent goldenbush (*Isocoma menziesii* var. *decumbens*), sticky dudleya (*Dudleya viscida*), and wart-stemmed ceanothus (*Cenothus verrucosus*) (CDFG, 2008).

Special-Status Wildlife. Information acquired from the CNDDB resulted in a list of 60 special-status wildlife species that could occur within the 12-quad search area (Pala, Bonsall, Morro Hill, Las Pulgas Canyon, Valley Center, San Marcos, San Luis Rey, Oceanside, Escondido, Rancho Santa Fe, Encinitas, and Del Mar 7.5-minute USGS quadrangles). The USFWS species list for San Diego County identified 36 additional wildlife species located within the County.

No onsite field survey or habitat assessment was conducted for the two alternative site locations to determine potential occurrence of special-status wildlife species. Natural habitats, however, do occur within a 1-mile radius of the sites, which contain suitable habitat for a variety of special-status wildlife. The location of the CECP at Sites #1 and #2 would create noise, vibration, and glare impacts to areas offsite that could result in impacts to these sensitive wildlife species.

According to the CNDDB results, six special-status wildlife species are known to occur within a one-mile radius of the two alternative site locations including: the horned lizard (*Phrynosoma coronatum*), southern California rufos-crowned sparrow (*Aimophila ruficeps canescens*), coastal California gnatcatcher (*Polioptila californica californica*), white-tailed kite (*Elanus leucurus*), California horned lark (*Eremophila alpestris actia*), and orange-throated whiptail (*Aspidoscelis tigris stejnegeri*) (CDFG, 2008).

2.5.3 Cultural Resources

Proposed Site. The record search completed as part of preparation of the AFC indicated that there are 35 previously recorded cultural resource sites within 1 mile of the Proposed Site, however, none of these are situated within the CECP site and no impacts to these resources are expected to occur through implementation of the proposed CECP.

Alternative Site #1. The cultural resources study prepared for the Calavera Hills EIR identified 14 unevaluated sites immediately adjacent to this site. One cultural resource artifact (isolate) was also recorded. This site is surrounded on two sides by residential subdivisions and the Carlsbad Municipal Water District's Maerkle Reservoir site, which is presently graded on a regular basis, as well as historical agricultural activities to the south, reducing the probability of encountering cultural resources (and their expected quality if found) at this site.

Alternative Site #2. The cultural resources study prepared for the Oaks FEIR identified 19 resources within the initial 650-acre survey area. Of the 19 resources, eight sites were new discoveries and 11 were previously recorded. The literature review and field survey identified 16 archaeological sites (seven new sites and nine previously recorded sites) and six archaeological isolates within the area of this site. Of the 16 prehistoric sites within the area of this site, seven have been determined to be significant.

2.5.4 Land Use

The Proposed Site and two alternative sites (Sites #1 and #2) are located within the City of Carlsbad, San Diego County. The Proposed Site is located in an area designated as Public Utility ("U" and "PU", respectively) in the City of Carlsbad's General Plan and Zoning Ordinance. This designation is consistent with the Agua Hedionda Specific Plan and allows for electrical generation and transmission facilities, thus the existing Encina Power Station and CECP are consistent with the Public Utility land use designation. Refer to the CECP AFC for additional land use-related information.

Figure 2 shows the General Plan designations in the vicinity of Alternative Sites #1 and #2. Figure 3 shows the zoning districts in the vicinity of Sites #1 and #2. The General Plan designates Site #1 as Open Space, and the development portion of Site #2 as Planned Industrial. In order to allow development of a power plant, Sites #1 and #2 would require

significant General Plan and Zoning Ordinance amendments from Open Space (Site #1) and Planned Industrial (Site #2), respectively, to Public Utility. Site #2 is also controlled by the Carlsbad Oaks North Specific Plan. General Plan designations within a one-mile radius of the two alternative site locations include: Low Density Residential, Low-Medium Residential Density, Medium-Residential Density, Travel/Recreation Commercial, Local Shopping Center, Community Facilities, Government Facilities, Planned Industrial, and Open Space. Additional General Plan designations for the portions of the City of Vista and the City of Oceanside in the vicinity of Sites #1 and #2 are also shown on Figure 2. City of Carlsbad zoning designations within a one-mile radius of the two alternative site locations include: Residential Agricultural, Heavy Commercial, Tourist Commercial Qualified Development, Limited Control, Industrial, Industrial Qualified Development Overlay, Planned Industrial, and Open Space. Additional zoning designations for the portions of the City of Vista and City of Oceanside in the vicinity of the alternative sites are also shown on Figure 3.

Alternative Site #1. This site encompasses approximately 55 acres with a City of Carlsbad General Plan and Zoning Ordinance designation as Open Space. The site is immediately west and adjacent to the Cities of Oceanside and Vista.

The intent and purpose of the Open Space designation is to provide for natural habitat, open space and recreational uses; such uses have been deemed necessary for aesthetic and orderly growth of the community. This designation does not allow electrical generation or transmission facilities. Additionally, the Open Space designation carries a building height limitation. No building or structure shall exceed 25 feet in height unless a higher elevation is approved through a conditional use permit issued by the Planning Commission.

Alternative Site #2. This site is located in an area with a City of Carlsbad General Plan and Zoning Ordinance designation as Planned Industrial and the Carlsbad Oaks North Specific Plan. The site is immediately west and adjacent to residential development in the City of Vista.

The intent and purpose of the Planned Industrial designation is to allow the location of business and light industries engaged primarily in research and/or testing, compatible light manufacturing, business and professional offices (when engaged in activities associated with corporate offices or in activities whose primary purpose is not to cater directly to the general public), and certain commercial uses which cater to and are ancillary to the uses allowed in this zone. This designation does not allow electrical generation or transmission facilities. In addition, the Planned Industrial designation has a building height limitation. No building shall exceed a height of 35 feet or three levels, and allowed height protrusions shall not extend more than 45 feet. Building heights in excess of 45 feet may be allowed through a specific plan amendment approved by the City Council. Depending on lot configurations, setbacks ranging from 10 to 50 feet shall apply. All buildings, including accessory building structures, shall cover not more than 50 percent of the area of a lot.

2.5.5 Noise

The Proposed Site and Sites #1 and #2 are located within the City of Carlsbad, therefore the City of Carlsbad's noise regulations apply. In addition, because Sites #1 and #2 are located near the cities of Oceanside and Vista, their noise regulations are also summarized below.

2.5.5.1 City of Carlsbad

The *City of Carlsbad General Plan Noise Element* (1995) establishes policies primarily to discourage new residential development in areas where noise levels exceed a Community Noise Equivalent Level (CNEL) of 60 decibels (dBA) (or 65 dBA if located near the McClellan-Palomar Airport). A CNEL of 60 dBA is approximately equivalent to a continuous noise level of 53 dBA or time varying noise level of 60 dBA between 7 a.m. and 7 p.m., 55 dBA between 7 p.m. and 10 p.m. and 50 dBA between 10 p.m. and 7 a.m. Figure 6A presents the City of Carlsbad Noise Guidelines Manual land use compatibility guidelines.

2.5.5.2 City of Oceanside

The City of Oceanside's municipal code establishes the noise limits presented in Table 3 below. These limits are based on the zoning of the noise source and are expressed in terms of hourly average at the property line.

TABLE 3
Summary of City of Oceanside's Noise Limits (dBA)

Zone District	7:00 a.m. to 9:59 p.m.	10:00 p.m. to 6:59 a.m.
Residential Districts:		
RE (Residential Estate)	50	45
RS (Single-Family)	50	45
RM (Medium Density)	50	45
RH (High Density)	55	50
RT (Residential Tourist)	55	50
C (Commercial)	65	60
I (Industrial)	70	65
D (Downtown)	65	55
A (Agricultural)	50	45
OS (Open Space)	50	45

Source: http://www.municode.com/resources/gateway.asp?pid=10130&sid=5

2.5.5.3 City of Vista

Chapter 8.32 of the City of Vista's municipal code adopts the noise regulations of the San Diego County Code of Regulatory Ordinances, Chapter 4, Division 6, Title 3 except for the numeric limits of Section 36.404 which it replaces with Table 4.

TABLE 4
Summary of City of Vista's Noise Limits (dBA)

Zone District	7:00 a.m. to 10:00 p.m.	10:00 p.m. to 7:00 a.m.
A-I, E-I, 0 & OSR, R-IB, MHP	50	45
R-M	55	50
C-I, C-2, 0-3, C-T, OP	60	55

TABLE 4
Summary of City of Vista's Noise Limits (dBA)

Zone District	7:00 a.m. to 10:00 p.m.	10:00 p.m. to 7:00 a.m.
M-I, I-P, all areas of Specific Plan 20	70	70

Source: City of Vista Municipal Code, Chapter 8.32, Table 8.32.040

The above limits are reduced by 5 dBA if the noise control officer determines the noise to contain a steady, audible tone such as a whine, screech or hum, is a repetitive noise such as hammering or riveting, or contains music or speech conveying informational contents.

2.5.5.4 CEC Significance Criteria

In addition to the City criteria, the CEC staff concluded that potential for a significant noise impact under CEQA exists where the noise of a project exceeds the background (i.e., ambient) noise levels by 5 dBA or more. It is important to note that the potential for an impact does not mean that there is an impact. Rather, it means that a project's noise levels require further evaluation.

Proposed Site. The closest residential area to CECP is located north of the Agua Hedionda Lagoon, approximately 1,750 feet from the CECP site. I-5 is the dominant noise source at the closest receptors. Average daily traffic on I-5 is currently 261,000 vehicles (near State Route 56) and is projected to increase to 430,000 daily vehicles by the year 2030. The average daily traffic near I-5 at Melrose is 24,144 measured in February 2008. More than 10,000 daily truck trips are made on I-5. Local traffic, the COASTER commuter rail service (which is being expanded), Amtrak rail services, and heavy rail traffic are also prominent existing noise sources. As described in the CECP AFC Section 5.7, nighttime noise levels taken west of the West Hotel and restaurant, near the entrance to the SDG&E yard were recorded at 47 dBa. In order to remain below the CEC's noise threshold of significance, the CECP noise operational level could not exceed 52 dBA, and as discussed in the CECP AFC, the CECP is not expect to exceed this threshold.

Sites #1 and #2 are located further away from major noise sources (Interstate 5, railroad, Pacific Ocean) than the Proposed Site. It is anticipated that the background nighttime noise level would be in the range of 35 to 40 dBA. A CECP noise level could not exceed 40 to 45 dBA in order to be below the CEC's threshold of significance.

Alternative Site #1. This site borders residential neighborhoods in the City of Oceanside to the northwest and the City of Vista to the northeast. Major sources of noise affecting the project area are vehicles traveling on nearby roadways and aircraft flights from the McClellan-Palomar Airport, located southwest of the site. No roadway immediately adjacent to the project area currently carries a level of traffic that adversely impacts the project area with regards to noise. Single family residential neighborhoods are located within approximately 500 feet of Site #1. At this distance, the project noise levels are anticipated to exceed 60 dBA. Achieving 40 to 45 dBA at the closest residences is technically infeasible or would require potentially first ever noise control measures. For example, the noise from each steam turbine fin fan cooler alone is anticipated to result in 58 dBA at this distance and this piece of equipment must be located outside with unobstructed access to air

flow for proper cooling. A 20 dBA reduction in the cooler would be necessary to ensure compliance with the 40 to 45 dBA limit. This is not likely feasible, even with a combination of slower quieter fans and acoustic barrier walls. Figure 6B presents the predicted noise contours from the CECP at the Maerkle site.

Alternative Site #2. This site borders residential neighborhoods in the City of Vista to the east. Major sources of noise affecting the project area are automobiles and commercial trucks traveling on nearby roadways and aircraft flights from the McClellan-Palomar Airport, located west of the site. Currently, Palomar Airport Road carries a large volume of traffic resulting in noise levels of approximately 73.4 CNEL at 75 feet from the centerline of the roadway. However, this roadway is at a sufficient distance (more than 1,600 feet) from the project area such that adverse noise levels associated with vehicular traffic is not experienced on-site. Additionally, Faraday Road, at four lanes in the vicinity of this site also carries a large traffic volume. Single family residential neighborhoods are located immediately adjacent to this site. At this distance, CECP noise levels are anticipated to exceed 60 dBA, similar to the technical feasibility issues described for the Maerkle Site #1. Figure 6C shows the predicted noise contours from the CECP in the location of the portion of the Carlsbad Oaks North Business Park that is the subject of this analysis.

2.5.6 Public Health

The Proposed Site and Sites #1 and #2 are located within 1 mile of sensitive receptors such as schools, hospitals, churches, residential areas, or other facilities that would potentially be considered sensitive receptors for public health. Public health impacts are generally related to air quality, which, based upon the conclusions of the AFC (including the implementation of identified mitigation measures), are not expected to occur. While no air quality modeling was conducted for this analysis, it is expected that proximity of residential neighborhoods to Sites #1 and #2 could result in an increased risk to public health as compared to the Proposed Site. Figure 7 shows sensitive receptors located near Sites #1 and #2.

2.5.7 Worker Health and Safety

Potential impacts to worker health and safety are activity-specific rather than site-specific. Regardless of the location, the CECP will prepare appropriate health and safety plans to protect workers and reduce the potential for injuries. Therefore, the worker health and safety impacts from the Proposed Site and Sites #1 and #2 are equivalent.

2.5.8 Socioeconomics

The City of Carlsbad is one of 18 incorporated cities within San Diego County. It is likely that most local purchases for construction and operation supplies would be made within San Diego County. Since the point of sale and the county of sale receive the greater portion of sales taxes that are not retained by the state, the local tax related impacts would be similar among the alternatives since they are all located in San Diego County.

It is anticipated that most of the construction workforce will be drawn from San Diego County. Construction workforce could also be drawn from other nearby counties or from out of state, if necessary. The origin of the workforce would not change among the alternative sites.

Environmental justice issues would also be similar for each site. Tables 5 and 6 show the minority (both racial and ethnic) as well as the low-income population distribution for the census blocks and census block groups that are within a 6-mile radius of the Proposed Site and Sites #1 and #2. The minority and income data are from the 2000 U.S. Census data. Of the overall total population in the Census Block Groups within the 6-mile radius of the CECP approximately 26 percent are racial minority while the ethnic minority (as represented by individuals of Hispanic origin) account for 23 percent (see Table 5). Of the overall population in the Census Blocks within a 6-mile radius of Sites #1 and #2, approximately 27 and 26 percent respectively are racial minority, while the ethnic minority (i.e., Hispanics) account for about 27 and 26 percent, respectively. The distribution of low income population in the Census Block Groups within the 6-mile radius is 10 percent for the Proposed Site and 4 percent each for Sites #1 and #2. These estimates are based on the total population for whom poverty status was determined, approximately 284,600, 342,600, and 340,200, respectively for the Proposed Site and Sites #1 and #2. According to the 2000 US Census, the City of Carlsbad's population is 14 percent racial minority, 12 percent Hispanic, and 6 percent low-income. In comparison, San Diego County's population is 34 percent racial minority, 27 percent Hispanic, and 12 percent low-income.

TABLE 5
2000 Census Racial/Ethnic Data by Census Blocks and Census Block Groups 6-mile Radius

Sites	Total Population	White	Minority	Percent Minority	Hispanic Origin*	Percent Hispanic
Proposed Site	304,136	224,037	80,099	26.3%	70,357	23.1%
Site #1	323,261	237,057	86,204	26.7%	85,886	26.6%
Site #2	322,487	239,117	83,370	25.9%	84,214	26.1%

Source: 2000 Census.
* Hispanics or Latinos are those people who classified themselves in one of the specific Spanish, Hispanic, or Latino categories listed on the Census 2000 questionnaire—"Mexican, Mexican Am., Chicano," "Puerto Rican," or "Cuban"—as well as those who indicate that they are "other Spanish/Hispanic/Latino." People who identify their origin as "other Spanish/Hispanic/Latino" may be of any race. Thus, the percent Hispanic should not be added to percentages for racial (i.e., minority) categories.

TABLE 6
2000 Census Low Income Data by Census Block Groups 6-mile Radius

Census Block Group	Total Population*	Income Below Poverty Level	Percent Low-Income
Proposed Site	284,637	27,293	9.6%
Site #1	342,640	14,369	4.2%
Site #2	340,190	13,640	4.0%

Source: 2000 Census.
* Population numbers are only those for whom poverty was determined and exclude full-time college students.

2.5.9 Agriculture and Soils

Proposed Site. As concluded in the AFC, while prime farmland, unique farmland, or farmland of statewide importance are located within the 1-mile study area, no impacts to these agricultural resources would occur as a result of the development of this project.

Alternative Site #1. While there are no agricultural activities occurring on this site, or on the immediately adjacent properties, the area southwest of the site has historically been in agricultural production. Construction and operation of a power plant would not be expected to impact these agricultural activities with the exception of the project's linear components and access road which would most likely be located in this area. In most cases, however, agricultural activities can be found consistent with infrastructure improvements and utilities.

Alternative Site #2. While there are no agricultural activities occurring on this site, or on the immediately adjacent properties, the same agricultural area identified in relation to Site #1 is within the 1-mile radius of this site. The linear components and access road for this site, however, are not likely to cross any agricultural lands.

2.5.10 Traffic and Circulation

The Proposed Site is easily accessed from I-5. However Sites #1 and #2 are located east of I-5 and south of State Route 78 and would be more difficult to access. The Proposed Site and Site #2 (and associated linears) would be accessed by arterials within the City of Carlsbad. Site #1 (and associated linears) would be accessed by residential streets within the City of Carlsbad, or potentially through the cities of Vista and Oceanside. Site #1 is not served by a north/south, east/west grid of roads, resulting in an increased level of difficulty in accessing the site and a need to construct new access roads.

The Burlington Northern-Santa Fe rail line located immediately west of the Proposed Site allows for rail delivery of heavy and oversize loads during project construction. No rail system is in place adjacent to or in close proximity to Sites #1 and #2. The proximity of the Proposed Site to the Burlington Northern-Santa Fe rail line decreases the impact of the CECP on traffic, compared with the other sites.

2.5.11 Visual Resources

The potential for visual resource impacts associated with the Proposed Site and Sites #1 and #2 varies depending on the relative visibility of the sites from nearby roads, including El Camino Real which is designated as a scenic corridor by the City, I-5, residences, parks, and coastal areas as well as the length and potential visibility of any new transmission lines required to serve the power plant. Visual resources are also a function of the surrounding environment. Due to the proximity of a power plant to existing residences at Sites #1 and #2, it is expected that a change in visual resources and neighborhood character would be considered a significant impact. Figure 8 provides a conceptual simulation of the CECP from existing residential areas located near Site #1.

2.5.12 Hazardous Materials Handling

The same quantity of hazardous materials would be stored and used at the Proposed Site and Sites #1 and #2. However, due to the close proximity of Sites #1 and #2 to existing residential areas, it is expected that hazardous material deliveries would have to pass near more residential development as compared to the Proposed Site in order to get to Sites #1 and #2.

2.5.13 Waste Management

A lower level of construction-related waste will be generated from Sites #1 and #2 because demolition of existing industrial facilities is only required for the Proposed Site. The environmental impact of operational waste disposal would be the same for the Proposed Site and the alternative sites.

2.5.14 Water Resources

As outlined for the Proposed Site in the AFC and assumed for Sites #1 and #2, water required for operation of the CECP would be provided by new connections to the City of Carlsbad's systems. Use of non-potable water may be possible, although the water requirements of the project would not likely warrant the expenditure required to install a pipeline or water treatment measures required to make the water suitable for operational use. At this time, the City has informed the Applicant that the capacities of the City's water systems are not adequate to accommodate this size of a facility.

2.5.15 Geologic Hazards and Resources

Due to the screening level of this analysis and proximity of the sites to each other, no site-specific seismic analysis was performed. The potential for seismic impacts would be essentially the same for all sites and could be addressed in plant design.

Proposed Site. This site is approximately 30 feet above mean sea level, underlain by artificial fill, alluvium, and terrace deposits and is relatively flat.

Alternative Site #1. This site is relatively flat and it is expected that with the implementation of mitigation measures, geologic hazards would be minimized to acceptable levels.

Alternative Site #2. Prior to the implementation of the grading activities for the Business Park, this site had varied topography and drainage features. These features have now been mostly graded and contained in new pads for development and infrastructure improvements. Approval of the tentative map for the Business Park included mitigation measures to address potential geologic impacts.

2.5.16 Paleontological Resources

Proposed Site. As discussed in the AFC, although no fossils records are known from the Quaternary sediments that lie immediately beneath the surface in the CECP, similar sediments of somewhat greater age have yielded scientifically significant fossil records in the Carlsbad area. Because of the potential for this unit to yield fossils, it was assigned a "moderate" sensitivity rating.

Alternative Site #1. This site is expected to have similar paleontological sensitivity as Site #2. However, due to the proximity of this site to recent grading activities, as well as historical agricultural activities, the probability of encountering paleontological resources is unlikely.

Alternative Site #2. The project area overlies several geologic formations, representing both granitic basement rocks and overlying sedimentary rocks. These formations are the Lower Cretaceous Green Valley Tonalite (a type of granitic rock), the Lower Cretaceous Lusardi

Formation, the Upper Cretaceous Point Loma Formation, and the Middle Eocene Santiago Formation. Granitic rocks do not have any potential for yielding fossils. The basement rocks are a cobble to boulder conglomerate that is assigned a "moderate" paleontological sensitivity, although the formation has yet to yield any fossils. The Upper Cretaceous Point Loma Formation and the Middle Eocene Santiago Formation that occur in the area have yielded very important fossils of marine invertebrate faunas and both are assigned high paleontological resource sensitivity. The only known dinosaur skeleton from San Diego County was recovered nearby, off Faraday Avenue. The Santiago Formation has also yielded important terrestrial vertebrates. Therefore, this site is expected to have a moderate paleontological sensitivity.

2.6 Achievement of Project Objectives

Proposed Site. The Project is designed to achieve all of the project objectives.

Alternative Site #1 Maerkle and Alternative Site #2 Carlsbad Oaks North Business Park. As described previously, the alternative sites will not achieve the key project objectives of accomplishing a "Brownfield" redevelopment of an existing power plant or meeting the commercial qualifications for long-term power contract opportunities in southern California by delaying project completion past 2012. Further, because existing infrastructure at the Encina Power Station would not be reused for the Project if an alternative location was utilized, existing Encina Units 1-3 would not necessarily need to be retired. This may prevent achievement of the key project objective to retire Units 1-3 and their associated seawater once-through cooling systems.

3.0 References

California Department of Fish and Game (CDFG). 2008. *California Natural Diversity Data Base*. Search of the Pala, Bonsall, Morro Hill, Las Pulgas Canyon, Valley Center, San Marcos, San Luis Rey, Oceanside, Escondido, Rancho Santa Fe, Encinitas, and Del Mar 7.5-minute USGS quadrangles.

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Figures

City of Carlsbad

City of Oceanside

City of Vista

Tamarack Ave.

Tamarack Ave.

College Blvd.

138 kV

138 kV

Cannon Road Extension (proposed)

Holly Springs Residential Development (approved)

Ocean Hills community

Shadowridge community

Calaveras-Shadowridge 138 kV Transmission Line Segment

S. Melrose Dr.

Site #1 - Maerkle

El Camino Real

Cantarini Residential Development (approved)

Gas Line Route

Sunny Creek Road (proposed)

Sycamore Ave.

Shadowridge Substation

Carlsbad Energy Center Project - Proposed Site

Existing 30" Gas Line

Park Center Dr.

Whiptail Loop

138 kV and 230 kV

Site #2 - Carlsbad Oaks North

Faraday Ave.

Faraday Ave. Extension

El Fuerte St.

Cannon Rd.

Gas Line Route for Site #2 to follow Faraday Rd. Ext. to Whiptail Loop

138 kV and 230 kV

College Blvd.

Palomar Airport Rd.

W. San Marcos Blvd.

Palomar Airport Rd.

Melrose Dr.

5

LEGEND

City Boundary

Roads

Existing Gas Lines

Proposed Reclaimed Water

Proposed Site Access Roads

Transmission Lines

Alternative Site Locations

Proposed Gas Lines

Proposed Potable Water

Proposed Sewer

N

0 0.5 1 Miles

Approximate Scale

Aerial courtesy of Google™ Earth. Image ©2008 NASA.

Note: Existing electrical transmission lines and gas lines are not shown in their entirety.

FIGURE 1A
ALTERNATIVE SI ES EVALUATION - GENERAL INFOR MATION
CARLSBAD ENERGY CEN ER PROJECT
CARLSBAD, CALIFORNIA

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0 1000 2000 feet

1 Photo Viewpoint

FIGURE 1B - SHEET 1
ALTERNATIVE SITES EVALUATION - PHOTO VIEWPOINTS - CARLSBAD OAKS NORTH ALTERNATIVE SITE #2
CARLSBAD ENERGY CENTER PROJECT
CARLSBAD, CALIFORNIA

Source: ENVIRONMENTAL VISION

1. Faraday Avenue near Brookhaven Pass looking west

2. Faraday Avenue at Whiptail Loop E looking west

3. Faraday Avenue at Whiptail Loop E looking north

FIGURE 1B - SHEET 2
ALTERNATIVE SITES EVALUATION - REPRESENTATIVE VIEWS - CARLSBAD OAKS NORTH ALTERNATIVE SITE #2

CARLSBAD ENERGY CENTER PROJECT
CARLSBAD, CALIFORNIA

Source: ENVIRONMENTAL VISION

CH2MHILL

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4. Faraday Avenue at Whiptail Loop W looking west

5. Whiptail Loop W near Faraday Avenue looking north

Source: ENVIRONMENTAL VISION

FIGURE 1B - SHEET 3
ALTERNATIVE SITES EVALUATION - REPRESENTATIVE VIEWS - CARLSBAD OAKS NORTH ALTERNATIVE SITE #2
CARLSBAD ENERGY CENTER PROJECT
CARLSBAD, CALIFORNIA

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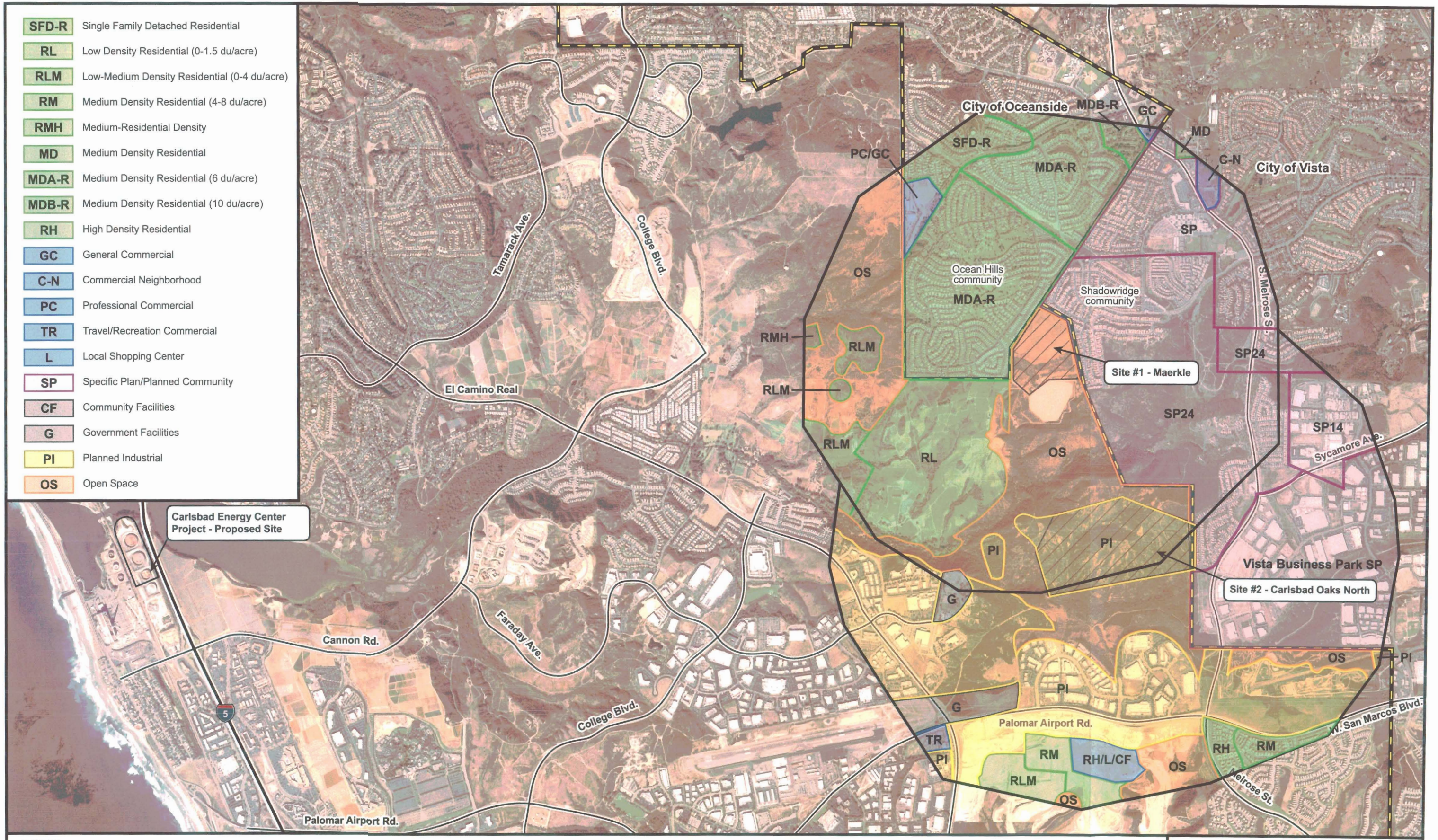
SFD-R	Single Family Detached Residential
RL	Low Density Residential (0-1.5 du/acre)
RLM	Low-Medium Density Residential (0-4 du/acre)
RM	Medium Density Residential (4-8 du/acre)
RMH	Medium-Residential Density
MD	Medium Density Residential
MDA-R	Medium Density Residential (6 du/acre)
MDB-R	Medium Density Residential (10 du/acre)
RH	High Density Residential
GC	General Commercial
C-N	Commercial Neighborhood
PC	Professional Commercial
TR	Travel/Recreation Commercial
L	Local Shopping Center
SP	Specific Plan/Planned Community
CF	Community Facilities
G	Government Facilities
PI	Planned Industrial
OS	Open Space



LEGEND

- City Boundary
- Roads
- Alternative Site Locations

Aerial courtesy of Google™ Earth. Image ©2008 NASA.

N

0 0.5 1 Miles

Approximate Scale

FIGURE 2
ALTERNATIVE SITES EVALUATION - GENERAL PLAN DESIGNATIONS
CARLSBAD ENERGY CENTER PROJECT
CARLSBAD, CALIFORNIA

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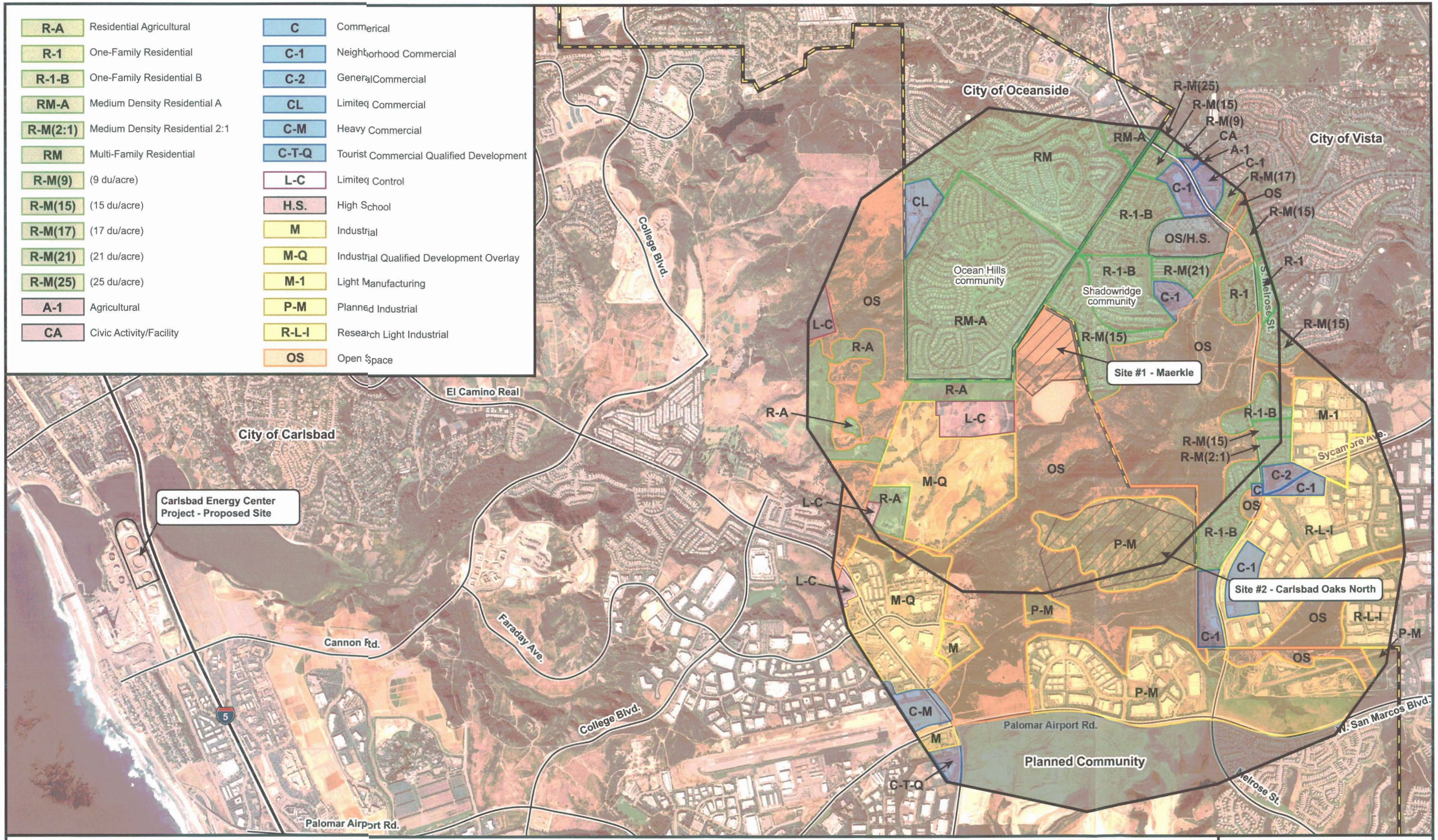
R-A	Residential Agricultural	C	Commerical
R-1	One-Family Residential	C-1	Neighborhood Commercial
R-1-B	One-Family Residential B	C-2	GeneralCommercial
RM-A	Medium Density Residential A	CL	Limited Commercial
R-M(2:1)	Medium Density Residential 2:1	C-M	Heavy Commercial
RM	Multi-Family Residential	C-T-Q	Tourist Commercial Qualified Development
R-M(9)	(9 du/acre)	L-C	Limited Control
R-M(15)	(15 du/acre)	H.S.	High School
R-M(17)	(17 du/acre)	M	Industrial
R-M(21)	(21 du/acre)	M-Q	Industrial Qualified Development Overlay
R-M(25)	(25 du/acre)	M-1	Light Manufacturing
A-1	Agricultural	P-M	Planned Industrial
CA	Civic Activity/Facility	R-L-I	Research Light Industrial
		OS	Open Space



LEGEND

- City Boundary
- Roads
- Alternative Site Locations

Aerial courtesy of Google™ Earth. Image ©2008 NASA.

N

0 0.5 1 Miles

Approximate Scale

FIGURE 3
ALTERNATIVE SITES EVALUATION - ZONE DISTRICT INFORMATION
CARLSBAD ENERGY CENTER PROJECT
CARLSBAD, CALIFORNIA

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City of Carlsbad

City of Oceanside

City of Vista

Tamarack Ave.

College Blvd.

Ocean Hills community

Shadowridge community

S. Melrose St.

Site #1 - Maerkle

El Camino Real

Sycamore Ave.

Carlsbad Energy Center Project - Proposed Site

Site #2 - Carlsbad Oaks North

Cannon Rd.

Faraday Ave.

College Blvd.

Palomar Airport Rd.

W. San Marcos Blvd.

Melrose St.

CNEL 60

CNEL 65

CNEL 70

CNEL 75

LEGEND

- City Boundary
- Airport Influence Zone
- Flight Activity Zone
- Runway Protection Zone
- Roads
- Alternative Site Locations
- Proposed McClellan-Palomar Airport Land Use Compatibility Plan Safety Zones 1–6 - requires consultation with the San Diego County Airport Land Use Commission

N

0 0.5 1 Miles

Approximate Scale

Aerial courtesy of Google™ Earth. Image ©2008 NASA.

FIGURE 4
ALTERNATIVE SITES EVALUATION - AIRPORT ZONES
CARLSBAD ENERGY CENTER PROJECT
CARLSBAD, CALIFORNIA

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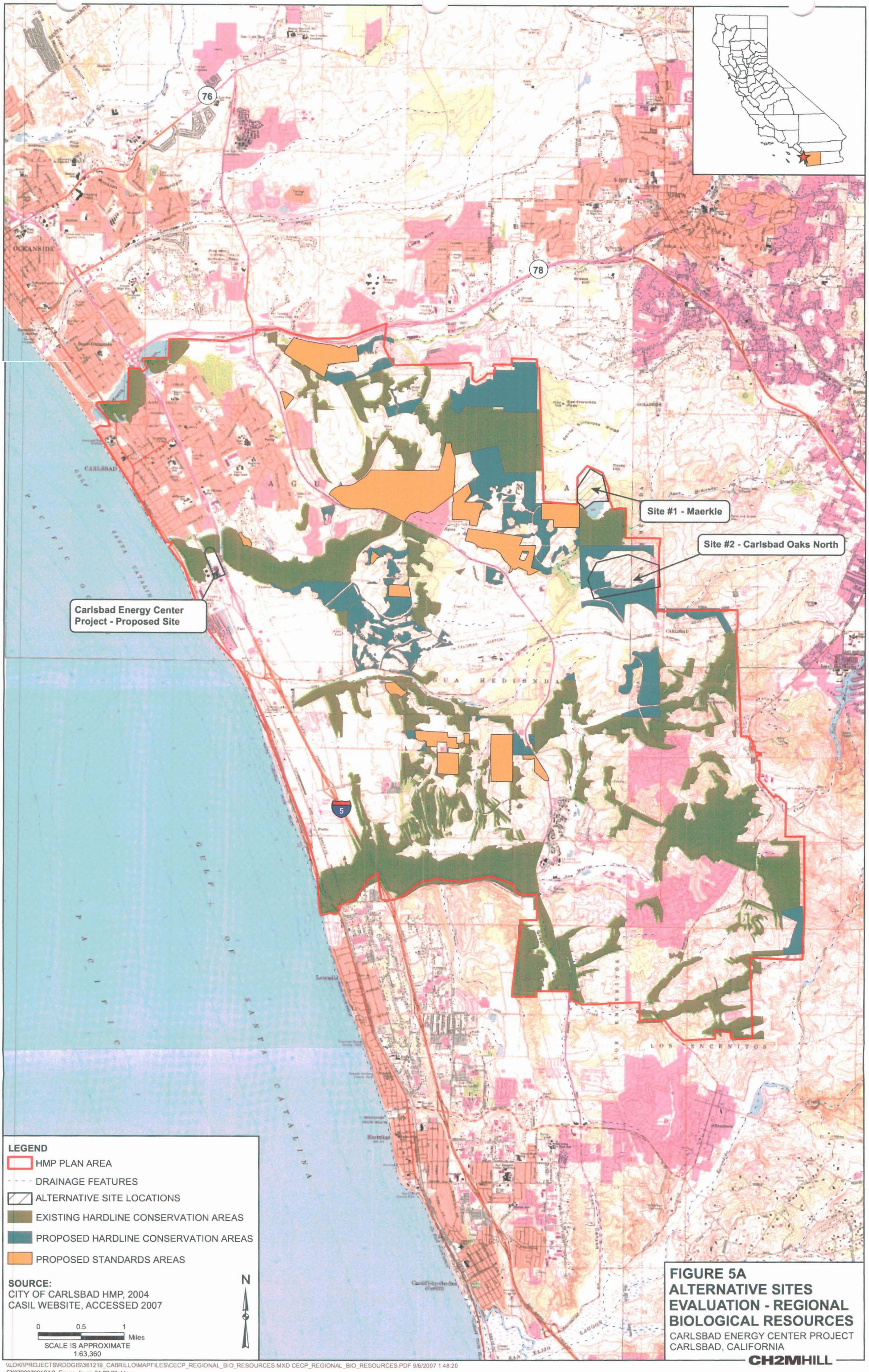
Site #1 - Maerkle
Site #2 - Carlsbad Oaks North
Carlsbad Energy Center Project - Proposed Site
LEGEND
HMP PLAN AREA
DRAINAGE FEATURES
ALTERNATIVE SITE LOCATIONS
EXISTING HARDLINE CONSERVATION AREAS
PROPOSED HARDLINE CONSERVATION AREAS
PROPOSED STANDARDS AREAS
SOURCE:
CITY OF CARLSBAD HMP, 2004
CASIL WEBSITE, ACCESSED 2007
0 0.5 1 Miles
SCALE IS APPROXIMATE
1:63,360
N
FIGURE 5A
ALTERNATIVE SITES EVALUATION - REGIONAL BIOLOGICAL RESOURCES
CARLSBAD ENERGY CENTER PROJECT
CARLSBAD, CALIFORNIA
CH2MHILL
\\LOKI\PROJECTS\RDDGIS\361219_CABRILLO\MAPFILES\CECP_REGIONAL_BIO_RESOURCES.MXD CECP_REGIONAL_BIO_RESOURCES.PDF 9/6/2007 1:48:20
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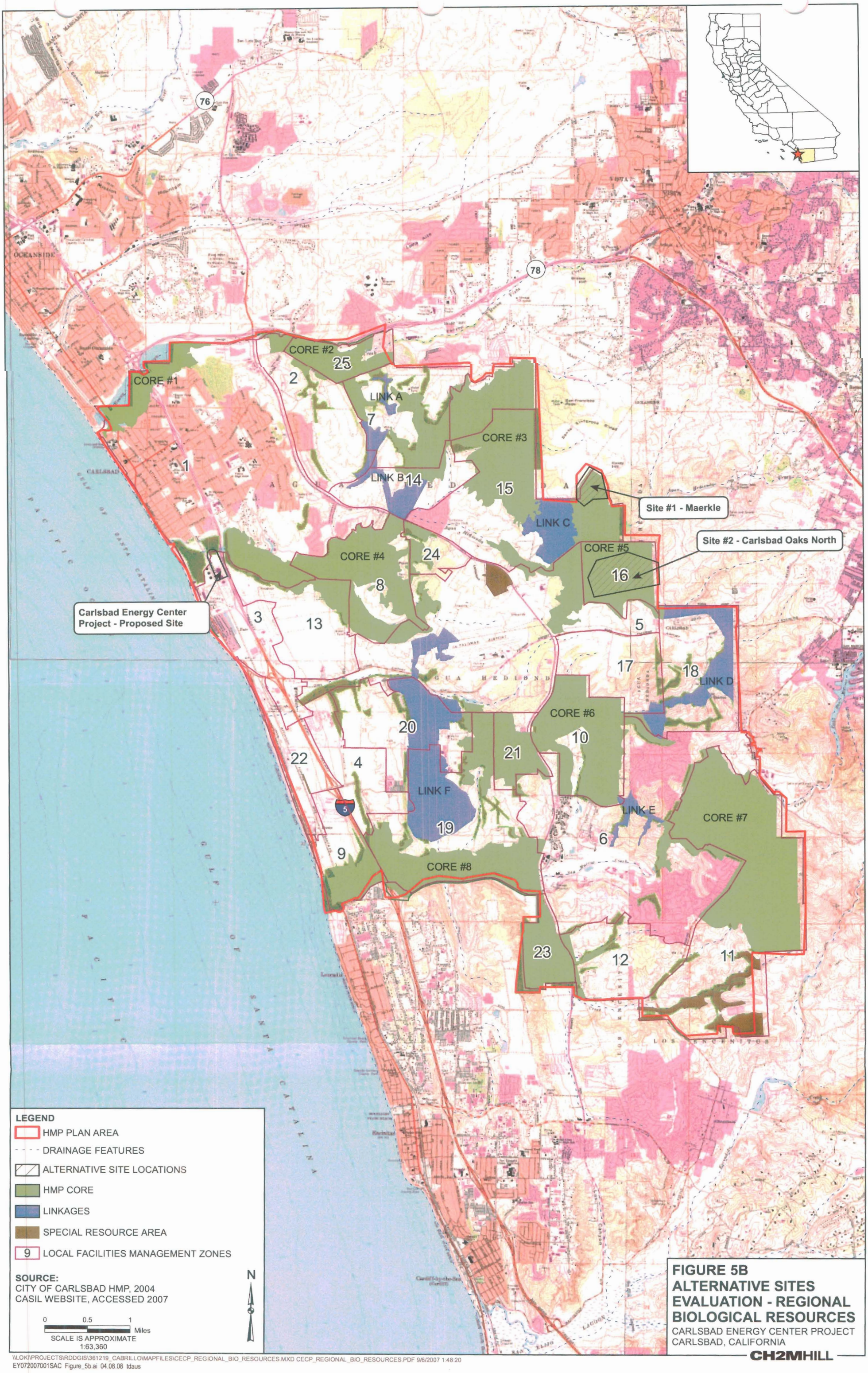

FIGURE 5B
ALTERNATIVE SITES EVALUATION - REGIONAL BIOLOGICAL RESOURCES
CARLSBAD ENERGY CENTER PROJECT
CARLSBAD, CALIFORNIA

CH2MHILL

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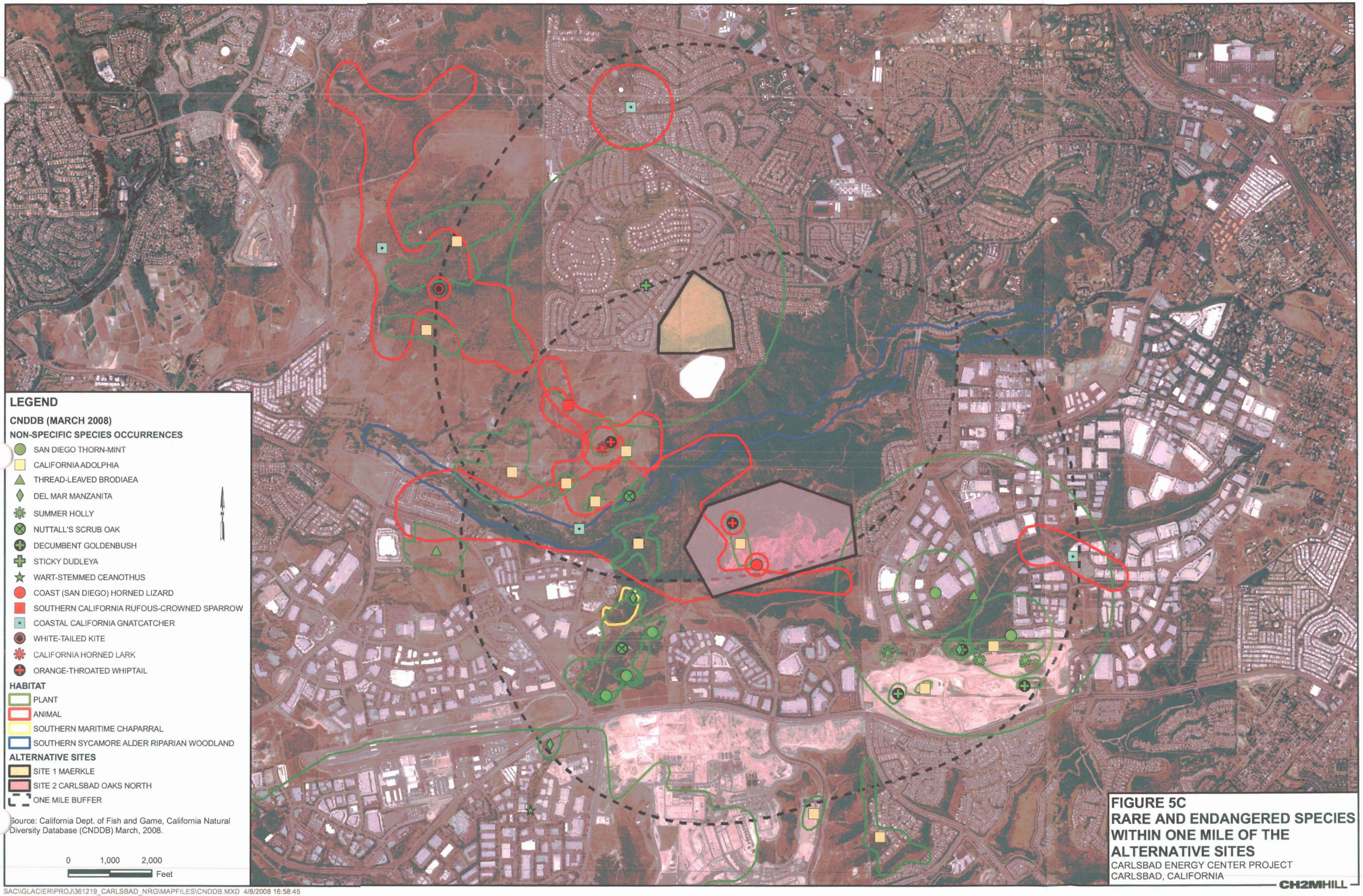

FIGURE 5C
RARE AND ENDANGERED SPECIES WITHIN ONE MILE OF THE ALTERNATIVE SITES
CARLSBAD ENERGY CENTER PROJECT
CARLSBAD, CALIFORNIA

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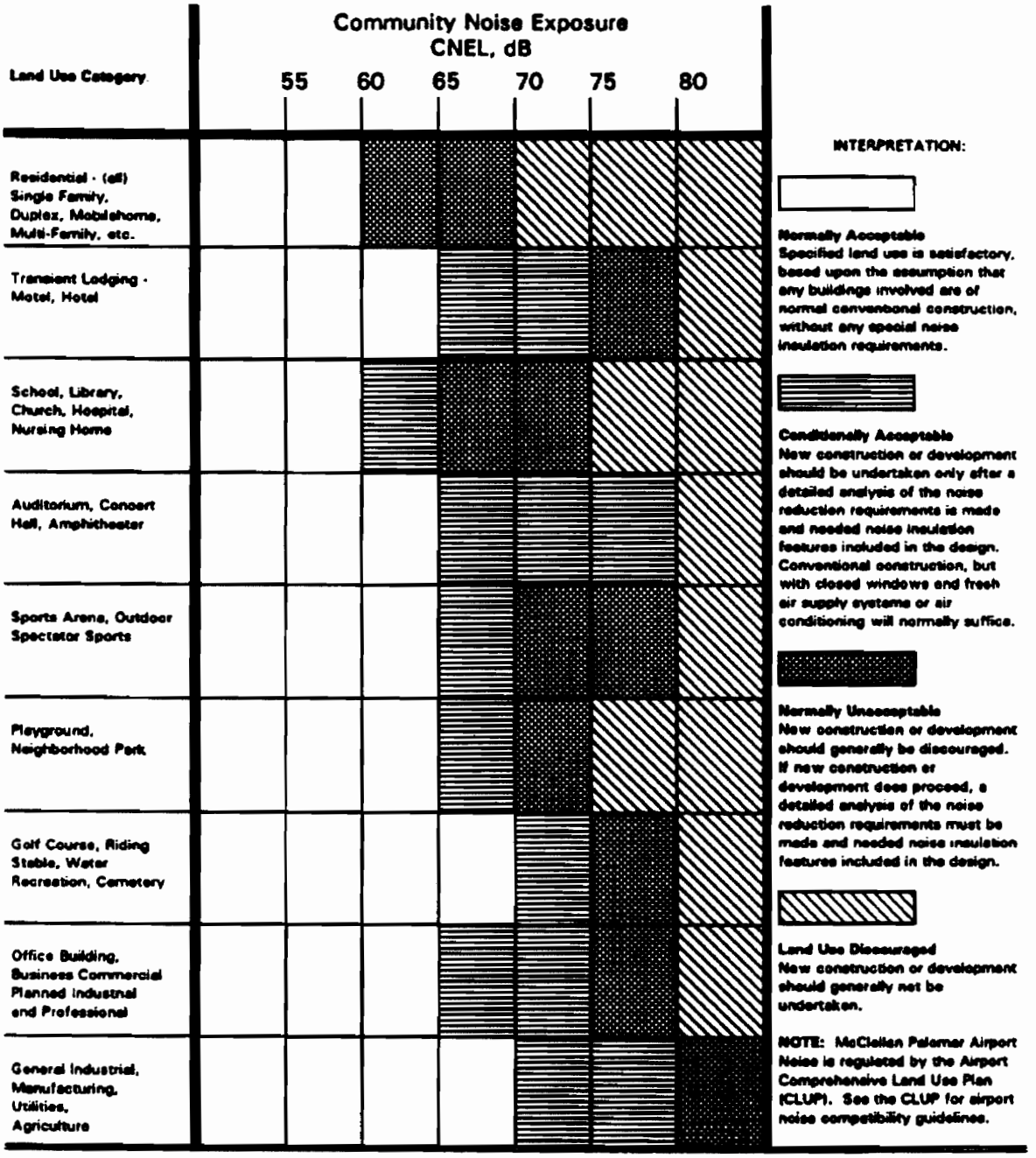

FIGURE 6A
ALTERNATIVE SITES EVALUATION - CITY OF CARLSBAD NOISE GUIDANCE MANUAL LAND USE COMPATABILITY MATRIX
CARLSBAD ENERGY CENTER PROJECT
CARLSBAD, CALIFORNIA

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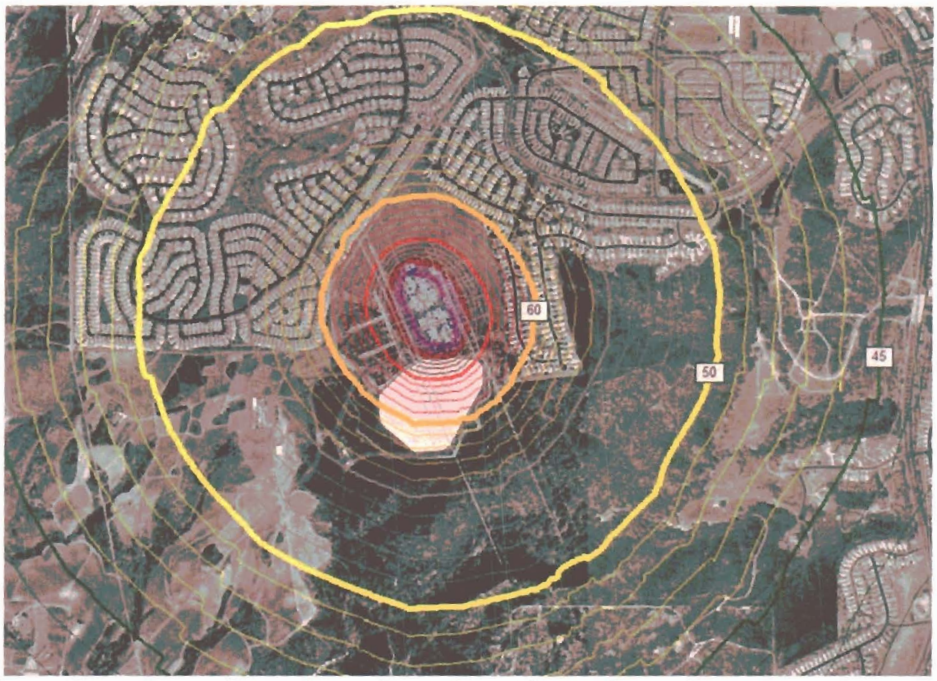

Figure 6B - Preliminary Noise Contours of CECP at Site #1 (Maerkle)(dBA)

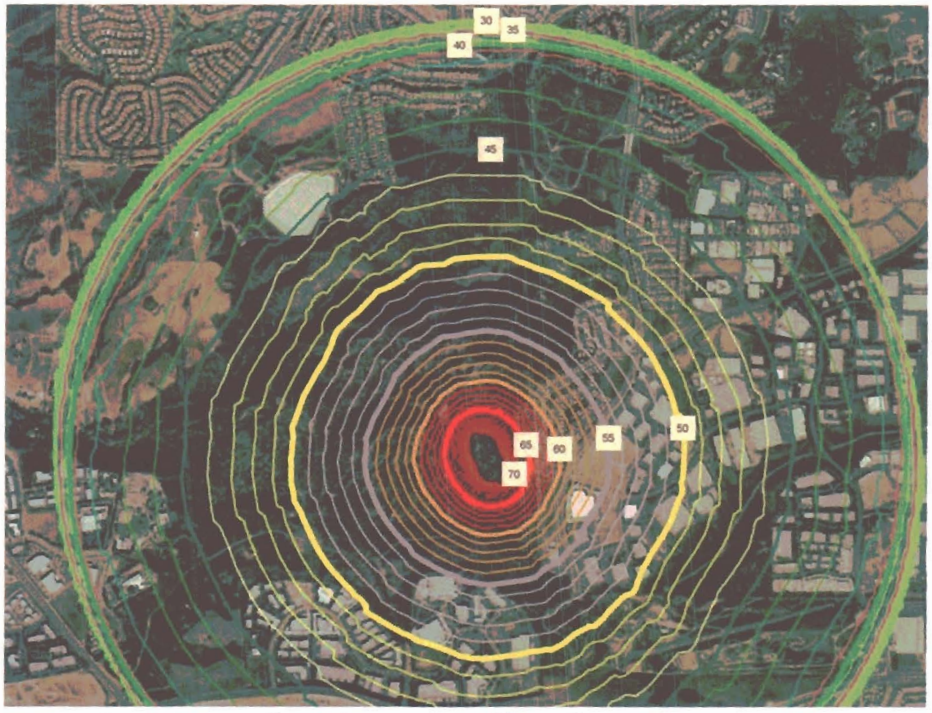

Figure 6C - Preliminary Noise Contours of CECP at Site #2
(California Oaks North Industrial Park) (dBA)

FIGURES 6B AND 6C
ALTERNATIVE SITES EVALUATION - APPLICATION OF CECP NOISE CONTOURS
CARLSBAD ENERGY CENTER PROJECT
CARLSBAD, CALIFORNIA

CH2MHILL

Carlsbad Energy Center Project
Proposed Site

Site #1 - Maerkle

Site #2 - Carlsbad Oaks North

LEGEND

- Preschool
- School
- Hospital
- Community Clinic
- WIC Program Center (Women, Infants and Children program)
- Fire Station
- Law Enforcement Facility
- 3 Mile Radius of Alternative Site Boundary
- Proposed Project Site
- Site 1 Maerkle
- Site 2 Carlsbad Oaks North

N

0 2,000 4,000 Feet

FIGURE 7
ALTERNATIVE SITES EVALUATION
SENSITIVE RECEPTORS AND COMMUNITY SERVICES
CARLSBAD ENERGY CENTER PROJECT
CARLSBAD, CALIFORNIA

CH2MHILL

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Existing View from Applewood Lane looking southwest (Maerkle Site #1)

Conceptual Visual Simulation of Project Alternative

FIGURE 8
ALTERNATIVE SITES EVALUATION -
MAERKLE SITE ALTERNATIVE
EXISTING VIEW AND CONCEPTUAL SIMULATION
CARLSBAD ENERGY CENTER PROJECT
CARLSBAD, CALIFORNIA

Source: ENVIRONMENTAL VISION

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