# Project to Add 16 Emergency Backup Generators to the Santa Clara SC-1 Data Center

## Santa Clara, California

# Application for Small Power Plant Exemption

Submitted to the

**California Energy Commission**

Submitted by

**Xeres Ventures LLC**

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F Letter from Arlene L. Ichien & Melissa Jones to Mr. W. Tate Cantrell, Jr. (Apr. 21, 2008)

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# 1.0 Introduction

Xeres Ventures LLC ("Xeres" or the "Applicant"), a subsidiary of DuPont Fabros Technology, Inc. ("DuPont Fabros"), a leading owner, developer, operator, and manager of wholesale data centers, is seeking a Small Power Plant Exemption (SPPE) for the installation of 16 emergency standby diesel fuel-powered generators that are part of the second phase of the existing Santa Clara SC-1 Data Center, in the city of Santa Clara. The cumulative nameplate capacity of the existing 16 backup generators associated with Phase 1 is 36 megawatts ("MW"). The addition of the 16 additional engines associated with Phase 2 will have a total cumulative nameplate capacity in excess of 50 MWs.

On that basis, the California Energy Commission ("Commission") asserted permitting jurisdiction over Phase 2 of the project in a letter dated April 21, 2008. One of the conditions of the Bay Area Air Quality Management District ("BAAQMD") issued Authority to Construct for the Data Center backup generators (Permit Application No. 17020, Plant No. 18801) is that a Permit to Operate for backup generators 17-32 shall not be issued until either a small power plant exemption or certification is granted by the California Energy Commission or it has otherwise been determined that the backup generators are not subject to the provisions of Chapter 6 of Division 15 of the California Public Resources Code (Power Facility and Site Certification). Based on the facts detailed in this application, Xeres seeks a SPPE.[1]

Under non-emergency conditions, the Data Center's electric load will be served by Silicon Valley Power, the local public utility. The electric load is drawn primarily by the computer servers and associated equipment operating in the Data Center together with the cooling equipment and other support systems. The backup generators, each with a nameplate capacity of 2.25 megawatts (MW), will provide only emergency backup electric power. In addition, they will also run for testing and maintenance but only for short periods and otherwise will not operate unless there is a power failure that prevents Silicon Valley Power from supplying the electric service. The backup generators will not sell power to Silicon Valley Power or any other party. As designed, the backup generators' maximum output will be limited to the maximum load of the Data Center, which is 49.1 MW.

The Data Center was designed in two phases, with 16 backup generators installed in each phase. The two phases are co-located within a single building, but are completely separate from one another from an operational perspective. Construction of Phase 1 of the Data Center (including installation of 16 backup generators) is complete as well as the building in which both Phase 1 and Phase 2 will be located. Pursuant to permits and approvals granted by the City of Santa Clara and BAAQMD, Phase 1 of the Data Center began commercial operation in September 2011. Virtually all of the Phase 2 build out will be constructed within the existing building shell. As a result, save construction of a temporary construction driveway, no further ground disturbance will occur on the site for the construction of Phase 2.

[1] The Applicant has had several discussions with Commission staff with regard to this jurisdictional determination. The Applicant continues to disagree with the Commission's assertion of jurisdiction and reserves all of its rights with respect to jurisdiction over the backup generators.

This SPPE application has been prepared in accordance with Commission's Power Plant Site Certification Regulations. It provides:

- A detailed description of the backup generators, including the need for the backup generators, the type of fuel to be used, the method of construction, and discussion of the use of the gross energy output;

- A location map identifying the location of the Data Center and the backup generators, with accompanying description;

- Photographic representations adequately depicting the visual appearance of the site of the Data Center and backup generators and the immediate surroundings;

- A discussion of the permitting history of the Data Center and the backup generators, and Xeres Ventures LLC's reservation of rights with respect to jurisdiction;

- A description of the efficiency and environmental benefits of the backup generators and the Data Center;

- A discussion of environmental impacts and mitigation or avoidance measures, including a summary of the Initial Study conducted by the City of Santa Clara and a separate discussion of greenhouse gas impacts.

- An alternatives analysis;

- A description of the backup generators' compatibility with the most recent Integrated Energy Policy Report (IEPR); and

- A list of governmental agencies whose standards, ordinances, or laws are applicable to the backup generators.

The environmental baseline for the Santa Clara SC-1 Data Center site, or conditions at the time of this application, consist of an existing 312,000 square foot Data Center building with 16 backup generators, underground diesel fuel tanks, a completed mechanical room and service yard, parking lot, and landscaping installed. An electrical substation, switch gear and underground utility lines serving the Data Center also are in place.

# 2.0 Description of Backup Generators and Other Phase 2 Equipment

## 2.1 Introduction

Xeres proposes to install 16 backup generators at the Santa Clara SC-1 Data Center in an industrial area in the City of Santa Clara in Santa Clara County, California. These 16 backup generators are in addition to the 16 backup generators that are already installed at the Data Center. The Backup Generators will be run only for short periods for testing and maintenance and otherwise will not operate unless there is a power failure. Xeres has constructed and is currently operating Phase 1 of the facility and seeks authorization to complete the build out of Phase 2 of the facility.

## 2.2 Description of the Data Center

### 2.2.1 Overview

The Data Center is an approximately 312,000 square foot building on a 16.1-acre site located on the north side of Reed Street, west of De La Cruz Boulevard, in the city of Santa Clara. (See Appendix A at Figures 1-3.) The parcels are 535-555 Reed Street and 500-520 Mathew Street; the Assessor's Parcel Numbers are 230-03-075 and 230-03-080. The site was formerly developed with structures associated with a lumber mill and is within a fully developed area in Santa Clara. (See Appendix A at 1, Photos 1-4.)

The Data Center will house computer servers and supporting equipment for private clients, as well as associated office uses, in an environmentally controlled structure. The Data Center is two stories and approximately 48 feet in height. Construction is complete on the foundation and exterior of the structure, a substation and switchgear, and Phase 1 improvements in the southern half of the building. A detailed site plan is included as Appendix J.

The backup generators will be housed in a 51,550 square foot penthouse enclosure on the second floor of the Data Center and are air cooled. The second floor will also contain 14,087 square feet of offices. The first floor will house mechanical equipment and computer servers.

The Data Center has been designed in two phases. (See Appendix A at Figure 4.) The entire structure including all onsite civil improvements, central office, loading, and control/security areas, as well as sixteen backup generators have been constructed during Phase 1. Phase 2 will include the outfitting of all the remaining critical infrastructure, walls and partitions, raised floor and the remaining sixteen backup generators. An 80,000 square foot area in the northeast corner of the site will remain vacant (e.g., not covered by buildings or pavement). Development of this area, if any, would be subject to subsequent environmental review and permitting.

Construction of Phase 1 began in August 2008. Due to credit difficulties during the 2008-2010 financial crisis, construction of Phase 1 was suspended in November 2008. It was resumed May 2010 and construction work is now complete. No further excavation or other substantial ground disturbances will be required, and no additional structures will need to be erected under Phase 2. Commercial operation of Phase 1 began in September 2011. Construction of Phase 2 could begin as soon as late 2012 upon receiving appropriate regulatory approvals, and is expected to last approximately 10 months.

### 2.2.2 Need for the Backup Generators

The Data Center derives commercial value from its ability to provide its customers with mission critical space to support their servers, including space conditioning and a steady stream of high-quality power supply. Interruptions of power could lead to server damage or corruption of the data and software stored on the servers. To ensure a reliable supply of high quality power, the servers will be connected to 32 uninterruptible power supply (UPS) systems that store energy and provide near-instantaneous protection from input power interruptions. In the event of a power interruption, the UPS systems will require a power generation source to continue supplying steady power to the servers and other equipment. Thus, the Data Center's commercial viability depends on the backup generators.

The backup generators will provide back-up power to the Data Center when equipment failure or other conditions result in a disturbance or other interruption to the utility supply. The problem may be limited to a momentary disruption or may develop into a full loss of regular power supply. As soon as a problem is detected, the system will bring the backup generators online.

### 2.2.3 Electric Infrastructure Improvements

The backup generators will provide power for the Data Center only in the event of a power failure. No transmission or other grid interconnection facilities will be required for operation of the backup generators because their output will only supply the internal load of the Data Center, except for no longer than 30 second periods during the closed transition parallel transfer from the Silicon Valley Power grid to the backup generators, or vice versa.

Under normal operation, the serving electric municipal utility, Silicon Valley Power, will provide electrical power for the Data Center. As part of Phase 1 of the Data Center, an electrical primary substation and associated electrical equipment were constructed on the northeast portion of the site to provide for the electric demand of the Data Center. (See Appendix A at Figure 4.) Silicon Valley Power has routed new 60kV loop feeders into and through the station along Mathew Street.

The 3-bay substation (three 30/40/50m VA 60kV-24.9kV step-down transformers) has an all-weather surface underlain by crushed granite. A concrete masonry unit screen wall, 15 feet in height surrounds the substation (refer to Photo 2). Distribution of electrical power from the substation will be through three underground duct banks to supply the indoor distribution switchgear at 24.9kV.

Upon completion and testing of the new primary substation, approximately one-eighth acre of the site underlying the substation will be dedicated to the control and protection of Silicon Valley Power's 60kV loop. Electric switching equipment, owned and maintained by Xeres Ventures LLC, has and will be installed adjacent in the remainder of the yard (approximately 0.6 acre). Details concerning interconnection of the Data Center with the Silicon Valley Power public utility system are provided in Appendix Q.

## 2.2.4 Building Cooling System

Mechanical cooling for the Data Center equipment will be provided by two central chilled water plants in mechanical rooms; one for each phase and including centrifugal chillers and a primary/secondary pumping system for distribution of chilled water within the data center. The chilled water plants reject the heat of the tenants computer server load through cooling towers located in the service yard at the rear of the building. (See Appendix A at Figure 4 and Figure 2-7 "Mechanical Room".)

Equipment in the mechanical rooms and adjacent service yard use the principles of heat exchange to remove heat that that builds up in the computer server rooms from the Data Center building. The primary/secondary pumping system distributes water from the plant to the computer room air handling (CRAH) units in the computer rooms. The server heat is carried back to the chiller plant with that water where it is removed by the chillers and rejected to the atmosphere by the cooling towers. There is also a 500,000 gallon thermal energy storage tank integrated into the system that will provide chilled water to the CRAH units in the event of a chiller plant shut down. Recycled water from South Bay Recycling will be used in the cooling towers.

### 2.2.4.1 Chemical Use in the Building Cooling System

R-123 (trichlorofluoromethane), the refrigerant used in the chillers, is a hydrochlorofluorocarbon (HCFC). HCFCs are considered refrigeration and air conditioning system replacements for chlorinated fluorocarbons (CFCs) which are extremely stable and have adverse effects on the earth's ozone layer when released into the atmosphere. The hydrogen in the molecular structure of HCFCs, in contrast, increases their instability which allows the gas to break down in the lower atmosphere before reaching the stratospheric ozone layer. While more environmentally friendly to the atmosphere, CFC substitutes such as R-123 can pose different health and safety concerns to users, and pose somewhat greater health risks to people working with and around it. The installed centrifugal chillers for Phase 1 include refrigerant monitoring systems, which have been inspected by the City of Santa Clara Fire Marshal. (Appendix P). The proposed Phase 2 chillers will include similar safeguards and be inspected for conformance with requirements in the City's Municipal Fire and Environmental Code prior to operation.

Several biocides are and will be used in the cooling water pipelines and cooling towers to control the growth of organisms and the formation of biofilms in the system. Currently both oxidizing (i.e., bromine activated by sodium hypochlorite) and non-oxidizing biocides are fed into the system in liquid form. Bromine and sodium hypochlorite (bleach) are fed simultaneously based on demand based on an Oxidation Reduction Potential (ORP) Setpoint for water disinfection monitoring. The non-oxidizing compound is DBNPA, or 2,2-dibromo-3-nitrilopropionamide, is

fed on a timer. DBNPA has a 30 minute half life and degrades relatively rapidly. Sulfuric acid is used to adjust pH, if required. These materials are delivered to the site and stored in dual containment tanks.

A scale and corrosion inhibitor (EV-00040) is also used for treatment of the recirculating cooling water system. This material is stored on a spill containment pallet within the mechanical room.

Water treatment chemicals for the building cooling system are used and/or stored on-site in small quantities in conformance with local, state and federal hazardous materials regulations. As a part of cooling tower blowdown,[2] cooling water is discharged to the City's sanitary sewer system. Blowdown is prevented for one hour after DBNPA is fed into the cooling system. All discharge of cooling water to the sanitary sewer system is designed to meet local requirements of the San José-Santa Clara Water Pollution Control Plant.

#### 2.2.4.2 Building Cooling System Monitoring of Microbial Control

Bacteria in cooling water of the Phase 1 system is routinely monitored using both Total Colony Count Dip Slides and the use of Free (extracelluar) and Total ATP tests which provide an indication of the effectiveness of microbial control. Initial results for both total colonies and enzyme activity in Phase 1 have been very low.[3] Specific testing for Legionella bacteria was undertaken for the Phase 1 cooling tower for water samples collected on September 22, 2011. None were detected.[4] Comparable microbial testing will be conducted on the Phase 2 system.

### 2.2.5 Location Map of the Data Center and Backup Generators

The location of the Data Center site is shown on Figure 2-1 and Figure 2-2. An aerial photograph with surrounding land uses is provided in Figure 2-3.

### 2.2.6 Photographic Representations of the Data Center

Oblique aerial views of the Data Center site taken in September 2011 are shown on Figures 2-4, 2-5 and 2-6. The location of existing backup generator stacks and cooling towers (Phase 1 mechanical equipment) are noted on Figure 2-6.

### 2.2.7 Layout of Data Center and Backup Generators

A schematic layout of Phase 1 (complete) and Phase 2 of the Data Center is provided in Figure 2-7 and in Appendix J.

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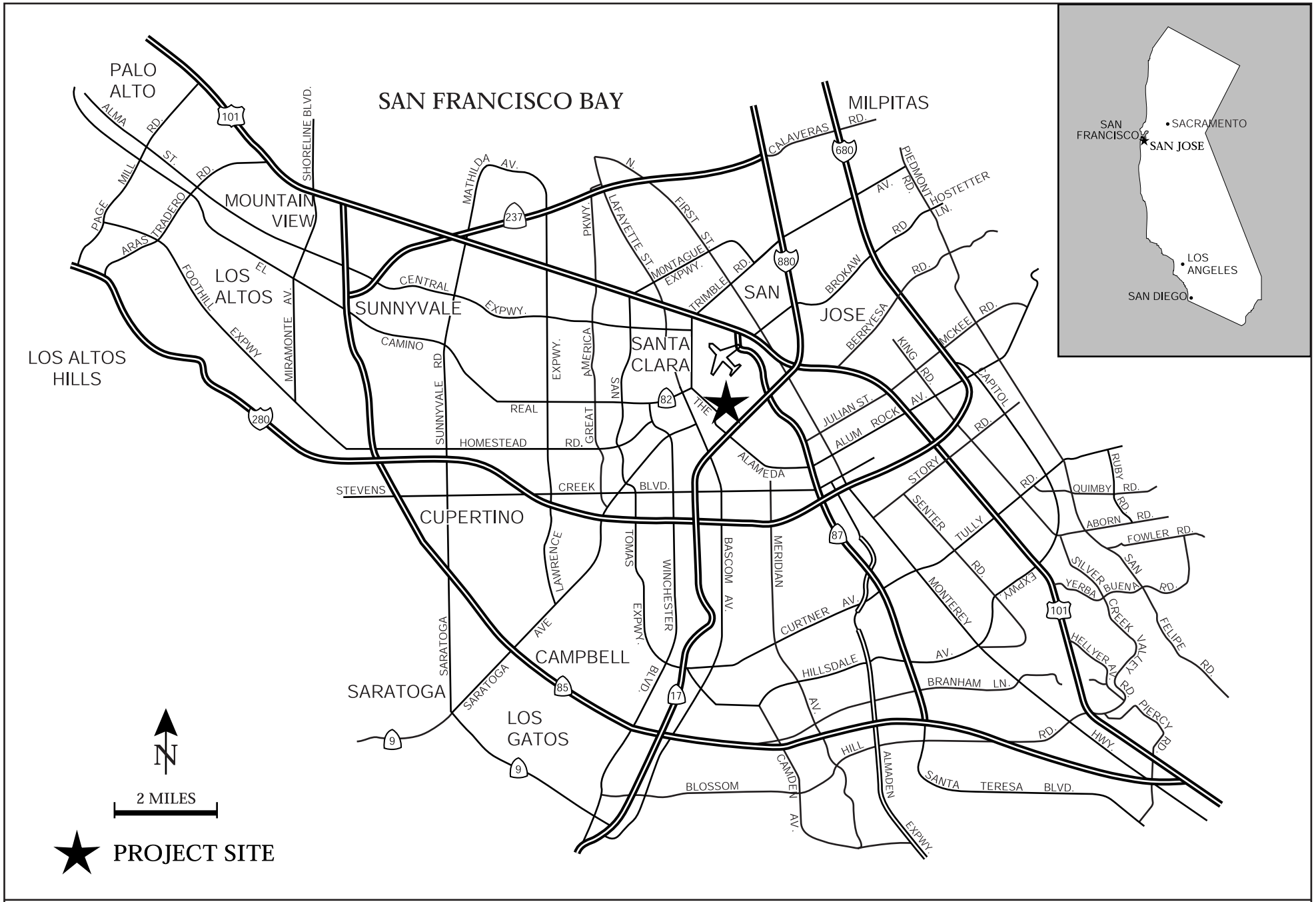
[2] Blowdown is the removal of a portion of the circulating cooling water in order to maintain the amount of dissolved solids (e.g., salts) at an acceptable level for preventing buildup of scale, biological growth and corrosion.

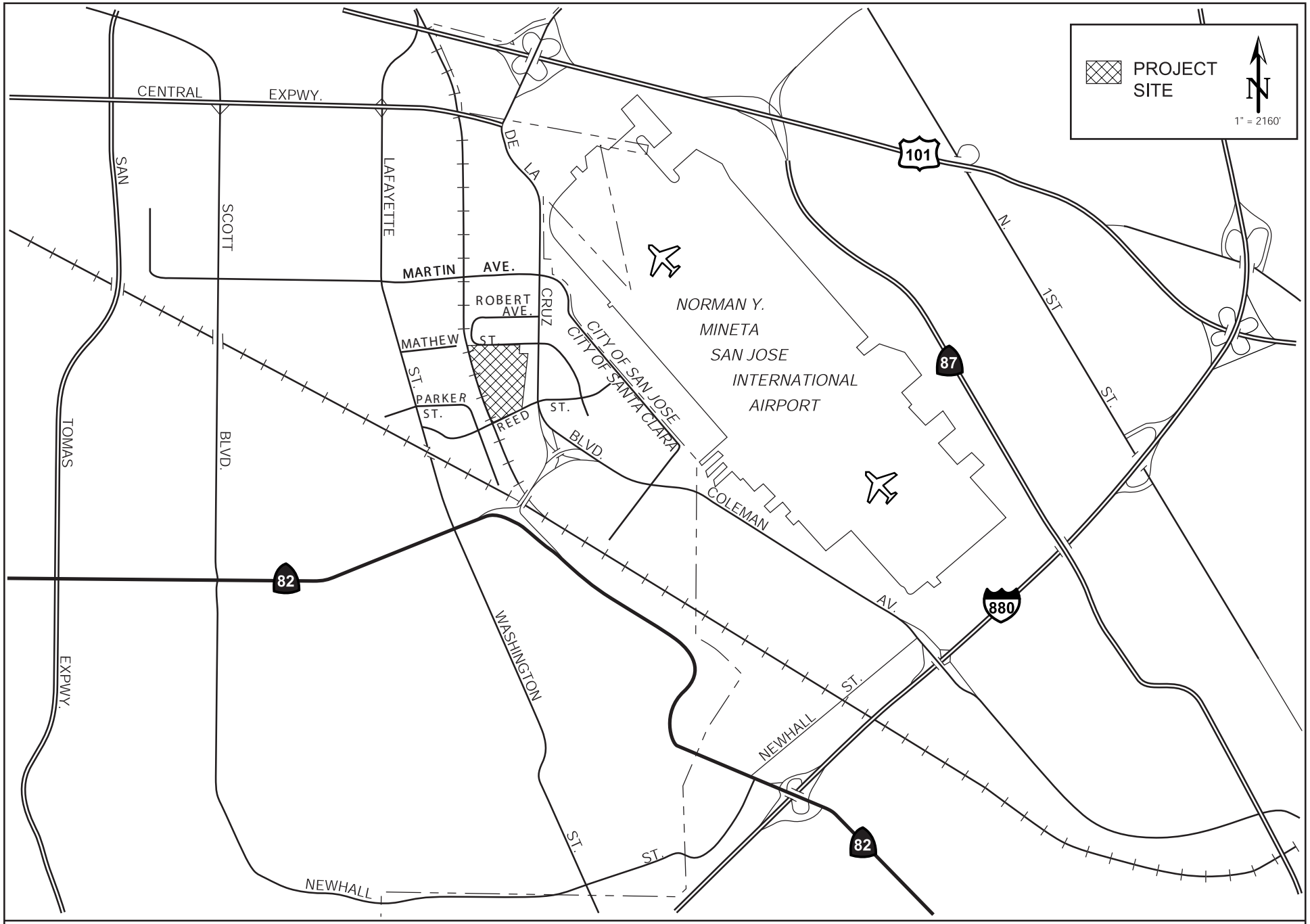
[3] Rick Nalven, Western Regional Manager, Chemtex International, written communications to Rick Waddle, Director of Construction, DuPont Fabros Technology, August 16, 2011.

[4] Environmental Safety Technologies. "Legionella Laboratory Report" for DuPont Fabros SC1. October 5, 2011.



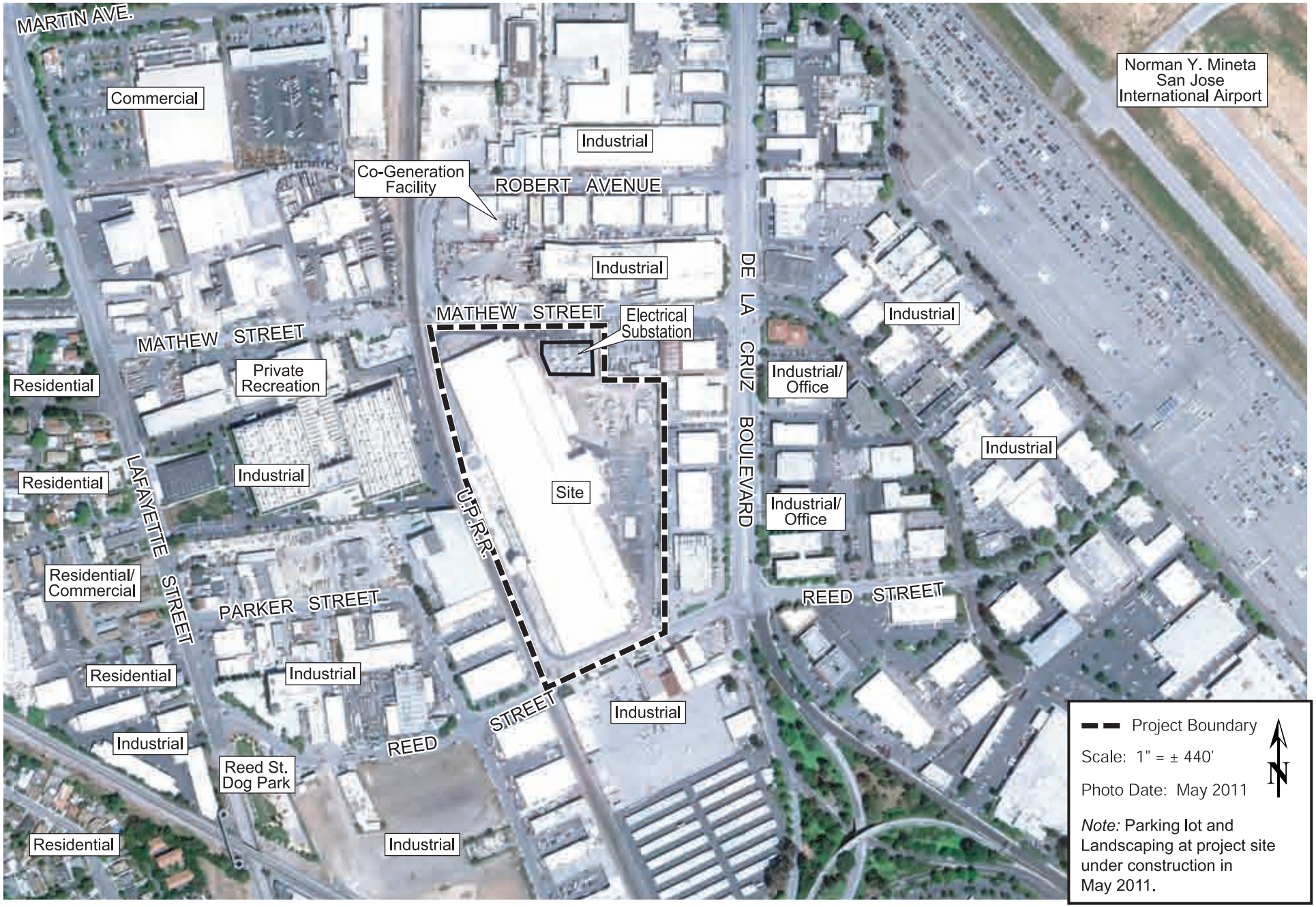

REGIONAL MAP

FIGURE 2-1




VICINITY MAP

FIGURE 2-2




AERIAL PHOTOGRAPH WITH SURROUNDING LAND USES

FIGURE 2-3

OBLIQUE AERIAL PHOTOGRAPH OF DATA CENTER - LOOKING WEST

FIGURE 2-4

OBLIQUE AERIAL PHOTOGRAPH OF DATA CENTER - LOOKING SOUTHWEST FIGURE 2-5

OBLIQUE AERIAL PHOTOGRAPH OF DATA CENTER - LOOKING NORTH

FIGURE 2-6

LAYOUT OF DATA CENTER AND BACKUP GENERATORS

FIGURE 2-7

## 2.3 Description of the Backup Generators and System Performance

### 2.3.1 Backup System Design (N+2)

In Data Center designs, it is commonplace to build levels of systems and equipment redundancy and concurrent maintainability into the overall electrical and mechanical infrastructure. The base quantity of systems that are required to serve the design load of the facility is referred to as "N". In each phase of the Data Center design, this N is equal to 14 electrical systems, corresponding to 14 backup generators. When reliability requirements dictate that redundant systems are added to the base quantity of systems, it is commonplace in the industry to refer to the number of redundant systems as "X" in the representation "N+X". This value of "X" can range from one to a higher number in various data center design topologies. In each phase of the Data Center, two redundant systems were planned (i.e., X=2). This allows for maintenance to be performed on a component, such as a backup generator, and still ensure an additional backup generator is in reserve and available to operate should another engine fail to start during a power outage. Therefore, the "Base + Redundant" systems for the Santa Clara SC-1 Data Center design are represented by the expression "N+2".

All backup generators, including redundant units, will be called into operation in the event of an interruption of electrical supply from SVP. The output from the system during emergency operation would be limited to the maximum load of the data center, as discussed in Section 2.3.2, below.

### 2.3.2 Electrical Generation Equipment

Each backup generator consists of a Detroit Diesel MTU Model 16V4000G83 engine that is rated 3,353 brake horsepower (bhp) and capable of producing 2250 kW of electricity from the generator output terminals. The backup generators are air cooled.

The backup generators will be run for short periods for testing and maintenance purposes and otherwise will not operate unless there is a disturbance or interruption of the utility supply. BAAQMD's Authority to Construct and the California Air Resources Board's Airborne Toxic Control Measures (ATCM) limits each engine to no more than 50 hours annually for reliability purposes (i.e., testing and maintenance). Additionally due to the results of BAAQMD's risk analysis, the combined total number of hours of operation for reliability purposes for all 32 engines is limited to 700 hours (300 hours between midnight and 8:00 AM; 200 hours between 8:00 AM and 4:00 PM; and 200 hours between 4:00 PM and midnight (24:00) per year).

The backup generators will not and cannot be run to sell power to Silicon Valley Power or any other party. As such, the backup generators' output will always be limited to the maximum load of the data center. The entire Data Center (Phases 1 and 2) is designed to support a critical load for the computer servers and associated equipment of 36.4 MW or 18.2 MW per phase. This load is met by 16, 1.3 MW UPS systems in each phase, two of which are for redundancy purposes.

### 2.3.3 Fuel System

The backup generators will use ultra low sulfur diesel as fuel (< 15 parts per million sulfur by weight). Fuel will be stored in four 50,000-gallon underground diesel fuel tanks located under the parking lot on the eastern portion of the property. (See Appendix A at Figure 4.)

### 2.3.4 Capacity and Maximum Output

**Overview of Power Usage Effectiveness (PUE)**

By definition, Power Usage Effectiveness (PUE) is equal to the "Total Facility Load" of the Data Center divided by the "Critical Load" of the Data Center. The Total Facility Load is the sum of: Critical Load + Air Handling Equipment Load + Mechanical Plant Load (Chiller) + House Power Load (security, monitoring, lighting, receptacle, miscellaneous). Critical Load is the power demand of the servers, storage devices, and networking equipment that are supplied with power by the UPS and which the facility is constructed and designed to protect.

Expressed in terms of energy consumed over a unit of time, this becomes:

PUE = [(Critical Load) + (Air Handling Equipment Load) + (Mechanical Plant Load) + (House Power Load)] / (Total Facility Load)

The lower the PUE, the more "efficient" a data center is deemed to be, by requiring less energy overall to support the critical computer server loads. The lowest PUE for the facility design is achieved at the point the facility operates at its design capacity (see *Absolute Maximum Total Facility Load* and *Expected Total Facility Load* discussions, below). Typical data centers in the industry have PUE's in the range of 1.75 to 2.0. New facilities using best practices typically are lower, as will be the case with the Santa Clara SC-1 Data Center.

**Critical Load Capacity**: Each Phase of the Data Center will consist of 16 UPS systems, with capacities of 1.3 MW each. In order to provide the necessary reliability, they will be arranged to provide N+2 redundant topology described above. This yields a critical load capacity of 36.4 MW. This means the Data Center is designed to accommodate a total computer server load of no greater than 36.4 MW (18.2 MW for each phase).

- *Calculation*: 2 * ((16 UPS systems * 1.3 MW per UPS system) - (2 redundant UPS systems * 1.3 MW per UPS system)) = 2 * 18.2 MW = 36.4 MW

**Absolute Maximum Total Facility Load**: Total Facility Load is a function of the utilization of the facility, i.e., what portion of the facility is being utilized as a data center. As noted, the greater the utilization, the greater the efficiency, which in turn, impacts the Total Facility Load of the Data Center. Based on the experience at the identical data center in operation and run by DuPont Fabros in Virginia, the PUE at maximum utilization will be 1.35, which meets the LEED gold standard for new data centers. Thus, if the Santa Clara Data Center were operated at 100% utilization, the maximum Total Facility Load for the entire facility (Phases 1 and 2) cannot exceed 49.1 MW.

- *Calculation*: 36.4 MW x 1.35 PUE = 49.1 MW

**Expected Total Facility Load**: The Applicant anticipates that the Data Center will not be used beyond 85% of its design utilization. At this level of use, the PUE would be 1.40, reflecting a decrease in efficiency due to the lower use. The total expected facility load is therefore expected not to exceed 43 MW.

- *Calculation*: 36.4 MW x 85% x 1.40 PUE = 43 MW.

### 2.3.5 Gross Energy Output of Backup Generators within the Data Center

The backup generators will never supply power outside the Data Center; their output will always be mechanically limited to the maximum load of the Data Center. Said otherwise, during disturbances or interruptions to the utility supply at the Data Center, the backup generators will supply the exact load of the Data Center. As detailed above, the total expected facility load of the Data Center is 43 MW and the absolute maximum load is 49.1 MW. Thus, the theoretical maximum gross energy output of the backup generators will be 49.1 MW once Phase 2 is operational.

### 2.3.6 Emission Reduction System

Each backup generator will be equipped with selective catalytic reduction (SCR) technology using urea as the ammonia source and will be Tier 2 compliant (low NOx). Based on the expected operation and allowing for SCR warm-up time, there will be an overall target of 90% NOx reduction for operation above cool down/idling mode. NOx control will be greater than 90% at all times the engine exhaust exit temperature is above 500 degrees Fahrenheit.

The backup generators meet California Air Resources Board Risk Guidance requirements regarding emissions below health risk thresholds (an increased cancer risk greater than 10 per million for either residential or workplace receptors), in conformance with BAAQMD requirements.

Each generator will be maintained in good condition, in proper tune (per manufacturer's specifications), and in compliance with all state and federal requirements.

## 2.4 Method of Construction

The 16 backup generators will be assembled and acceptance tests will be performed on them off-site. Xeres will purchase the backup generators fully assembled. Construction of the 16 backup generators will consist only of using a crane to lift them onto the second floor of the Data Center and then attaching fuel lines and exhaust and emissions controls.

## 2.5 Permitting History

Xeres Ventures LLC began development of the Data Center unaware that the Commission would later assert jurisdiction over the backup generators. Xeres has worked with the City of Santa Clara and the Bay Area Air Quality Management District (BAAQMD) over the past 3 years to obtain necessary permits and approvals.

### 2.5.1 City of Santa Clara

The Santa Clara SC-1 Data Center project (PLN2007-06643) was approved by the City of Santa Clara, following completion of the City's Development and Environmental Review processes. A series of required and detailed plans were submitted to the City Planning Division and reviewed for completeness and consistency and compliance with the City's stated goals and objectives that are established in the General Plan, Zoning Ordinance, City Codes and in other regulations and standards.

An application for the Santa Clara SC-1 Data Center, along with the pertinent fee(s) and project plans and details, was filed with the City of Santa Clara on September 18, 2007. The project plans were then initially reviewed by staff departments, such as Police and Fire, Public Works, and Planning and Inspection, within two weeks of the application submittal.

The City's Project Clearance and Subdivision Committees (PCC/SC) met to review the project application for completeness and compliance with City standards and other necessary requirements that apply to the project on October 1, 2007 and November 13, 2007. The PCC/SC Committees meet routinely on a weekly basis to guide a project through the development review process and identify features that may require plan revisions to assure inclusion of necessary project information. The Committees do not take action on applications, but provide recommendations to the decision-makers, such as the Architectural Review Committee. They also review plans for conformance with local and State laws related to building construction, including mandated energy conservation and life safety requirements. In accordance with the City's adopted procedures, the Initial Study prepared for the project under the California Environmental Quality Act (CEQA) was reviewed by the Project Clearance Committee and recommended as completed for circulation on February 6, 2008.

In February 2008, the City of Santa Clara completed the Initial Study for the Data Center. (See Appendix A.) The conclusions of the Initial Study are summarized in Section 5. On February 6, 2008, the City published notice of its intent to adopt a Mitigated Negative Declaration for the Data Center and provided a 20-day public comment period. (See Appendix B.) On March 5, 2008, the City adopted the Mitigated Negative Declaration and Mitigation Monitoring and Reporting Program. (See Appendix C.)

Subsequent to circulation of the Initial Study, project plans were reviewed and approved by the City of Santa Clara Architectural Review Committee at its March 5, 2008 meeting. Standards for Architectural Review are based upon the Community Design Guidelines adopted by the City Council and General Plan and Zoning Ordinance standards. Architectural Review was completed prior to issuance of Building Permits and included review of proposed landscaping and exterior lighting.

Site development permits issued for the project include demolition permits for buildings in the former lumber yard, a full building permit for the SC-1 Data Center issued on September 3, 2008,[5] and fire permits (e.g., alarm, sprinklers, refrigeration) for Phase 1 improvements in the southern portion of the Data Center building. As a part of the permit process, the City's

[5] Diane Vong, Senior Permit Technician, City of Santa Clara, October 1, 2011, personal communications.

Inspection Division and Fire Protection Division provide inspection services for building construction to ensure compliance with approved plans. The project has undergone routine field inspections for structural, mechanical, electrical, life safety (e.g., provision of exits, adequate access for responders), and hazardous materials storage (e.g., diesel fuel storage and refrigerants in chillers).

Other types of permits issued for the Santa Clara SC-1 Data Center project include encroachment permits for installation of utility connections in public rights-of-way and transportation permits for temporary street closures. All off-site utility improvements in street rights-of-way (e.g., recycled water lines, potable water, sanitary sewer) to serve the Data Center have been installed. A certificate of occupancy for the Data Center was issued by the City of Santa Clara on August 29, 2011.

## 2.5.2 Bay Area Air Quality Management District

### 2.5.2.1 Application Submission and Review

On November 21, 2007, Xeres Ventures LLC applied for an Authority to Construct/Permit to Operate from the BAAQMD for the backup generators.[6] The Application was deemed complete by BAAQMD on August 13, 2008. Over the following two years, BAAQMD undertook a very thorough analysis of the Applicant's intended use of the 32 backup generators and the associated air quality impacts. BAAQMD's review also considered four natural gas-fired boilers, four underground diesel storage tanks, and two evaporative chilled water systems at the Data Center.

#### *2.5.2.1.1 "Emergency Standby Engine" Status*

The Applicant originally proposed to use the backup generators during both actual power supply interruptions and "anticipatory outages." Based on discussions with the BAAQMD, the Applicant agreed to forgo any anticipatory use of the backup generators. Based on this agreement, BAAQMD determined that the backup generators meet the definition of emergency standby engines (i.e., emergency generators) under BAAQMD Regulation 9, Rule 8. (See Appendix I at 1.)

#### *2.5.2.1.2 Emissions Standards*

The backup generators are model year 2010 and thus must meet Tier 2 emissions standards. Although the Applicant originally proposed 100 hours of discretionary (maintenance and testing) use per backup generator per year, BAAQMD calculated individual source emissions based on 50 hours of discretionary operation, the maximum allowed under 17 California Code of Regulations, Section 93115.6(a)(3)(C). The Applicant also agreed to accept permit conditions that include a combined annual limit of 700 hours on discretionary operation of all backup generators. (See Appendix I at 2; Appendix E at 2-3.)

Upon review of the anticipated emissions from the backup generators, BAAQMD found that refined calculations as compared to those proposed by the Applicant were necessary for diesel particulate matter (PM) and nitrogen oxides ($NO_x$). BAAQMD also found that the Applicant

[6] The entire BAAQMD administrative record for the issuance of air permits for the backup generators has already been submitted to the Commission. Additional copies are available upon request.

needed to accept certain permit conditions to bring the project emissions within appropriate levels.

BAAQMD found that the natural gas-fired boilers, the cooling towers, and the diesel storage tanks all qualified for air permit exemptions under BAAQMD Regulation 2, Rule 1, Sections 114.1.2, 128.4, and 123.3.2 respectively. (See Appendix I at 6-8.)

#### *2.5.2.1.3 Federal 1-Hour $NO_2$ NAAQS*

On January 22, 2010, the United States Environmental Protection Agency (EPA) announced a new 1-hour nitrogen dioxide ($NO_2$) National Ambient Air Quality Standard (NAAQS) of 100 parts per billion (Ppb), which is attained when the 3-year average of the 98th-percentile of the annual distribution of daily maximum 1-hour concentrations does not exceed 100 ppb at each monitor within an area. (See Appendix G.) In March 2011, EPA issued a guidance memorandum which recognized an exemption for certain emergency generators from this 1-hour $NO_2$ standard. For emergency generators that are not operated frequently enough to contribute significantly to the annual distribution of daily maximum 1-hour concentrations of $NO_2$, reviewing authorities have discretion to exclude emissions from emergency or startup/shutdown operations from compliance demonstrations for the 1-hour $NO_2$ standard under appropriate circumstances. (See Appendix H.) Thus, the Xeres backup generators need not demonstrate compliance with the federal 1-hour $NO_2$ NAAQS.

#### *2.5.2.1.4 CEQA*

BAAQMD Regulation 2, Rule 1, Section 310 requires all proposed new and modified sources under BAAQMD's jurisdiction to be reviewed in accordance with the California Environmental Quality Act (CEQA) requirements, except for ministerial or exempt projects. The City of Santa Clara was the Lead Agency for purposes of the CEQA Analysis. BAAQMD is a responsible agency.

BAAQMD found during its review of the Authority to Construct application that emissions from project equipment as initially proposed and described in the Initial Study and Mitigated Negative Declaration would not meet all BAAQMD rules and regulations. The Applicant then agreed to modify several components of the project description. As BAAQMD explained in its CEQA Addendum to the 2008 Mitigated Negative Declaration, the changes to the original project which were not evaluated in the Mitigated Negative Declaration adopted by the City on March 5, 2008 are as follows:

1. The 32 engine-generators are 3,353 bhp each rather than 3,848 bhp each;

2. Additional limitations shall be imposed on the 32 engine-generators:

    a. Projected hours of non-emergency operation were reduced from 100 hours per year per backup generator to 50 hours per year;

    b. Combined hours of operation for reliability-related operations shall not exceed the following limits per year:

        i. From 12 am up to 8 am 300 hours;

ii. From 8 am to up to 4 pm 200 hours;

iii. From 4 pm to up to 12 am 200 hours;

c. Projected hours for initial startup testing/commissioning are limited to 50 hours per backup generator (engine) unless a different limit is approved by the Air Pollution Control Officer (APCO); and

3. The four (4) natural gas-fired boilers are 1.75 MMBtu/hour each rather than 1.44 MMBtu/hour each.

The Addendum to the Mitigated Negative Declaration (Appendix E, at 3-4) also addressed modeling of and demonstration of compliance with the California and federal 1-hour $NO_2$ National Ambient Air Quality Standard (NAAQS). Overall, BAAQMD found that the modeling results do not establish a reasonable possibility of a significant environmental impact from $NO_2$ emissions.

The BAAQMD Addendum to the Mitigated Negative Declaration found that the project, as modified, complies with all BAAQMD, state and federal air quality rules and regulations and would not result in significant environmental effects or otherwise require the preparation of subsequent EIR or negative declaration under Section 15162 of the CEQA Guidelines.

#### *2.5.2.1.5 BACT*

Per BAAQMD Regulation 2, Rule 2, Section 301, Best Available Control Technology (BACT) requirements are triggered if maximum potential emissions from a new source are 10 lbs/day or more of: particulate matter with aerodynamic diameter of 10 microns or less (PM10), precursor or non-precursor organic compounds (POC/NPOC), nitrogen oxides ($NO_x$), sulfur dioxide ($SO_2$), or carbon monoxide (CO).

BAAQMD determined that the maximum daily backup generator emissions will exceed 10lbs/day for $PM_{10}$, POC, $NO_x$, and CO. Once BACT is triggered, BAAQMD can only permit a diesel engine if a natural gas-fueled engine or electric motor is impractical. One such circumstance arises if the engine is only used during involuntary loss of electrical service. Because the backup generators will only be used under emergency conditions and for maintenance and testing purposes, and because the Applicant demonstrated that use of a natural gas-fueled engine would be technically infeasible, BAAQMD determined that diesel engines are allowable for use at the Data Center. BAAQMD's BACT guidelines specify that BACT is compliance with the emission standard listed as "BACT2" in the guidelines or the current tier standard, whichever is more stringent. Because the Tier 2 standards, to which the backup generators are certified, are more stringent than the listed BACT2 standards, BAAQMD determined that BACT has been met. (See Appendix I at 12-13.)

#### *2.5.2.1.6 Offsets*

BAAQMD did not require offsets for the $PM_{10}$ and $SO_2$ emissions from the Data Center because it is not considered a "major facility" pursuant to BAAQMD Regulation 2, Rule 2, Section 303. Similarly, because the backup generators will not emit at least 10 tons per year of POC or $NO_x$, BAAQMD did not require offsets for those pollutants. (See Appendix I at 13-14.)

#### *2.5.2.1.7 Prevention of Significant Deterioration Requirements*

BAAQMD's Prevention of Significant Deterioration (PSD) regulations require any new "major facility" to demonstrate that its emissions will not interfere with attainment and maintenance of the national ambient air quality standard for $SO_2$ or $NO_2$, or cause an exceedance of a PSD increment. Because the Data Center is not considered a "major facility", BAAQMD determined that the PSD requirements do not apply. (See Appendix I at 14.)

#### *2.5.2.1.8 Health Risk Assessment for Toxic Air Contaminants*

BAAQMD reviewed emissions of toxic air contaminants (TAC) emitted from the backup generators during discretionary operation because emergency operation is exempt from TAC review. BAAQMD found that best available control technology for toxics (TBACT) had been applied to the backup generators because the Generators would not emit diesel particulates at a rate greater than 0.15 g/bhp-hr. Because TBACT was satisfied, BAAQMD found that the increase in cancer risk of 1.2 in a million for the nearest residential receptor and 9.9 in a million for the offsite worker was acceptable. (See Appendix I at 14-15.)

#### 2.5.2.2 Issuance of Authority to Construct

BAAQMD issued Authority to Construct (ATC) for Permit Application No. 17020, Plant No. 18801 on July 15, 2010. (See Appendix D.) The ATC covers the backup generators in both phases of the project.

### 2.5.3 California Energy Commission

In a letter dated April 21, 2008, the Commission asserted permitting jurisdiction over the backup generators. (See Appendix F.) Xeres disagrees with the Commission's assertion of jurisdiction because the Data Center will never sell power on the electrical grid, is not a "power plant" under the Warren-Alquist Act, and because the maximum output of the backup generators for both project phases is 49.1 MW, which is less than the Commission's 50 MW jurisdictional threshold.

Representatives of Xeres met and corresponded with Commission staff on numerous occasions regarding this jurisdictional determination. In August 2008, Xeres and Commission Staff reached an agreement that allowed construction of Phase 1 of the Data Center to begin. Xeres and Staff agreed that the Commission would not assert jurisdiction over the Phase 1 backup generators as long as the BAAQMD Authority to Construct for the Phase 2 backup generators contained the following language:

> A Permit to Operate shall not be issued for, and permittee shall not operate, Source S-__ [ICE 17-32] for any reason whatsoever until the California Energy Commission (CEC) has granted a small power plant exemption relating to the DuPont Fabros Data Center per Section 25541 of the California Public Resources Code, approved an application for certification relating to the DuPont Fabros Data Center per Chapter 6 of Division 15 of the California Public Resources Code, or it has otherwise been determined that Sources S-__ through S-__ [ICE 1-32] are not subject to the provisions of Chapter 6 of Division 15 of the California Public Resources Code.

BAAQMD issued the Authority to Construct for Permit Application No. 17020, Plant No. 18801 for the Data Center and the backup generators on July 15, 2010. (See Appendix D.) The language required by the Commission was included as Condition 13 of Authority to Construct.

In filing this application, Xeres reserves all of its rights with respect to jurisdiction over the backup generators. Nothing in this application shall be construed to be a release, waiver, or limitation of any rights or remedies that Xeres may have under any laws, regulations, or common law.

# 3.0 Efficiency and Environmental Benefits

Xeres Ventures, LLC is a subsidiary of DuPont Fabros Technology. Inc., a leading owner, developer, operator, and manager of wholesale data centers. DuPont Fabros' data centers are highly specialized, secure facilities used by tenants--primarily national and international technology companies--to house, power, and cool computer servers that support critical business processes. With designs that incorporate increased power densities, high efficiency systems, and long term reliability, DuPont Fabros' data centers lead the industry. This section discusses a few of the efficiency and environmental benefits of the Data Center and the backup generators.

## 3.1 Strategic Location

The Data Center will be located in a service area with reliable electric power and supplied by a Silicon Valley Power-controlled substation constructed by DuPont Fabros at DuPont Fabros' sole expense. This limits the possibility that backup generators will be used. The Data Center involves redevelopment of a "brownfield" site within an established industrial area of the City of Santa Clara. This use aligns with California state policies to promote brownfield development, as codified in laws such as the California Land Environmental Restoration and Reuse Act of 2001 and the California Land Reuse and Revitalization Act of 2004.

## 3.2 Data Center Design Features

The Data Center includes design features outlined in the United States Green Building Council's LEED (Leadership in Energy and Environmental Design) rating system to achieve a Gold Certification. These include sustainable site, water efficiency, energy and atmosphere, materials and resources, and indoor air quality features.

Table 4.17-1 in the Initial Study (see Appendix A at 71-72) summarizes the LEED features of the Data Center.

## 3.3 High Efficiency System

The Data Center uses state-of-the-art server and UPS technologies, utilizing substantial economies of scale to establish a high efficiency system. Xeres chose rotary UPS systems which have fewer losses than other UPS options. As with Phase 1, Phase 2 of the Data Center will utilize high efficiency chillers to reduce the facility's parasitic load. This will result in less power being required to support the servers as compared to other data centers.

In the data center industry, energy efficiency of a facility is typically measured in terms of Power Usage Effectiveness (PUE). The PUE shows the ratio of the entire facility load (or the "Total Facility Load") to the critical load of the servers, storage devices, and networking equipment (the "Critical Load"). This ratio illustrates a facility's ancillary or parasitic load. As such, a lower PUE indicates a more efficient data center. Data Center industry average PUE is between 1.75 and 2.0. When operating at full load, Xeres' Data Center will have a PUE between 1.35 and 1.4.

## 3.4 Long Useful Life

The Data Center, like all of DuPont Fabros' operating data centers, is specially designed to have a long useful life. Its core power and cooling infrastructure are based on stable technology that is not tenant specific and therefore is less likely to become obsolete.

# 4.0 Environmental Information

This section briefly summarizes the conclusions of the February 2008 Initial Study of environmental impacts prepared by the City of Santa Clara (Appendix A) and the June 2010 BAAQMD Addendum to Mitigated Negative Declaration (Appendix E). It also discusses which impacts have already occurred during the Phase 1 construction process, prior to submittal of this Application. The Initial Study defined the project as construction of the Data Center, including the backup generators, on the 16.1-acre site. Section 4 of the Initial Study discussion environmental identifies impacts and mitigation measures; all mitigation measures cited below refer to Section 4 of the 2008 Initial Study.

## 4.1 Aesthetics

The site is within a fully developed area in Santa Clara. The central portion of the City, north of the Caltrain corridor and south of U.S. 101, consists of predominately light and heavy industrial uses and public/quasi public uses, although some of the area has transitioned into office/Research and Development (R&D) and data centers. The City's heavy and light industrial businesses are characterized by manufacturing, warehousing and wholesaling activities occupying low intensity one and two story buildings.[7] Visually, the area is predominantly industrial in character.

### 4.1.1 Scenic Corridors

The City of Santa Clara is served by four freeways: U.S. 101 traverses east-west through the center of the City, while State Route 237 is located to the north and Interstate (I)-880 and I-280 skirt the southeast and southwest corners of the City, respectively. These segments have not been officially designated as scenic highways by the California Department of Transportation and the project site is not visible from any designated scenic corridors.

### 4.1.2 Changes in Visual Quality and Lighting and Glare

Construction of the Santa Clara SC-1 Data Center Building involved demolition of the structures in a former lumberyard and an industrial building on Mathew Street and construction of a large industrial type building. The design of the new building was subject to the City's design review process and conforms to current City of Santa Clara architectural and landscaping standards (refer to Section 2.5.1 City of Santa Clara Permitting History).

The industrial type building has already been erected. Views of the project site from adjacent City streets and the adjacent UPRR corridor are shown in Photos 1-9. Views of nearby adjacent uses are shown in Photos 10-15 on pages 35 and 48-50. The exterior finishes on the building, exterior lighting, and installation of landscaping are complete along the project frontages on Mathew Street and Reed Street. Landscaping is also in place along the project boundary adjacent to the UPRR corridor (see Photos 3, 4, 6, 7, 8 and 9). A total of 184,926 square feet

[7] City of Santa Clara. *City of Santa Clara 2010-2035 General Plan Integrated Final EIR*. January 2011.

(4.2 acres) of the 16.1 acre site is landscaped and irrigated with recycled water from the South Bay Water Recycling utility. Landscaping was installed based upon a set of landscape plans reviewed and approved by the City of Santa Clara. The site includes plantings of trees, shrubs and ground cover with low to medium irrigation requirements based upon Water Use Classifications of Landscape Species (WUCOLS) guidelines developed by the University of California Cooperative Extension and California Department of Water Resources.[8] Estimated water use was also calculated based upon requirements in the City Code (refer to landscape plans in Appendix K, Landscape Plans L1.2, L2.0, and L2.1).

Lighting installed at the site was selected to avoid light spillage onto adjacent properties and streets, in conformance with Section 18.50.140 of the City Code. Examples of overhead lighting on light poles in parking areas are shown in Photos 3, 4 and 6. Lighting was reviewed as a part of the City's permitting process and the general lighting design was approved by the Architectural Review Committee on March 5, 2008.

The exterior of the building is primarily concrete, with windows installed at the main entrance near the center of the structure facing the parking area. Given the limited glazing on the building and the focus of exterior lighting downward, glare from reflective surfaces and nighttime glare from lighting on the site is not substantial.

Installation of a second set of cooling towers and a water tank similar to those shown in Photo 9 is proposed as a part of completion of proposed mechanical systems for the northern half of the Data Center (Figure 4-1). Public visibility of this equipment would be limited due to its location at the rear of the Data Center building adjacent to the UPRR right-of-way. Mathew Street does not extend across the UPRR tracks at this location and views from local streets (Mathew Street and Reed Street) generally would be obscured by the existing building. A view from the UPRR right-of-way northwest of the site is shown in Photo 4. The rear of the building would only be visible for a brief period by rail passengers and is not inconsistent with the industrial views in the area. The mechanical equipment, setback from local roadways and partially screened by landscaping and fencing therefore would not adversely change the visual character or quality of this industrial area. No further exterior changes to aesthetics are anticipated.

Completion of the northern portion of the Data Center building improvements, therefore, will not result in significant, adverse visual or aesthetic impacts.

[8] University of California Cooperative Extension and California Department of Water Resources. 2000. *A Guide to Estimating Irrigation Water Needs in Landscape Plantings in California*. Available at: <http://www.water.ca.gov/wateruseefficiency/docs/wucols00.pdf>

Photo 1 - View of southern half of SC-1 Data Center from Mathew Street, looking southwest.

Photo 2 - View of substation enclosure and landscaping on Mathew Street.

PHOTOS 1 AND 2

Photo 3 - View of the SC-1 Data Center Building and access driveway from Mathew Street, looking south.

Photo 4 - View of rear of building, fence and landscaping from UPRR right-of-way near Mathew Street terminous, looking south.

PHOTOS 3 AND 4

Photo 5 - View of the SC-1 Data Center (555 Reed Street) and adjacent industrial gas supply company from the southeast corner of De La Cruz Boulevard and Reed Street.

Photo 6 - View of the SC-1 Data Center Building and Access Driveway on Reed Street, looking northwest.

PHOTOS 5 AND 6

Photo 7 - View of Landscaped Frontage Along Reed Street, looking northwest.

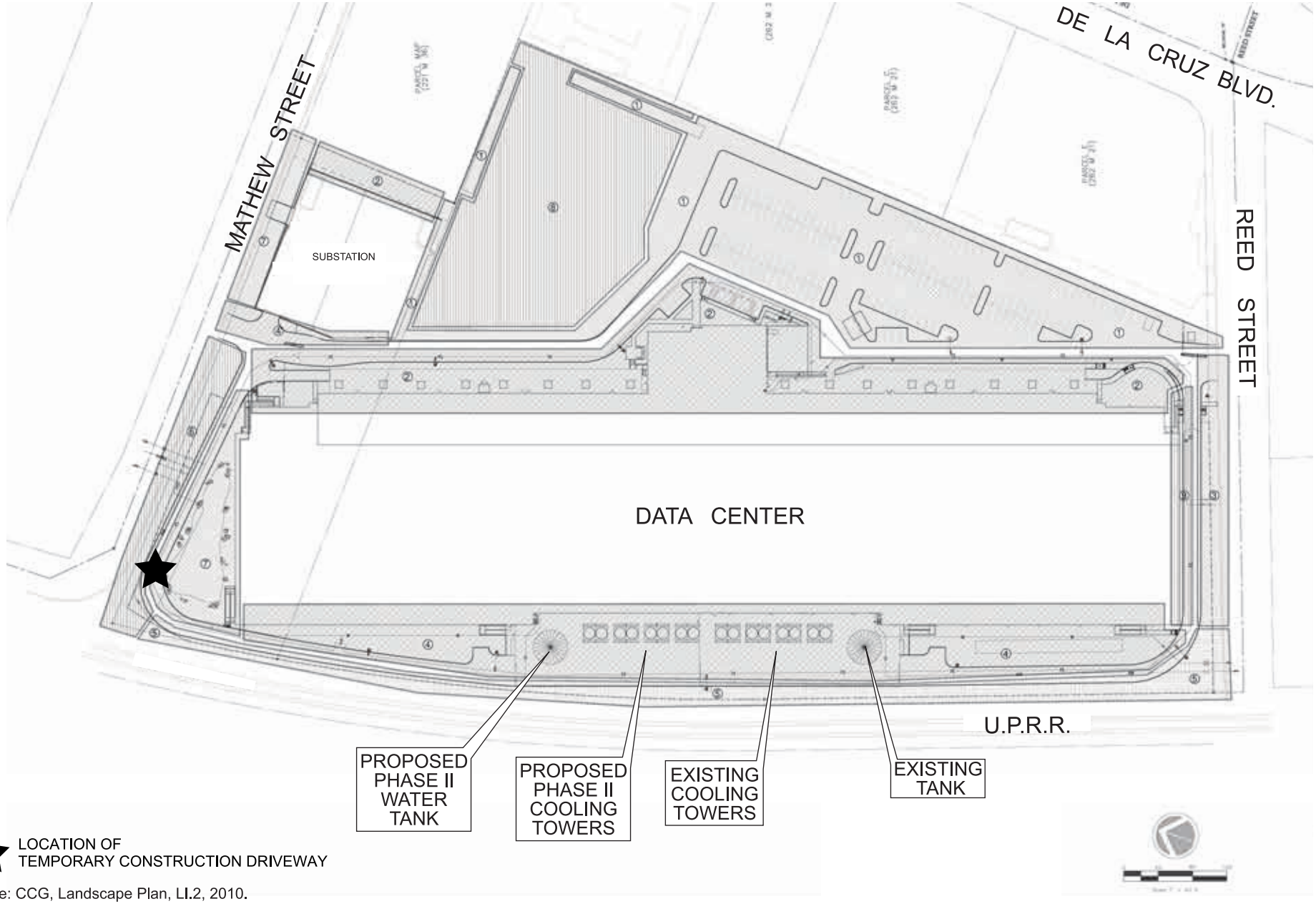
Photo 8 - View of the SC-1 Data Center Reed Street Frontage, looking northeasterly.

PHOTOS 7 AND 8

Photo 9 - View of Phase I Cooling Towers and Water Storage Tank from UPRR right-of-way (approximately 200 feet northwest of Reed Street).

Photo 10 - View of Industrial and Commercial uses at the southwest corner of De La Cruz Boulevard and Mathew Street. SC-1 Data Center partially visible in background on left (white building).

PHOTOS 9 AND 10




Source: CCG, Landscape Plan, LI.2, 2010.

LOCATION OF PHASE II EXTERIOR MODIFICATIONS

FIGURE 4-1

## 4.2 Agricultural Resources

The site is not currently used for agricultural purposes and is not designated as farmland of any type by the California Department of Conservation.[9] The Data Center will not result in impacts to agricultural resources.

## 4.3 Air Quality

The site is within the San Francisco Bay Area Air Basin (SFBAAB). Three pollutants are known at times to exceed the state and federal standards in the project area: ozone, particulate matter ($PM_{10}$), and carbon monoxide.

According to the 2008 Initial Study and a subsequent Addendum to the Initial Study prepared by the BAAQMD, the Data Center will not result in significant long-term regional or local air quality impacts. Air quality modeling for the backup generators and four gas-fired furnaces (boilers) was initially completed by AMEC Earth and Environmental, Inc. (See Appendix A at App. A.) Estimated emissions from the backup generators made in 2008 were well below the BAAQMD significance criteria (15 tons/yr) for reactive organic gases (ROG), nitrogen dioxide, and $PM_{10}$ then in place. Modeling for the backup generators showed that the maximum 1-hour and 8-hour average carbon monoxide using the worst-case Screen3 modeling assumptions for the backup generators (100% power for all generators) would not exceed National Ambient Air Quality Standards (NAAQS).

BAAQMD subsequently found that the Initial Study did not analyze whether projected emissions would exceed the state 1-hour $NO_2$ ambient air quality standard (AAQS) or result in an exceedance of BAAQMD's project risk limit due to its emissions of diesel particulate matter, and requested additional modeling. In October 2009, Sierra Research completed a $NO_2$ Air Quality Impact Analysis and Diesel Particulate Health Risk Assessment for the Applicant.[10] Subsequently, the U.S. Environmental Protection Agency promulgated a new 1-hour national ambient air quality standard (NAAQS) for $NO_2$. Based on the results of Sierra Research's study and additional confirmation with respect to the newly promulgated federal 1-hour $NO_2$ NAAQS, BAAQMD found that the project is extremely unlikely to violate the state 1-hour $NO_2$ AAQS or the new federal 1-hour $NO_2$ NAAQS. (See Appendix E at 4.) BAAQMD found, however, that the Data Center as originally proposed would create a cancer risk of greater 10 in one million, and therefore could not be approved under BAAQMD Regulation 2-5-302.1. The Applicant modified its project by reducing the proposed non-emergency use for each backup generator, limiting the combined total of proposed hours for reliability-related operations to 700 hours per year, and limiting the proposed hours for initial startup testing and commissioning. According to BAAQMD's Engineering Evaluation Report for the Data Center, the total nitrogen oxide ($NO_x$) emissions from all 32 backup generators for "discretionary" (i.e., non-emergency) operation for

[9] California Department of Conservation. *2010 Important Farmland Map for Santa Clara County*. There are no changes at the project location in this updated map when compared to the 2004 Santa Clara County Important Farmland Map referenced in the 2008 Initial Study.

[10] The October 2009 report completed by Sierra Research was included in BAAQMD administrative record previously submitted to the Commission. Additional copies are available upon request.

up to a combined total of 700 hours per year will be 8.147 tons per year.[11] This estimate is lower than the amount indicated in the 2008 Initial Study because the permitted annual hours of non-emergency operation have been substantially reduced to meet BAAQMD's risk guidelines for diesel particulate matter.[12] After these changes, BAAQMD found that the air quality impacts would not be significant. (See Appendix E at 3.)

The backup generators will also emit ammonia due the selective catalytic reduction (SCR) control of nitrogen oxide emissions. The excess ammonia that passes through the SCR process without reacting is emitted in the backup generator (engine) exhaust and is referred to as ammonia slip. The annual ammonia emissions from the proposed low use backup generators were calculated by BAAQMD as 75.4 pounds per year. The impacts from the expected ammonia slip as a toxic air contaminant also would be slight (Appendix I at 14-16).

Construction activities may have short-term air quality impacts. Due to the negligible amount and short duration of construction-related air quality impacts, all were considered to be less than significant except dust. Short-term air quality impacts associated with construction-generated dust (Impact AIR-1 in the 2008 Initial Study) were reduced to a less than significant level with the implementation of standard construction and mitigation measures (MM AIR-1.1).

# 4.4 Biological Resources

## 4.4.1 Direct Impacts to Habitat and Special Status Species

Prior to construction of Phase 1 of the Data Center, the site contained 12 industrial structures, an office building, and limited landscaping, with pavement over the remainder of the site. The site is surrounded by industrial and commercial development with limited cover and foraging habitat for wildlife.

No substantial impacts to natural plant communities or habitats will occur as a result of the construction of Phase 2 improvements and operation of the Data Center. Special status plant and wildlife species are not expected on this previously developed site. Site disturbance associated with installation of proposed Phase 2 improvements would be limited to construction of a temporary construction driveway from Mathew Street (see Figure 4-7). Landscaping at this location would be reinstalled following installation of the backup generators and exterior cooling towers and water tank in the service yard. These activities would not result in impacts to natural plant communities or habitats or special status species or other direct impacts to biological resources.

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[11] Under the BAAQMD Authority to Construct, both emergency and non-emergency hours of operation will be tracked at the SC-1 Data Center Facility. Annual emissions from emergency operation of backup generators would be in addition to those for non-emergency reliability testing listed above.

[12] The BAAQMD CEQA Air Quality Guidelines have been revised since preparation of the 2008 Initial Study. The current significance threshold for maximum annual emissions are 10 tons per year for ROG, $NO_x$, and $PM_{2.5}$ and remain 15 tons per year for $PM_{10}$ (BAAQMD CEQA Guidelines, updated May 2011). As noted above, with the revisions on reliability testing hours, none of these thresholds would be exceeded.

## 4.4.2 Indirect Impacts to Sensitive Serpentine Grassland Habitat from Nitrogen Deposition

### 4.4.2.1 Regional Conditions

In the South Bay area, serpentine soils are found primarily in foothill areas bordering the Santa Clara Valley. They are derived from serpentinite, an ultramafic rock, and typically are shallow, nutrient-poor for plants (except for high concentrations of magnesium), and may contain heavy metals. Serpentine soils often support vegetation largely restricted (or endemic) to these sites. The Draft Santa Clara Valley Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP) estimates there are about 35,000 acres of serpentine soils in central and southern Santa Clara County within the HCP/NCCP study area. The main body of sensitive serpentine habitats closest to the project site is found along Coyote Ridge, approximately 8 miles southeast of the project site. Grassland on serpentine soils are also present in the Communications Hill, Santa Teresa Hills, Tulare Hill, and the hills on the west side of Coyote Valley and in the Calero Reservoir area. These areas range from about five miles (Communications Hill) to over ten miles from the project site (Figure 4-2).

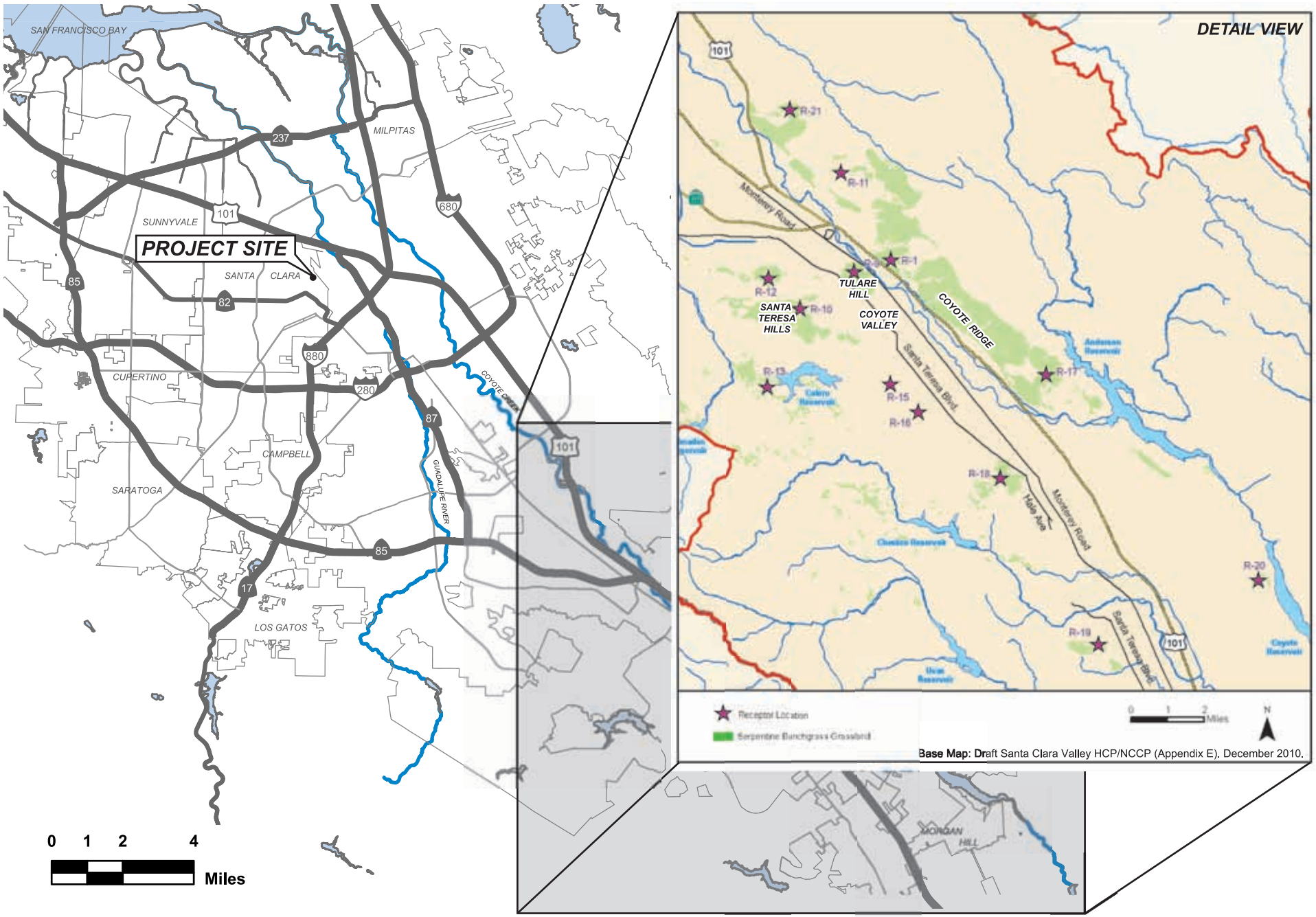
While there is no serpentine grassland habitat on the project site or in the immediate project vicinity, nitrogen deposition and its indirect impacts on serpentine grassland habitat have been identified as a regional issue in previous environmental analyses for projects in Santa Clara County. Indirect impacts from nitrogen deposition associated with human activities may include decreasing habitat suitability for native plants in serpentine grasslands due to an increase in non-native grass growth in these areas. Serpentine habitats are of particular concern because of the extreme rarity and sensitivity of serpentine grassland habitats, and the number of special-status species that depend on the integrity and quality of such habitats.

In Santa Clara County, increased growth of non-native grass may affect special status plants such as the federally endangered Metcalf Canyon jewel-flower, Santa Clara Valley dudleya, Coyote ceanothus and Tiburon paintbrush or native plants used by the federally threatened Bay checkerspot butterfly as a food source by caterpillars or as a nectar source by adults. These impacts can be managed under specific grazing regimes designed to remove additional non-native grass cover.[13]

Estimating impacts associated with nitrogen deposition from human activities on sensitive habitats miles away poses a number of challenges. Atmospheric nitrogen deposition is a complex process by which reactive chemical forms of nitrogen (N) – nitrogen oxides ($NO_X$), ammonia ($NH_3$), and other compounds – are deposited onto plant and soil surfaces. These forms of nitrogen can enter ecosystems and act as nitrogen fertilizer to plants. Some naturally occurring or "background" nitrogen deposition is a normal part of the "nitrogen cycle" of nitrogen compounds between water, soil, and the atmosphere.

Existing and future development allowed under the Santa Clara General Plan, as well as other urban and rural development in the region, contributes nitrogen to the atmosphere through emissions from passenger and commercial vehicle trips and other industrial and nonindustrial

[13] Santa Clara Valley HCP/NCCP. Draft Valley HCP -Appendix E (Nitrogen Deposition Contribution). Available at <http://www.scv-habitatplan.org >. Accessed September 9, 2011.




VALLEY HCP/NCCP SERPENTINE GRASSLAND HABITAT

FIGURE 4-2

sources, such as boilers, backup generators, and wastewater treatment. Emissions from these sources are known to increase airborne reactive nitrogen compounds (e.g., nitrogen oxides), of which a certain amount is converted into forms that can fall to the ground as depositional nitrogen.

As disclosed in the EIR for the Santa Clara 2010-2035 General Plan (2010), there were about 115,500 residents and 58 million square feet of non-residential development in the City at the time environmental review of the General Plan was initiated in 2008. The service population (jobs+residents) in Santa Clara in 2008 was 222,000 persons. In neighboring San José, there were 985,307 residents and over 113 million square feet of industrial, commercial and public-quasi public uses in the City in 2008.[14] Travel by residents and employees to and from jobs in the urban areas of the Santa Clara Valley, including cities other than San José and Santa Clara, is one of the major sources of nitrogen emissions and nitrogen deposition in serpentine grassland areas.

#### 4.4.2.2 Previous Environmental Review and Deposition Estimates in Santa Clara County

The amount of nitrogen deposited due to emissions associated with "existing" development and future development in the greater South Bay area is difficult to accurately estimate because the atmospheric chemistry of nitrogen compounds is complex and dynamic and deposition also is influenced by atmospheric conditions such as wind and air circulation.

Several estimates of indirect impacts to serpentine grasslands from nitrogen deposition associated with individual power plant projects, general plan updates, and a draft specific plan have been made in the last 11 years. In addition, nitrogen deposition contribution estimates in Santa Clara County have been made as a part of preparation of the draft Santa Clara Valley HCP/NCCP (Appendix F of the draft HCP/NCCP). Estimates of emissions of nitrogen compounds from previous reports are listed in Table 4-1.

BAAQMD also has prepared estimates of emissions of nitrogen oxides and ammonia for the nine Bay Area counties as part of the region's *Bay Area 2010 Clean Air Plan*. Region wide, total emissions (from mobile and stationary sources) of nitrogen oxide (as $NO_2$**)** are projected to be 432 tons per day (about 157,680 tons per year) in 2012 and 357 tons per day (about 130,305 tons per year) in 2020. In 2008, Bay Area ammonia emissions were estimated at 52 tons per day.[15] The leading sources of ammonia emissions in the Bay Area include livestock, commercial refrigeration, human respiration and perspiration, domestic animal waste, and motor vehicles.

Estimated annual average nitrogen oxide emissions for Santa Clara County in 2008 were 91.3 tons per day (33,325 tons per year).[16]

---

[14] City of San José. *Draft EIR for the Envision San José 2040 General Plan* (Appendix K). June 2011.

[15] BAAQMD. September 2010. *Final Bay Area 2010 Clean Air Plan*. Adopted September 15, 2010. Table 2-3 and Figure 2-14.

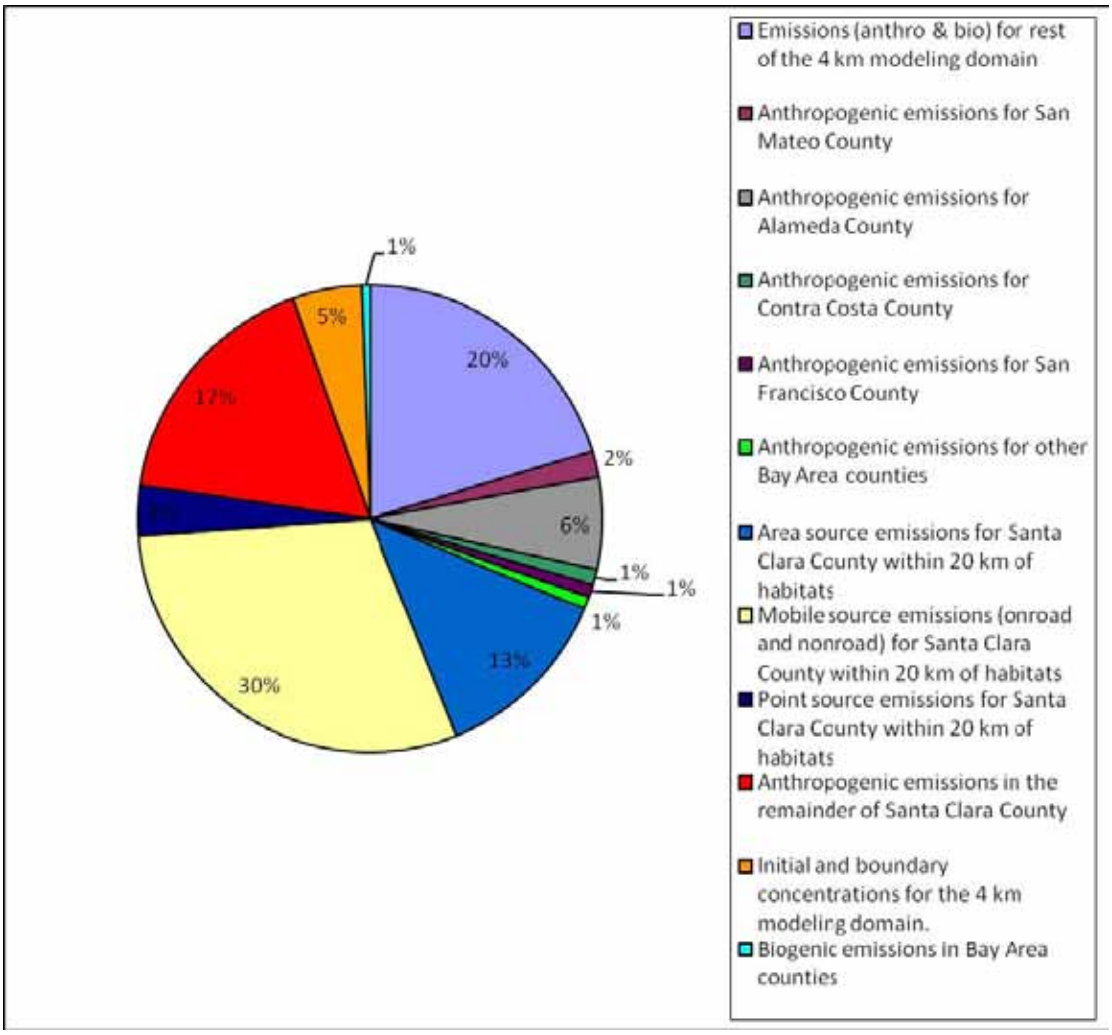
[16] California Air Resources Board. "Almanac Emission Projection Data (published in 2009)" Available at: <http://www.arb.ca.gov/app/emsinv/emssumcat_query.php?F_DIV=-4&F_DD=Y&F_YR=2008&F_SEASON=A&SP=2009&F_AREA=CO&F_CO=43>.

**Table 4-1. Development Projects and Plans – Nitrogen Emission Estimates**

| Site | Use | Estimated $NO_x$ Emissions |
|---|---|---|
| Metcalf Energy Center (2000) | 600 MW natural gas-fired power plant in North Coyote Valley in the City of San Jose | 185.24 tons per year<br><br>(BAAQMD, 2000) |
| Silicon Valley Power Don Von Raesfeld Power Plant (2005) | 147 MW natural-gas fired power plant in the City of Santa Clara, north of Central Expressway | 43.3 tons per year<br><br>(BAAQMD, 2003) |
| Gilroy Co-Generation Plant | 109 MW natural-gas fired combined cycle power plant in the City of Gilroy | 349 tons per year was permitted by BAAQMD; recent permit for 14.7 tons per year for gas turbine. (BAAQMD, 2007) |
| Low Effect Habitat Conservation Plan for the Los Esteros Critical Energy Facility (2010-draft) | Expansion of a 180 MW natural gas fueled power plant to a 320 MW combined cycle facility in northern San José. | Approximately 28 tons per year (based upon required emission credits).<br><br>(CH2MHill, 2010) |
| Coyote Valley Research Park (2001) | 6 million square feet of office space in North Coyote Valley in the City of San Jose | 1,271 pounds per day (or about 160 tons per year for employment uses)<br>(City of San José, 2000) |
| Draft EIR for the Coyote Valley Specific Plan (2007); | 50,000 jobs and 70,000-80,000 residents | 848 pounds per day, about two-thirds of the estimated emissions for the Coyote Valley Research Park estimated in 2001. (City of San José, 2007) |
| Gavilan College Campus in Coyote Valley (2008) | 55-acre campus to serve up to 10,000 students, many who travel from San José to the Gilroy campus | 5.5 tons per year<br>(reflects reduced student trip lengths)<br>(H.T. Harvey & Associates, 2008) |
| US 101 Widening (2004); Valley Transportation Authority | Freeway widening between the cities of San José and Morgan Hill in Santa Clara County and in the vicinity of Coyote Valley (Bernal Road to Cochrane Road) | 2,915-6,809 additional pounds per day for eight lanes (widening ultimately was for six lanes). (USFWS, 2001) |
| Xeres SC-1 Data Center | Completion of buildout of 312,000 square foot data center with 16 additional backup generators | 8.147 tons per year from routine testing of both Phase 1 and Phase 2 backup generators (plus 0.0377 tons of ammonia slip). Emergency operations would result in additional emissions as allowed and permitted by BAAQMD. (Appendix I) |

Notes: The methods used in the Coyote Valley Specific Plan do not account for anticipated future reductions in regional $NO_x$ emissions due to technological advancements. Other sources of nitrogen from power plants include ammonia emissions ("ammonia slip") from pollution control equipment. Coyote Valley in the City of San José is located in close proximity to serpentine grasslands (see Figure 4-2) and emissions from mobile or stationary sources would be expected to result in more deposition on sensitive habitats than emissions from sources at a greater distance.

The 2010 analysis in the Draft Santa Clara Valley HCP/NCCP estimates that the total nitrogen deposited annually upon the serpentine grasslands located within Santa Clara County is about six (6) kg-N/ha/year (kilograms of nitrogen per hectare per year). This study also reports that total nitrogen deposition in the serpentine habitat areas could increase to 8 kg-N/ha/y in 2035 and almost 10 kg-N/ha/y in 2060. Currently, 63 percent of the annual nitrogen deposited in Santa Clara County derives from mobile and stationary sources located within the County (of which the San José area, which is larger and closer to serpentine grassland habitats, is expected to contribute a significant amount), with the remaining 37 percent of deposited nitrogen derived from sources outside the County (refer to graph from Appendix E of the draft Santa Clara Valley HCP/NCCP, below). This relative contribution from Santa Clara County, estimated from modeling based on assumed growth projections,[17] is expected in the HCP/NCCP analysis to grow over the next few decades as local populations increase.




Source: Draft Santa Clara Valley HCP/NCCP, Appendix E. December 2010.

[17] The assumed growth projections in the Draft Santa Clara Valley HCP/NCCP are based on ABAG's *Projections 2005*. For the year 2035, population growth in San José, Santa Clara County and the Bay Area in *Projections 2005* was referenced directly. The average rate of population change from 2010 to 2035 in *Projections 2005* was used for extrapolations out to the year 2060.

As described in the Final EIR for the City of Santa Clara 2010-2035 General Plan and the Draft Santa Clara Valley HCP/NCCP, nitrogen deposition sources in 2035 affecting serpentine habitat in Santa Clara County are projected to be as follows:

| | |
|---|---|
| 38 percent | San Jose |
| 16 percent | Rest of HCP study area (incl. Morgan Hill, Gilroy, unincorporated County) |
| 27 percent | Rest of County outside HCP study area (including the City of Santa Clara) |
| 81 percent | Total Santa Clara County sources |
| + | |
| 19 percent | Sources outside of Santa Clara County (incl. Alameda Co. 6 percent, San Mateo Co. 2 percent, San Francisco 1 percent, Contra Costa Co. 1 percent, remaining Bay Area counties 1 percent) |
| 100 percent | All sources |

The Draft Santa Clara Valley HCP/NCCP nitrogen modeling did not specifically isolate City of Santa Clara emissions (since the City is outside the HCP study area). However, based upon Santa Clara's projected population in 2035, the Final EIR for the Santa Clara General Plan roughly estimated that Santa Clara, with implementation of its proposed General Plan in 2035, will, on a citywide basis, contribute roughly 5 percent of the nitrogen deposition that will affect serpentine grassland species covered in the Draft Santa Clara Valley HCP/NCCP.

The large majority of the City of Santa Clara's forecast 2035 nitrogen emissions will be derived from sources (homes, businesses) present in the City today that will continue to emit nitrogen into the future. These emissions from the City's current service population reflect the existing environmental condition. Emissions from new development in Santa Clara in 2035 (i.e., new houses and businesses planned in the Santa Clara General Plan which would accommodate 28 percent of the City's 2035 service population) would account for roughly 1.5 percent of the HCP/NCCP's total modeled nitrogen deposition. In contrast, the contribution of the built environment in the City of San Jose to nitrogen deposition in the habitat areas is estimated to be 38 percent in 2035[18], of which roughly 14 percent of the HCP/NCCP's total modeled nitrogen deposition would be from new development.[19]

The projected forecast 2035 nitrogen deposition in the HCP/NCCP discussed above is somewhat in contrast to trends reported by the BAAQMD in the Bay Area 2010 Clean Air Plan. Emissions of $NO_x$ have been reduced by about 50 percent in recent decades and $NO_x$ emissions in the Bay Area are projected to continue to decline in future years.[20] These BAAQMD projections of reduced NOx emissions reflect the impact of regulations in place as of December 31, 2006.

[18] Santa Clara Valley HCP/NCCP. December 2010. *Draft Santa Clara Valley Habitat Plan Appendix E (Nitrogen Deposition Analysis)*, available at <http://www.scv-habitatplan.org/>.

[19] Based upon an estimated increase in Service Population (jobs+residents) of about 37 percent.

[20] BAAQMD. September 2010. *Final Bay Area 2010 Clean Air Plan*. Adopted September 15, 2010, pages 2-20 and 2-21.

#### 4.4.2.3 Project Indirect Impacts to Sensitive Serpentine Habitats and Special Status Species

Under CEQA, the thresholds that would apply to the assessment of indirect impacts to special status species and serpentine habitats are:

- Would the project have a substantial adverse effect either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?
- Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or U.S. Fish and Wildlife Service? or
- Does the project have impacts that are individually limited, but cumulatively considerable?

Given the magnitude of nitrogen emissions in the San Francisco Bay Area and deposition in the Santa Clara County area from millions of individual sources, an individual development project in the City of Santa Clara would not have an individually significant indirect impact on serpentine grasslands or the special status plant and wildlife found associated with this habitat (i.e., the nitrogen emissions of that one project alone will not be considered significant individually by causing habitat modifications). The question that then needs to be addressed is whether the project would make a cumulatively considerable contribution to impacts from cumulative development. Cumulatively considerable means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects (in this case, available nitrogen emissions and deposition from current Bay Area development and planned development throughout the region over the next 25-50 years.

Based upon BAAQMD's Engineering Evaluation Report for the Data Center (Application #17020), the total nitrogen oxide ($NO_x$) emissions from all 32 backup generators for "discretionary" (i.e., non-emergency) operation (for up to a combined total of 700 hours of testing per year) will be 8.147 tons per year (Appendix I at 14) and ammonia slip would add 75.4 pounds per year (Appendix I at 15), only a fraction of which would be deposited on the approximately 35,000 acres of sensitive serpentine habitat to the south and southeast. This estimate for emissions from the backup generators is lower than the amount indicated in the 2008 Initial Study because the permitted annual hours of non-emergency operation have been reduced.

Bay Area nitrogen oxide emissions in 2012 are estimated to be 432 tons per day (about 157,680 tons per year) and emissions in Santa Clara County in 2008 were projected to be about 91.3 tons per day or 33,325 tons per year. Non-emergency operation of the backup generators would represent roughly 0.02% of Santa Clara County emissions if 2008 emission estimates are used as a baseline.

In addition to the total emissions, another factor that effects nitrogen deposition from a source to a receptor (such as the serpentine grassland habitats in Santa Clara County) is the distance between the source and receiver. Emissions closer to the receiving serpentine grassland would be expected to result in a greater proportion of the emissions to be deposited. This relationship is reflected in the HCP/NCCP modeling which shows the minimal effect of emissions from houses and jobs in neighboring counties. The proposed project is approximately five miles from the closest serpentine grassland on Communications Hill and eight to ten miles from key serpentine grassland areas on Coyote Ridge, which are identified as Critical Habitat for the Bay checkerspot butterfly.

At less than 10 tons of nitrogen oxides per year, emissions from the proposed non-emergency operation of backup generators (i.e., testing not to exceed 700 total hours annually) compared to emissions from existing development (e.g., emissions associated with existing jobs and residents) and other planned or foreseeable development in Santa Clara and the greater South Bay area, would be relatively small and only a fraction of project emissions will be likely to be deposited on sensitive serpentine habitats miles away. Based upon the relative contribution to total nitrogen compound emissions regionally and countywide and the location of the project (five miles or more from serpentine grasslands), it appears that stationary emissions from the Data Center would make a less than cumulatively considerable contribution to nitrogen deposition impacts on serpentine grassland habitat and the special status plants and animals found in this habitat.

## 4.5 Cultural Resources

Holman and Associates, Archaeological Consultants, evaluated the potential for buried prehistoric and historic resources on the site in an archaeological literature review and an archaeological testing and evaluation plan. In addition, Ward Hill, Consulting Architectural Historian, prepared a Historic Evaluation Report to address the historic significance of existing structures on the site. (See Appendix A at App. B)

Construction of the Data Center involved excavation within an archeologically sensitive area. Potential impacts associated with construction grading and excavation (Impact CR-1) have been reduced to a less than significant level with the implementation of the mitigation measures included in the project (MM CR-1.1 to MM CR-1.3). The construction Data Center did not adversely impact historic buildings.

With the exception of installation of a temporary construction driveway in a previously landscaped area, no further ground disturbance or excavation will occur on the project site under Phase 2 buildout. Accordingly, no cultural resources will be impacted during the remainder of the construction.

## 4.6 Geology and Soils

The Data Center will not result in significant, adverse geology, soils, or seismicity impacts that cannot be avoided through standard engineering and construction techniques. Construction of the Data Center building was observed by a geotechnical engineering firm and construction was

carried out in general conformance with the recommendations by Cornerstone Earth Group (see Appendix L).

## 4.7 Hazards and Hazardous Materials

The site was historically used for agriculture, by the Pacific Redwood Casket Company, by the Beaver Lumber Company, and by several other commercial and industrial tenants. AEI Consultants prepared two Phase I Environmental Site Assessments for the site, and Cornerstone Earth Systems prepared a letter report summarizing conditions. (See Appendix A at App. C.)

Potential hazards and hazardous materials impacts (Impact HAZ-1) during construction were reduced to a less than significant level with the implementation of the mitigation measures included in the project (MM HAZ-1.1 to MM HAZ 1.7). The Soil Management Plan for the Reed Street site (MM HAZ-1.1) was provided to Adrianna Constantinesu of the San Francisco Bay Regional Water Quality Control Board on February 25, 2008 by Ron Helm, C.E.G., R.E.A. II, of Cornerstone Earth Group.[21] Undocumented fills and other materials excavated at the site were stockpiled were tested and analyzed for chemicals of concern in accordance with Regional Water Quality Control Board guidance before being off-site (MM HAZ-1.2). In 2010 and 2011, three stockpiles were tested prior to off-haul and chemicals of concern were below regulatory screening levels (refer to Appendix M).

## 4.8 Hydrology and Water Quality

The Data Center will not result in substantial adverse flooding or drainage impacts. With implementation of the mitigation measures included in the project (MM HYDRO-1.1 to MM HYDRO-1.4), possible impacts to water quality (Impact HYDRO-1) during construction and post construction will be reduced to a less than significant level.

All major exterior construction activities for the Data Center building facility have been completed. No new substantial impacts to water quality or hydrology would occur with Phase 2 buildout.

## 4.9 Land Use

The Data Center building is located within an industrial area of the City of Santa Clara. The project site is bordered by the Union Pacific Railroad (UPRR) main line and has access from Mathew Street on the north and Reed Street on the south (refer to Figure 2-3). A paperboard recycling facility and a Silicon Valley Power co-generation facility are located on Mathew Street north of the project site (Photos 12-13). Uses west of the UPRR tracks, include a data center and

[21] Email communications, Ron Helm to Adrianna Constantinesu, Regional Water Quality Control Board, February 25, 2008.

Photo 11 - View of surrounding uses on Mathew Street; commercial recycler and paperboard recycler. The SC-1 Data Center and SVP electrical substation are on left, in background.

Photo 12 - View of paperboard manufacturer on Mathew Street, north of SC-1 Data Center.

PHOTOS 11 AND 12

Photo 13 - View of paperboard storage area at paperboard manufacturing facilicty and SVP Co-generation facility on the north side of Mathew Street, looking northeast from UPRR right-of-way.

Photo 14 - View of surrounding industrial uses on south side of Reed Street at De La Cruz Boulevard, looking westerly.

PHOTOS 13 AND 14

Photo 15 - View of auto repair businesses on the south side of Reed Street, opposite the SC-1 Data Center site.

PHOTO 15

indoor soccer facility in an industrial-style building on the northern segment of Mathew Street (with access from Lafayette Street). Light industrial uses, including an auto body shop, are located south of the site across Reed Street (Photo15). Industrial and industrial serving commercial uses are present along the De La Cruz Boulevard frontage, east of the data center property (Photos 10 and 14). Uses along De La Cruz Boulevard include an industrial gas distributor (at Reed Street) and a commercial recycling company (on the southwest corner of Mathew Street and De La Cruz Boulevard).

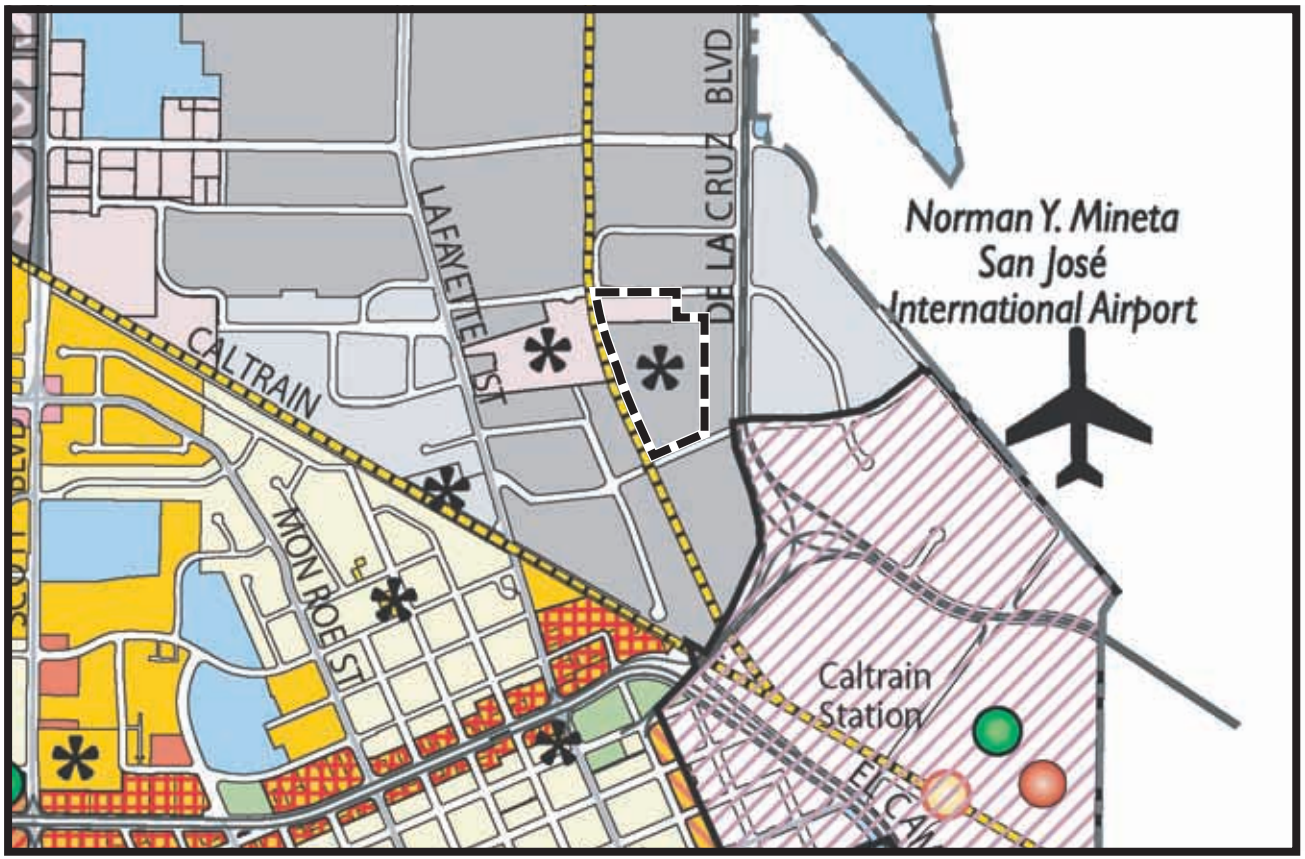
## Existing Land Use Designations

The current Land Use Diagram in the City of Santa Clara 2010-2035 General Plan, adopted November 16, 2010, designates the site for Heavy Industrial and Low Intensity Office/R&D land uses (refer to Figure 4-3).

The *Heavy Industrial* land use designation, which applies to the majority of the site, allows primary manufacturing, refining and similar activities and accommodates warehousing and distribution, as well as data centers. Support ancillary office space, excluding medical facilities, or retail associated with the primary use, may be up to a maximum of ten percent of the building area. Because uses in the designation may be noxious or include hazardous materials, places of assembly, such as religious institutions and schools, and uses catering predominately to sensitive receptors, such as children and the elderly, as well as entertainment uses such as clubs, theaters and sports venues south of U.S. Highway 101, are also prohibited. The maximum FAR (floor area ratio) is 0.45.

The Low-Intensity Office/Research and Development (R&D) land use designation is intended for campus-like office development that includes office and R&D, as well as medical facilities and free standing data centers, with manufacturing uses limited to a maximum of 20 percent of the building area. It is typically located in areas that provide a transition between light industrial and higher-intensity office and R&D uses. It includes landscaped areas for employee activities and parking that may be surface, structured or below-grade. The maximum FAR is 1.00.

The data center use and FAR of 0.45 for the entire site is consistent with allowed uses and development intensity under both the Heavy Industrial and Low-Intensity Office/R& D land use designations.




- Project Boundary
- Low Density Residential
- Medium Density Residential
- High Density Residential
- Community Commercial
- Neighborhood Mixed Use
- Community Mixed Use
- Public/Quasi Public
- Low Intensity Office/R&D
- Parks/Open Space
- Light Industrial
- Heavy Industrial
- Santa Clara Station Area
- * Approved/Not Constructed and Pending Projects 2010
- Open Space - (with new development [1])
- New Neighborhood Retail
- Rail & Light Rail
- Stations
- City Limits

N

Source: City of Santa Clara 2010-2035 General Plan, 2010.

EXISTING GENERAL PLAN DESIGNATIONS

FIGURE 4-3

## Existing Zoning

The zoning of the entire site is MH – Heavy Industrial (Figure 4.4). This district is intended to encourage sound heavy industrial development in the City by providing and protecting an environment exclusively for such development, subject to regulations necessary to ensure the purity of the air and the waters in the bay area, and the protection of nearby uses of the land from hazards, noise, or other radiated disturbances (City of Santa Clara City Code Chapter 18.50). Data center uses, are allowed as an industrial use. Zoning requirements also include minimum lot area (20,000 square feet), building height limits (70 feet) and front yard setbacks (15 feet minimum). The Santa Clara SC-1 facility conforms to these zoning requirements.

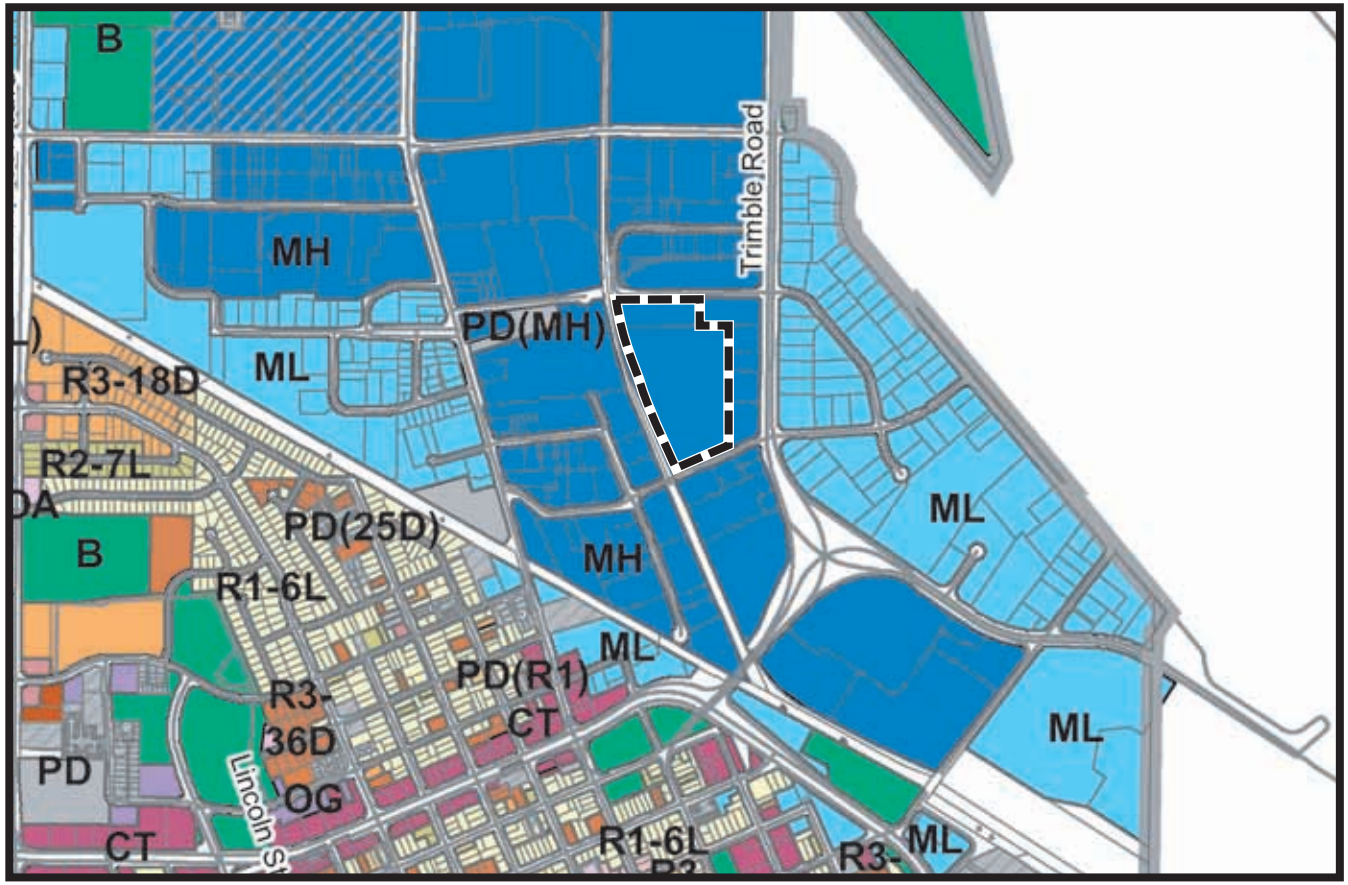
## Proximity to Norman Y. Mineta San José International Airport

The current Comprehensive Land Use Plan (CLUP) for the Norman Y. Mineta San José International Airport was adopted on May 25, 2011. The CLUP includes land use compatibility policies and standards updated from the preceding land use policy plan (as amended through November 2008), which previously covered activities around the airport. These policies and compatibility criteria form the basis for evaluating the land use compatibility of individual proposed projects. The CLUP is not intended to define allowable land use for a specific property, although the plan establishes development standards or restrictions that may limit certain types of uses and structures on a parcel.

Standards in the CLUP focus on the three areas of Santa Clara County Airport Land Use Commission (ALUC) responsibility including aircraft noise, the control of objects in navigable airspace, and the safety of persons on the ground and in aircraft. Portions of Santa Clara, as shown on Figure 4-5, fall within the for the Norman Y. Mineta San José International Airport Airport Influence Area (AIA), which is a composite of the areas surrounding the Airport that are affected by noise, height, and safety considerations. The AIA is defined as a feature-based boundary around the Airport within which all actions, regulations and permits must be evaluated by local agencies to determine how the CLUP policies may impact the proposed development.

Safety zones have been identified around San José International Airport in conformance with federal and state regulations. Airport safety zones are established to minimize the number of people exposed to potential aircraft accidents in the vicinity of an airport by imposing density and use limitations within these zones.

The restrictions associated with height restriction and safety zones are described below. Designated safety zones are shown on Figure 4-6 (Mineta San José International Airport). The project site is within the Traffic Pattern Zone, the least restrictive of the airport safety zones. California Public Utilities Code Section 21676 provides that local agencies whose general plan includes areas covered by an ALUC plan must submit its general plan, or any specific plans, zoning ordinances, or building regulations that affect the area covered by the ALUC plan, to the local ALUC for a consistency determination. The Santa Clara SC-1 Data Center project did not require a General Plan amendment, was not part of a Specific Plan or include other actions by the City of Santa Clara that would require referral to the County of Santa Clara ALUC for a review of consistency with the applicable CLUP.




Project Boundary

**RESIDENTIAL**

- R1-6L - Single Family
- R1-8L - Single Family
- R2-7L - Duplex
- R3-18D - Low-Density Multiple Dwelling
- R3-25D - Moderate-Density Multiple Dwelling
- R3-36D - Mediup-Density Multiple Dwelling
- R3-HD - High-Density Multiple Dwelling - Central Business District

**COMMERCIAL**

- CC - Community Commercial
- CD - Downtown Commercial
- CN - Neighborhood Commercial
- CP - Commercial Park
- CT - Thoroughfare Commercial
- OA - Professional and Administrative Office
- OG - General Office

**INDUSTRIAL**

- ML - Light Industrial
- MH - Heavy Industrial
- MP - Planned Industrial

**MIXED USE**

- MU - Mixed Use
- MC - Master Planned Community
- HT - Historic Combining
- PD - Planned Development Combining

**PUBLIC AND OPEN SPACES**

- A - Agriculture
- B - Public or Quasi-public

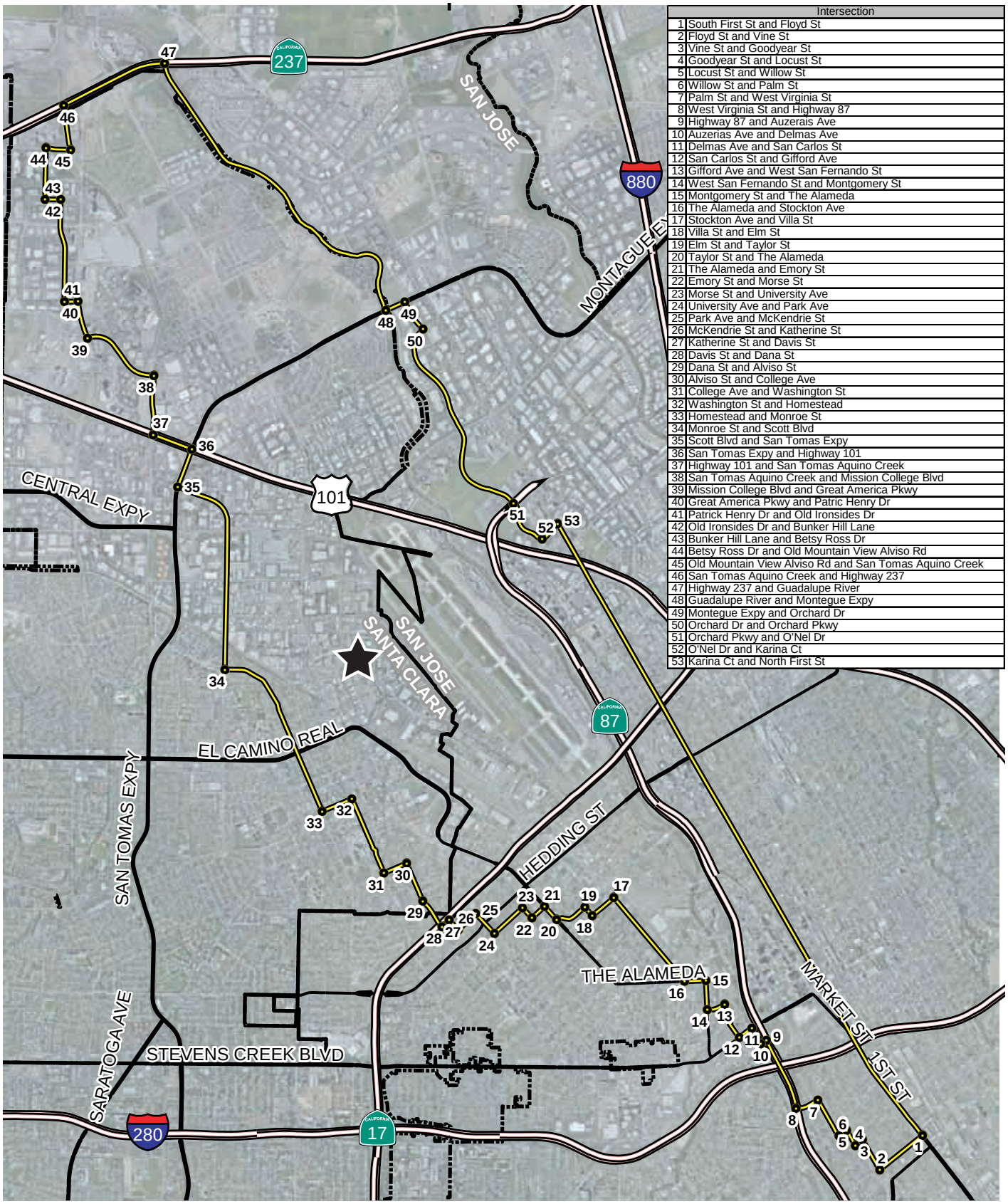
**ZONING OVERLAY AREAS**

- HT - Historic Combining
- PD - Planned Development Combining

N

EXISTING ZONING DESIGNATIONS

FIGURE 4-4




| | Intersection |
|---|---|
| 1 | South First St and Floyd St |
| 2 | Floyd St and Vine St |
| 3 | Vine St and Goodyear St |
| 4 | Goodyear St and Locust St |
| 5 | Locust St and Willow St |
| 6 | Willow St and Palm St |
| 7 | Palm St and West Virginia St |
| 8 | West Virginia St and Highway 87 |
| 9 | Highway 87 and Auzerais Ave |
| 10 | Auzerias Ave and Delmas Ave |
| 11 | Delmas Ave and San Carlos St |
| 12 | San Carlos St and Gifford Ave |
| 13 | Gifford Ave and West San Fernando St |
| 14 | West San Fernando St and Montgomery St |
| 15 | Montgomery St and The Alameda |
| 16 | The Alameda and Stockton Ave |
| 17 | Stockton Ave and Villa St |
| 18 | Villa St and Elm St |
| 19 | Elm St and Taylor St |
| 20 | Taylor St and The Alameda |
| 21 | The Alameda and Emory St |
| 22 | Emory St and Morse St |
| 23 | Morse St and University Ave |
| 24 | University Ave and Park Ave |
| 25 | Park Ave and McKendrie St |
| 26 | McKendrie St and Katherine St |
| 27 | Katherine St and Davis St |
| 28 | Davis St and Dana St |
| 29 | Dana St and Alviso St |
| 30 | Alviso St and College Ave |
| 31 | College Ave and Washington St |
| 32 | Washington St and Homestead |
| 33 | Homestead and Monroe St |
| 34 | Monroe St and Scott Blvd |
| 35 | Scott Blvd and San Tomas Expy |
| 36 | San Tomas Expy and Highway 101 |
| 37 | Highway 101 and San Tomas Aquino Creek |
| 38 | San Tomas Aquino Creek and Mission College Blvd |
| 39 | Mission College Blvd and Great America Pkwy |
| 40 | Great America Pkwy and Patric Henry Dr |
| 41 | Patrick Henry Dr and Old Ironsides Dr |
| 42 | Old Ironsides Dr and Bunker Hill Lane |
| 43 | Bunker Hill Lane and Betsy Ross Dr |
| 44 | Betsy Ross Dr and Old Mountain View Alviso Rd |
| 45 | Old Mountain View Alviso Rd and San Tomas Aquino Creek |
| 46 | San Tomas Aquino Creek and Highway 237 |
| 47 | Highway 237 and Guadalupe River |
| 48 | Guadalupe River and Montegue Expy |
| 49 | Montegue Expy and Orchard Dr |
| 50 | Orchard Dr and Orchard Pkwy |
| 51 | Orchard Pkwy and O'Nel Dr |
| 52 | O'Nel Dr and Karina Ct |
| 53 | Karina Ct and North First St |

**Airport Influence Area**

SJ AIA intersections

AIA

Project Location

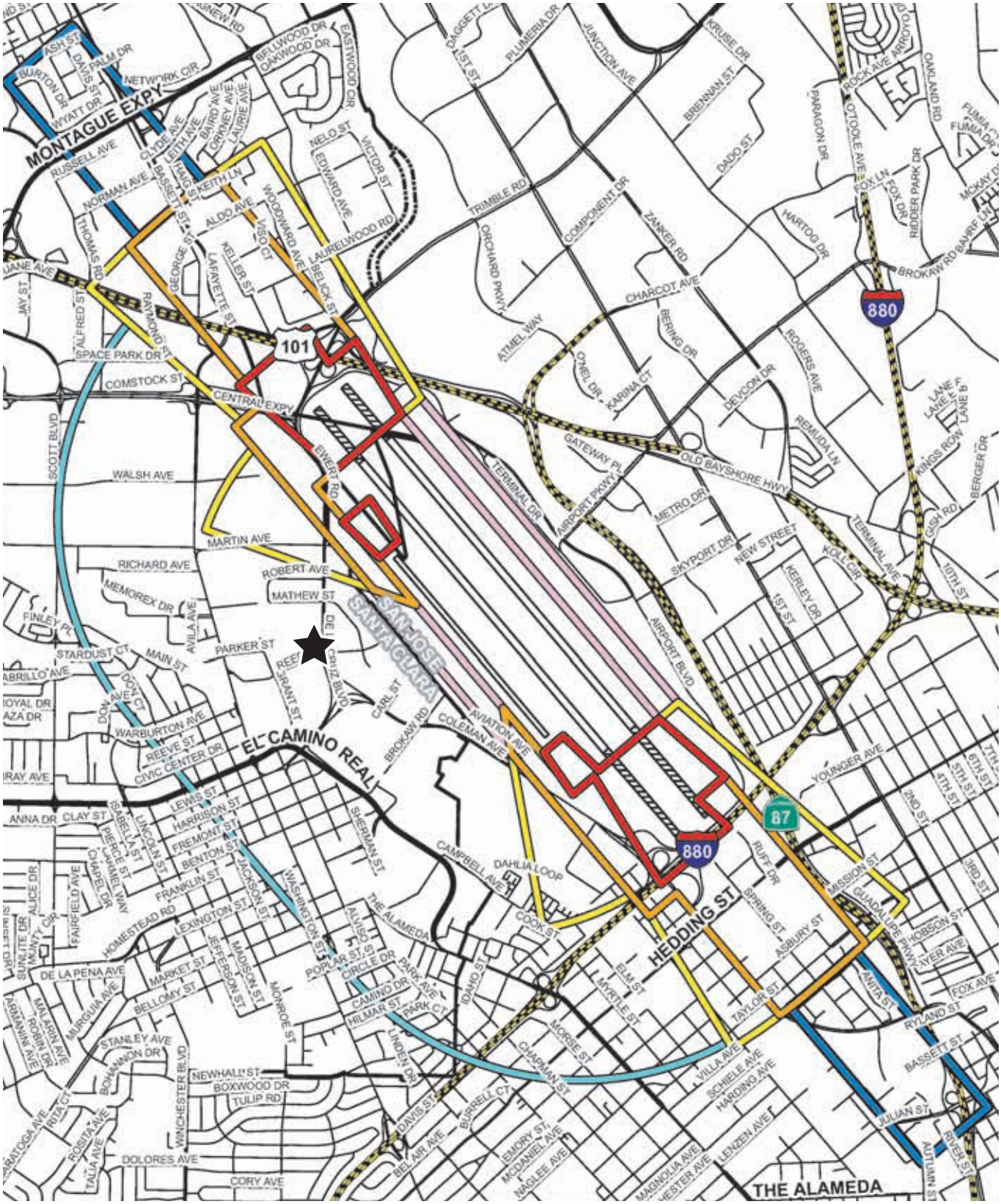
Feet

0 2,000 4,000 8,000

N

This map created by Santa Clara County Planning Office. The GIS data was compiled from various sources. While deemed reliable, the Planning Office assumes no liability.

SAN JOSÉ INTERNATIONAL AIRPORT INFLUENCE AREA FIGURE 4-5




SAN JOSE INTERNATIONAL AIRPORT SAFETY ZONES FIGURE 4-6

**Height Restrictions and Safety Zones**

Federal Aviation Regulations (FAR) Part 77, Objects Affecting Navigable Airspace, establishes imaginary surfaces for airports and runways as a means to identify objects that are obstructions to air navigation. Each surface is defined as a slope ratio or at a certain altitude above the airport elevation. The project site falls within the Federal Aviation Regulations Part 77 Surfaces 125 feet (above mean sea level [AMSL]) height restriction zone for the Mineta San José International Airport. The Santa Clara SC-1 Data Center building height was reviewed by the FAA and a Determination of No Hazard to Air Navigation made on March 25, 2011 (refer to Appendix N).

**Land Use Compatibility**

In summary, land use will be consistent with allowed uses for the Heavy Industrial and Low-Intensity Office/R& D land use designations, MH zoning district and the provisions of Comprehensive Land Use Plan (CLUP) for the Norman Y. Mineta San José International Airport, adopted by the Santa Clara County Airport Land Use Commission. The Data Center will not result in land use compatibility impacts to adjacent uses, and no on-going land use conflicts with adjacent uses are anticipated. Thus, the Data Center will not result in significant, adverse land use impacts or conflict with adopted plans or policies for the purpose of avoiding or mitigating environmental impacts.

## 4.10 Mineral Resources

The site does not contain any known or designated mineral resources. Thus, the Data Center will not result in impacts to known mineral resources.

## 4.11 Noise

The Environmental Quality Element of the City of Santa Clara's General Plan identifies noise and land use compatibility standards for various land uses. Office areas in the Data Center will be located on the opposite side of the site from the Union Pacific Railroad train tracks, and sound attenuation from measures included in the building design will reduce noise levels in the interior areas of the building to an acceptable level for employees and visitor-tenants. The Data Center will incorporate noise attenuation measures in conformance with the Santa Clara County Municipal Code noise standards of 70 dBA at the property line. Although construction of the Data Center will generate noise, because the duration of construction will be temporary, and no sensitive land uses have been identified within 1,000 feet of the site, it will not result in significant short-term noise impacts.

## 4.12 Population and Housing

Although the Data Center will result in a slight increase in jobs in the City, it will not induce substantial population growth in the City or substantially alter the City's jobs/housing ratio. Construction of the Data Center did not displace housing or residents.

## 4.13 Public Services

Plans for the Data Center were reviewed by the City of Santa Clara Fire Department as a part of the Development Review process before project approval. The Data Center will not generate substantial population growth in the project area or result in the use of public park facilities in the City by new residents. The Data Center will not result in an increase in school population or result in the need for new school facilities, or modification to school facilities, that could result in significant environmental impacts. Thus, the Data Center will not result in significant impacts to public services.

## 4.14 Recreation

Although the Data Center may increase employee usage of nearby parks and recreation facilities, this increase will not have an impact on these facilities such that adverse physical effects will result. Thus, the Data Center will not result in significant impacts to parks and recreational facilities.

## 4.15 Transportation

### 4.15.1 Data Center Operations

Based upon the assessment in the 2008 Initial Study, operation of the Data Center at full occupancy (about 50 employees and clients per day) is not anticipated to result in transportation level of service impacts to signalized intersections or freeway segments. Public transit capacity is sufficient to handle adequately all new transit trips generated by the Data Center. The Data Center includes on-site bicycle storage, changing rooms, and showers to accommodate travel by bicycle by employees and clients. It also includes 182 parking spaces, which is above City of Santa Clara Parking requirements. Thus, the Data Center will have adequate parking and will not result in significant transportation impacts during operations**.**

### 4.15.2 Construction Traffic

Phase 2 construction buildout, consisting of installation of mechanical and electrical systems and interior finishing work in the northern half of the Data Center would be initiated approximately in approximately 12-18 months (2012-2013), depending on market demand and occupancy of Phase 1. This work would take an estimated ten months to complete. Generally, hours of construction would between 5:30 AM–3:30 PM, Monday through Friday, although interior work could be in three shifts (24 hours per day) if needed to meet construction schedules for new tenants. Up to 300 construction workers a day would be employed at the site on a temporary basis, with peak numbers of workers traveling to and from the site over an approximately 2½ month period.

#### 4.15.1.1 Site Access and Construction Worker Parking

Construction vehicles will travel to and from the site to transport construction workers, for transportation of construction materials and equipment and for construction debris removal. A temporary construction driveway would be constructed off Mathew Street and used by heavy

equipment (such as cranes) and tractor trailers for the delivery of large equipment, such as backup generators, chillers and cooling towers. The approximately location of this temporary driveway is shown on Figure 4-7. Landscaping removed to accommodate the temporary driveway would be replaced prior to occupancy of Phase 2. Pedestrian access on the existing sidewalk frontage on Mathew Street would be maintained during construction.

Construction workers would park personal vehicles in an off-site parking lot (opposite the Data Center) on the south side of Reed Street dedicated for that purpose.

#### 4.15.1.2 Truck Routes

Trucks would use major freeways (U.S. 101 and Interstate 880) and major City streets to access the Phase 2 construction area. Large trucks traveling to and from U.S. 101 would travel on De La Cruz Boulevard to Mathew Street. Large trucks traveling to and from Interstate 880 would use Coleman Avenue to access De La Cruz Boulevard, Mathew Street and the project site. Up to two backup generators would be transported to the site per day. Smaller trucks (including pickup trucks) may also access the site from Lafayette Street to Reed Street to De La Cruz Boulevard and the construction driveway on Mathew Street.

#### 4.15.1.3 Temporary Lane Closures and Oversized Equipment

There could be some occasional, minor disruption to local traffic during construction when large equipment, such as backup generators and cooling towers, are delivered to the site. Deliveries would generally occur during off-peak hours (e.g., before 7:00 a.m.), however.

One-lane of Mathew Street could be closed for up to 24 hours for staging of backup generator deliveries. Mathew Street is not an arterial or collector street in the *City of Santa Clara Mobility & Transportation Roadway Network* and traffic volumes are low on this local street (Figure 2-3). Special Transportation Permits would be obtained from the City of Santa Clara Traffic Engineering Division in conformance with City requirements prior to any temporary lane closures. Construction impacts from transportation of large equipment, therefore, would be minimal.

#### 4.15.1.4 Temporary Increases in Traffic Volumes

Buildout of Phase 2 improvements would involve construction worker trips to and from the site by up to 300 construction workers per day, plus deliveries and hauling of construction waste to local recycling facilities and/or landfills. As previously noted, deliveries of large equipment and supplies generally would be made outside peak traffic periods. The primary changes in traffic volumes would be from construction workers traveling to and from the site with most of this travel before the 7-9 a.m. and 4-6 p.m. peak periods. If additional shifts of workers are added, their travel to and from the site would generally be outside peak periods based on shift times.

The project site is located near two major arterial streets, De La Cruz Boulevard and Lafayette Street, with good access to highways. Anticipated construction traffic would be greater than projected operational traffic by Data Center employees and clients. Construction traffic would

★ LOCATION OF
TEMPORARY CONSTRUCTION DRIVEWAY

LOCATION OF TEMPORARY CONSTRUCTION DRIVEWAY FIGURE 4-7

not be greater than that required for construction of the existing Data Center building and Phase 1 improvements over the last three to four years (2008-2011) and construction traffic and construction activities would not result in substantial impacts to the performance of intersections, streets, or other modes of transportation, such as transit, bicycle lanes, or pedestrian access.

## 4.16 Utilities and Service Systems

Adequate water supply, wastewater treatment, storm water drainage, solid waste disposal, electricity, and natural gas services are available to service the Data Center and are in place. The Data Center includes specific measures (e.g., regulated peak discharges from the cooling towers) to avoid possible future impacts to sanitary sewer level of service and to reduce wastewater flows from the site.

Silicon Valley Power, the local municipal utility, provides electrical power for the Data Center. As part of Phase 1 of the Data Center, an electrical primary substation and associated electrical equipment were constructed on the northeast portion of the site to provide for the electric demand of the Data Center. (See Appendix A at Figure 4.) Silicon Valley Power has routed new 60 kV loop feeders into and through the station along Mathew Street and no additional construction in the street rights-of-way for utility service is required for Phase 2.

The 3-bay electrical substation (three 30/40/50m VA 60kV-24.9kV step-down transformers) has an all-weather surface underlain by crushed granite. A concrete masonry unit screen wall, 15 feet in height surrounds the substation (refer to Photo 2). Distribution of electrical power from the substation will be through three underground duct banks to supply the indoor distribution switchgear.

Approximately one-eighth acre of the Santa Clara SC-1 Data Center site underlying the substation will be dedicated to the control and protection of Silicon Valley Power's 60kV loop. Electric switching equipment, owned and maintained by Xeres Ventures LLC, has and will be installed adjacent in the remainder of the yard (approximately 0.6 acre).

With construction and operation of the on-site and off-site utility improvements included in the project, operation of the Data Center will not exceed the capacity of existing utilities and service systems.

## 4.17 Greenhouse Gas Emissions

At the time the City of Santa Clara Initial Study was conducted in 2008, lead agencies in California were not yet required to include analyses of greenhouse gas (GHG) emissions in CEQA documents. Pursuant to Senate Bill 97, passed in 2007, the Office of Planning and Research (OPR) passed amendments the state CEQA Guidelines to address the GHG emissions which took effect in March, 2010.

As the primary agency responsible for air quality regulation in the nine-county San Francisco Bay Area Air Basin (SFBAAB), in which the Data Center and backup generators will be located, BAAQMD has prepared CEQA air quality guidelines to assist lead agencies in evaluating air quality impacts of projects and plans proposed in the SFBAAB. On June 2, 2010, BAAQMD

adopted thresholds of significance for GHG emissions as amendments to its CEQA air quality guidelines. The thresholds only apply prospectively to projects for which a Notice of Preparation was published, or environmental analysis commenced, after June 2, 2010. Because both the City of Santa Clara and BAAQMD began review of the Data Center and the backup generators prior to that date, BAAQMD did not consider GHG emission impacts in its addendum to the mitigated negative declaration.[22] The Applicant has prepared an analysis of GHG impacts included in Appendix O.

On June 3, 2010, EPA issued its final "PSD and Title V Greenhouse Gas Tailoring Rule" (hereinafter, "Tailoring Rule), so called because it tailors the regulation to focus PSD and Title V permit requirements on the largest GHG-emitting facilities. 75 Fed. Reg. 31514; EPA "PSD and Title V Permitting Guidance for Greenhouse Gases" at 7 (March 2011) (hereinafter "GHG Guidance")[23]. The Tailoring Rule sets thresholds for GHG emissions, addressing emissions from six GHGs as measured in carbon dioxide equivalents ($CO_2e$). As explained fully in Appendix O, application of the Tailoring Rule does not subject the Data Center and backup generators to PSD regulations on account of associated GHG emissions, as the facility does not have a potential to emit GHGs greater than the established threshold.

## 4.18 Mandatory Findings of Significance

With the implementation of the mitigation and avoidance measures included in the Initial Study, as amended by BAAQMD, the Data Center will not result in significant environmental impacts or make a cumulatively considerable contribution to cumulative impacts.

[22] The BAAQMD CEQA air quality guidelines are available at: http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES.aspx.

[23] *Available at*: http://www.epa.gov/region07/air/nsr/nsrmemos/ghgguid.pdf.

# 5.0 Alternatives Analysis

## 5.1 Evaluation Criteria

The Applicant used the following criteria as a means of evaluating and ranking alternatives:

- **Commercial Availability and Feasibility** -The selected alternative must currently be in use and proven as an accepted industry standard for technology. It must be operational within a reasonable timeframe where permits and approvals are required.

- **Technical Feasibility** - The selected alternative must utilize technology systems that are compatible with one another.

- **Maximize Thermal Conversion Efficiency** - The selected alternative must covert fuel resources to electrical energy for use of the Data Center during emergency situations at the lowest cost and highest thermal efficiency.

As part of the development of the Data Center, the Applicant considered three alternatives to the backup generators as proposed. As discussed more fully below, the alternatives considered include:

- 5.2 - No Project Alternative

- 5.3 - Smaller Capacity System

- 5.4 - Alternative Generating Technologies

## 5.2 No Project Alternative

Consumer demand for data storage has grown substantially in recent years. The Data Center, including its requisite backup generation, is proposed in response to this heightened demand. The "No Project" Alternative was considered, but rejected because it does not meet the project objectives to provide a high efficient data center to customers of DuPont Fabros.

In addition, the "No Project" Alternative may have resulted in greater potential environmental impacts. The Data Center building is already constructed. Build out of Phase 2, like Phase 1, will have equipment that, together with Phase 1 will result in energy efficiency that exceeds industry average. If the Data Center and the backup generators were not built, overall efficiency of the Data center would be eroded and consumer demand for data center storage space may have to be met with less-efficient systems that require more energy and environmental resources to operate and/or construct.

## 5.3 Smaller Capacity System

The Applicant considered designing a data center with smaller system capacity, such that the nameplate capacity of facility equipment would not exceed 50 MW. The Applicant rejected this alternative because the smaller system would not maximize thermal conversion efficiency and would limit the power that could be supplied to Data Center users in the 312,000 square foot Data Center building to about two-thirds of the original design. This loss of scale and efficiency would result in a data center that was not commercially viable.

## 5.4 Alternative Generating Technologies

The Applicant considered using a battery bank as back-up power. However, the size and power needs of the Data Center make this alternative technically infeasible. The Applicant also considered using natural gas-fired engines instead of diesel generators to supply the backup generation for the Data Center. The Applicant rejected this alternative because it was not technically feasible. The highly-efficient rotary UPS systems require back up generation that starts very quickly, and natural gas engines are too slow to start. In addition, storage of sufficient natural gas on site to maintain electric service to critical loads during an outage was not tenable given the volume of natural gas fuel required.

# 6.0 Compatibility with the IEPR

The Commission issued its most recent Integrated Energy Policy Report (IEPR) in 2009. The 2009 IEPR emphasizes the importance of energy efficiency in the overall energy policy landscape. It notes that the scope of building energy efficiency standards will need to be expanded to include process loads such as data centers, laboratories, and refrigeration systems. (2009 IEPR at 62-63.) However, such standards covering data centers have not yet been issued. Due to the high efficiency of the Data Center, as measured in part by its anticipated LEED certification, it is likely that the Data Center would be in conformance with building efficiency standards should they be promulgated in the near future.

The Commission recognized in the 2009 IEPR that there are some risks associated with the use of on-site back-up diesel generators at data centers, hospitals, and other facilities. (*See* 2009 IEPR at 105-106.) Many generators may not be reliable and able to operate during outages, and fuel supplies may be limited in the case of extended outages. The IEPR therefore recommends encouragement of combined heat and power (CHP) at facilities such as data centers and hospitals. Use of CHP for backup power at the Data Center is not technically or economically feasible. However, Xeres will provide for extensive maintenance and testing of the backup generators to assure their readiness and reliability. It will also maintain redundant equipment to support the backup generators, including block heaters, batteries, chargers, starters, and fuel pumps. Xeres will be able to store 200,000 gallons of diesel fuel on site, as well as 3,200 additional gallons in day tanks to maintain at least 48 hours work of fuel to maximum design load conditions. The Data Center should thus be well equipped to operate reliably during prolonged outages.

# 7.0 Agency List

Below are governmental agencies whose standards, ordinances, or laws are applicable to the backup generators. This list addresses only the backup generators. As discussed in the Initial Study (see Appendix A), additional agencies have standards, ordinances, or laws that apply to the Data Center.

**Table 7-1. Backup Generator Agency List**

| Agency | Contact | Applicability |
|---|---|---|
| Bay Area Air Quality Management District | Tamiko Endow, Air Quality Engineer II<br>Bay Area Air Quality Management District<br>939 Ellis St.<br>San Francisco, CA 94109<br>Attn: Engineering Division | Issued Authority to Construct for Permit Application No. 17020, and an Addendum to the Mitigated Negative Declaration |
| City of Santa Clara | Payal Bhagat, Associate Planner<br>Planning Department<br>City of Santa Clara<br>1500 Warburton Ave.<br>Santa Clara, CA 95050 | As Lead Agency under CEQA, prepared the Initial Study |

# 8.0 References


Bay Area Air Quality Management District (BAAQMD). 2000. *Metcalf Energy Center Final Determination of Compliance*. Available at: <http://hank.baaqmd.gov/pmt/public_notices/1999_2001/27215/index.htm>.

BAAQMD. 2007. *Gilroy Energy Center LLC Engineering Evaluation.* January 2007. Available at: <http://www.baaqmd.gov/Divisions/Engineering/Title-V-Permit-Programs/Title-V-Permits/Solano/B4511/Gilroy-Energy-Center-LLC.aspx>

BAAQMD. September 2010. *Final Bay Area 2010 Clean Air Plan*. Adopted September 15, 2010. Available at: <http://www.baaqmd.gov/Divisions/Planning-and-Research/Plans/Clean-Air-Plans.aspx>.

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CH2MHill. 2010. *Low-Effect Habitat Conservation Plan for Bay Checkerspot Butterfly and Serpentine Endemic Plant Species in Santa Clara County, California Los Esteros Critical Energy Facility San Jose, California.* February 2010.

City of San José. 2000. *Coyote Valley Research Park Final EIR.*

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H.T. Harvey & Associates. 2008. *Gavilan College Coyote Valley Campus Draft Environmental Impact Report Biological Resources Section.* August 5, 2008.

USFWS. 2001. *Formal Endangered Species Consultation on the U.S. Highway 101 Widening, Route 85/U.S. 101 South Interchange, Riparian and Wetland Consolidated Biological Mitigation Project, Bailey Avenue Extension/U.S. 101 Interchange, and Coyote Valley Research Park Projects, San José and Santa Clara County, California.* Letter to Calvin Fong U.S. Army Corps of Engineers, July 31, 2001.

**Persons Contacted**:

Payal Bhagat, Associate Planner, City of Santa Clara, September 26, 2011, personal communications.

Mark Connolly, Planner, County of Santa Clara Airport Land Use Commission, personal communications, September 12, 2011.

Diane Vong, Senior Permit Technician, City of Santa Clara, October 1, 2011, personal communications.

# 9.0 Appendices

**Appendix**

| | |
|---|---|
| A | Initial Study, Santa Clara SC-1 Data Center (Feb. 2008) |
| B | City of Santa Clara Notice of Mitigated Negative Declaration (Feb. 6, 2008) |
| C | City of Santa Clara Adoption of Mitigated Negative Declaration and Mitigation Monitoring and Reporting Program (Mar. 5, 2008) |
| D | Bay Area Air Quality Management District Authority to Construct for Permit Application No. 17020, Plant No. 18801 (July 15, 2010) |
| E | Bay Area Air Quality Management District Authority Addendum to Mitigated Negative Declaration (June 15, 2010) |
| F | Letter from Arlene L. Ichien & Melissa Jones to Mr. W. Tate Cantrell, Jr. (Apr. 21, 2008) |
| G | EPA Memorandum re: Guidance Concerning the Implementation of the I-hour N02 NAAQS for the Prevention of Significant Deterioration Program (June 29, 2010) |
| H | EPA Memorandum re: Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-hour NO2 National Ambient Air Quality Standard (Mar. 1, 2011) |
| I | Bay Area Air Quality Management District Authority, Engineering Evaluation Report (Jul. 7, 2010) |
| J | Site Plan of Phase 1 of Xeres Data Center (undated / 2007) |
| K | Landscape Plans – Xeres Data Center (2010) |
| L | Geotechnical Observations (2011) |
| M | Soil Stockpile Testing Results (2010-2011) |
| N | FAA Height Determination |
| O | GHG Memorandum |
| P | Permit Inspection for Refrigeration Units using R123 |
| Q | Silicon Valley Power Interconnection Information |