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SECTION 2

Project Description

The MREC will be a nominal 275-MW natural gas-fired peaking power plant consisting of five GE LM6000 PG natural gas-fired CTGs and related facilities, including batteries for energy storage and black start capability and clutch gear for synchronous condenser operation. Project elements include the generation equipment, battery array, and connections to natural gas and recycled water supply, and the electrical grid. The MREC location, ownership, and project benefits are described in detail in Section 1.0.

2.1 Generating Facility Description, Design, and Operation

The MREC will be a simple-cycle generating facility consisting of five power blocks. Each power block will contain one GE LM6000 PG natural gas-fired CTG (or equivalent). The MREC will interconnect to the grid at the Santa Clara Substation through a generator tie-line. The MREC will be designed and constructed in accordance with the design criteria provided in Appendix 2A in accordance with applicable laws, ordinances, regulations and standards (LORS).

2.1.1 General Site Arrangement and Layout

Figures 2.1-1 and 2.1-2 illustrate the MREC's general arrangement and elevations. The main access to the MREC site will be via Mission Rock Road. A portion of the site will be paved to provide internal access to all project facilities and onsite buildings. The areas around equipment will have gravel surfacing where not paved.

2.1.2 Process Description

The generating facility will consist of five GE LM6000 PG CTGs (or equivalent) equipped with SCR air emissions control equipment and associated support equipment for NO_x and CO control. The MREC will have a nominal generation rating of 255 MW.

Each CTG will generate approximately 57 MW (gross) at base load under International Standards Organization (ISO) conditions. The MREC is expected to have an overall annual availability of 92 to 98 percent, including scheduled and forced outages. The design of the plant will provide for operating flexibility. Each CTG is designed to start and ramp up to achieve full capacity in 10 minutes. This fast-start capability is well suited to meet the needs of the grid which is rapidly becoming increasingly dependent on intermittent renewable resources. Each CTG also provides various ancillary services, such as reg-up, reg-down, and spinning reserve, allowing the MREC to readily adapt to changing conditions in the energy and ancillary services markets.

The CTGs operate most efficiently when the inlet air temperature is maintained at 50 degrees Fahrenheit (°F). Two air-cooled inlet air chiller packages, with a total nominal chilling capacity of 7,200 tons, will cool the inlet air to the required temperature. The MREC heat and mass balance diagram is shown on Figure 2.1-3. This balance is based on an ambient dry bulb temperature of 61 and 79.2°F (annual average and 2 percent American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc. [ASHRAE]) an ambient wet bulb temperature of 53.2 and 63.9°F (annual average and 2 percent ASHRAE). Actual net output of the system will vary in response to ambient air temperature conditions, chiller demand, generator power factor, firing conditions of the combustion turbine and other operating factors. The CTGs can operate at partial load, with the CTGs operating down to minimum load (25 percent). Operational modes will be driven by good operating practices, market conditions, and dispatch requirements.

The emissions of each CTG are stabilized at permitted levels within 30 minutes of startup. Hot flue gas exits the CTGs and enters the emissions control equipment. The proposed emissions limits will be met using BACT, which includes the use of water injection and a SCR system that uses aqueous ammonia, to limit the emissions of NO_x; and a CO catalyst that will control the emissions of CO and volatile organic compounds (VOC). Emissions will be monitored by a continuous emissions monitoring system (CEMS) before exiting the stack. Emissions of particulate matter and sulfur dioxide will be controlled by the exclusive use of pipeline quality natural gas.

As a peaking power plant, the MREC is expected to operate during periods of increased need on the grid, such as: times of high electrical load, during periods when intermittent renewable source generation fluctuates, when baseload plants are not operating or being brought on-line, or during emergency conditions. Although the facility will be licensed and permitted to operate up to 28.5 percent of the time, plus 150 start and stop cycles, as a peaking power plant, its actual capacity factor is expected to be significantly less. In addition, having multiple turbines at the MREC site provides a wide operating range (13 to 286 MW), as well as shaft redundancy, meaning that, if one turbine is unavailable, the site can still provide a lot of energy.

2.1.3 Integrated Energy Storage

A 25 MW/100 MWh battery energy storage system will be installed at the MREC site. The system can be operated in conjunction with the thermal power plant or separately. The batteries will be lithium-ion and/or flow types. The storage system will consist of three main components, batteries, inverters, and Balance of Plant (BOP) (i.e., step-up transformers, site controller). Battery enclosures will minimize fire protection requirement and provide secondary containment. Mission Rock expects the energy storage system to be used for ancillary services (regulation up and regulation down), frequency regulation, peak shaving, and energy arbitrage.

2.1.4 Generating Facility Cycle

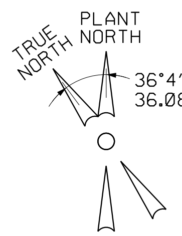
In the CTGs, combustion air flows through the filters, across inlet air chiller coils and associated air inlet ductwork, then is compressed in the gas turbine compressor section, before flowing to the CTG LM6000-PG single annular combustor. Natural gas is injected along with the compressed air into the combustor and then ignited. The hot combustion gases expand through the power turbine section of the CTG, causing the shaft to rotate and drive the electric generator and CTG compressor.

2.1.5 Combustion Turbine Generators

Thermal energy is produced in each CTG through the combustion of natural gas, which is converted into the mechanical energy required to drive the combustion turbine compressors and electric generators. The GE LM6000 PG CTG is a two-shaft/two-spool engine consisting of a compressor, a high-pressure turbine, and a low-pressure turbine. The engine is shock-mounted and connected to a two-pole, air-cooled generator operating at 13.8 kV and 60 hertz (Hz).

Each CTG system consists of a stationary combustion turbine generator, supporting systems, and associated auxiliary equipment. The CTGs will be equipped with the following required accessories to provide safe and reliable operation:

- Air inlet system complete with a modular, multistage filtration system
- Weatherproof acoustic enclosures with explosion-proof lighting
- Fuel system, including an electronically controlled fuel metering valve
- Two lube oil systems: One synthetic for the gas turbine and one mineral for the generator
- Stainless steel lube oil reservoirs, valve trim and piping



NEW PLANT DESCRIPTION

1 GAS TURBINE W/ SSS CLUTCH
2 SCR/CO UNIT
3 AMMONIA VAPORIZATION SKID
4 GT SPRINT SKID
5 EXHAUST STACK
6 GT AUXILIARY SKID
7 GENERATOR REMOVAL AREA
8 TURBINE REMOVAL AREA
9 GTG POWER DISTRIBUTION CENTER (PDC)
10 230KV TRANSFORMER
11 CEMS ENCLOSURE
12 AIR COMPRESSOR AND DRYER SKID
13 SCR TEMPERING AIR FANS
14 GT WATER WASH TANK (U/G)
15 SERVICE/ FIRE WATER STORAGE TANK
16 GT WATER INJECTION SKID
17 FIRE WATER PUMP HOUSE
18 SERVICE WATER PUMPS
19 AMMONIA TRUCK UNLOADING PAD
20 NON-SEG BUS DUCT
21 AMMONIA STORAGE TANK
22 AMMONIA FORWARDING PUMPS
23 AREA SUMP
24 CATALYST REMOVAL AREA
25 EYEWASH AND SAFETY SHOWER
26 4.16KV/480V STATION SERVICE TRANSFORMER
27 FIRE HYDRANT
28 METERING INSTRUMENT TRANSFORMERS
29 FUEL GAS COMPRESSOR SKID
30 FUEL GAS INLET SUCTION SCRUBBER
31 GARAGE/WAREHOUSE
32 FUEL GAS FILTRATION EQUIPMENT
33 230KV CONTROL BUILDING
34 GT FUEL GAS FILTER
35 DEMINERALIZED WATER TRAILER AREA
36 DEMINERALIZED WATER FORWARDING PUMP SKID
37 DEMINERALIZED WATER STORAGE TANK
38 SSS CLUTCH LUBE OIL SKID
39 SSS CLUTCH FIN FAN COOLER
40 230KV DISCONNECT SWITCH
41 GT FIRE PROTECTION SKID
42 FUEL GAS DRAIN TANK
43 13.8KV/4.16KV AUXILIARY TRANSFORMER
44 TRANSFORMER DEAD END STRUCTURE
45 ROADWAY LIGHTING FIXTURE
46 OIL WATER SEPARATOR
47 GT LUBE OIL COOLER SKID
48 FUEL GAS COMPRESSOR LUBE OIL COOLER
49 GENERATOR CIRCUIT BREAKER
50 CONTROL BUILDING
51 GAS METERING AREA
52 MAIN PLANT PDC
53 GAS TURBINE AIR INLET FILTER
54 GT GENERATOR
55 CHILLER CHEMICAL FEED SHELTER
56 CHEMICAL FEED PUMPS
57 CHILLER
58 BATTERY
59 POWER CONVERSION SYSTEM
60 13.8KV/480V BATTERY AUX TRANSFORMER
61 BATTERY STORAGE STEP-UP TRANSFORMER
62 BATTERY STORAGE POWER DISTR CENTER

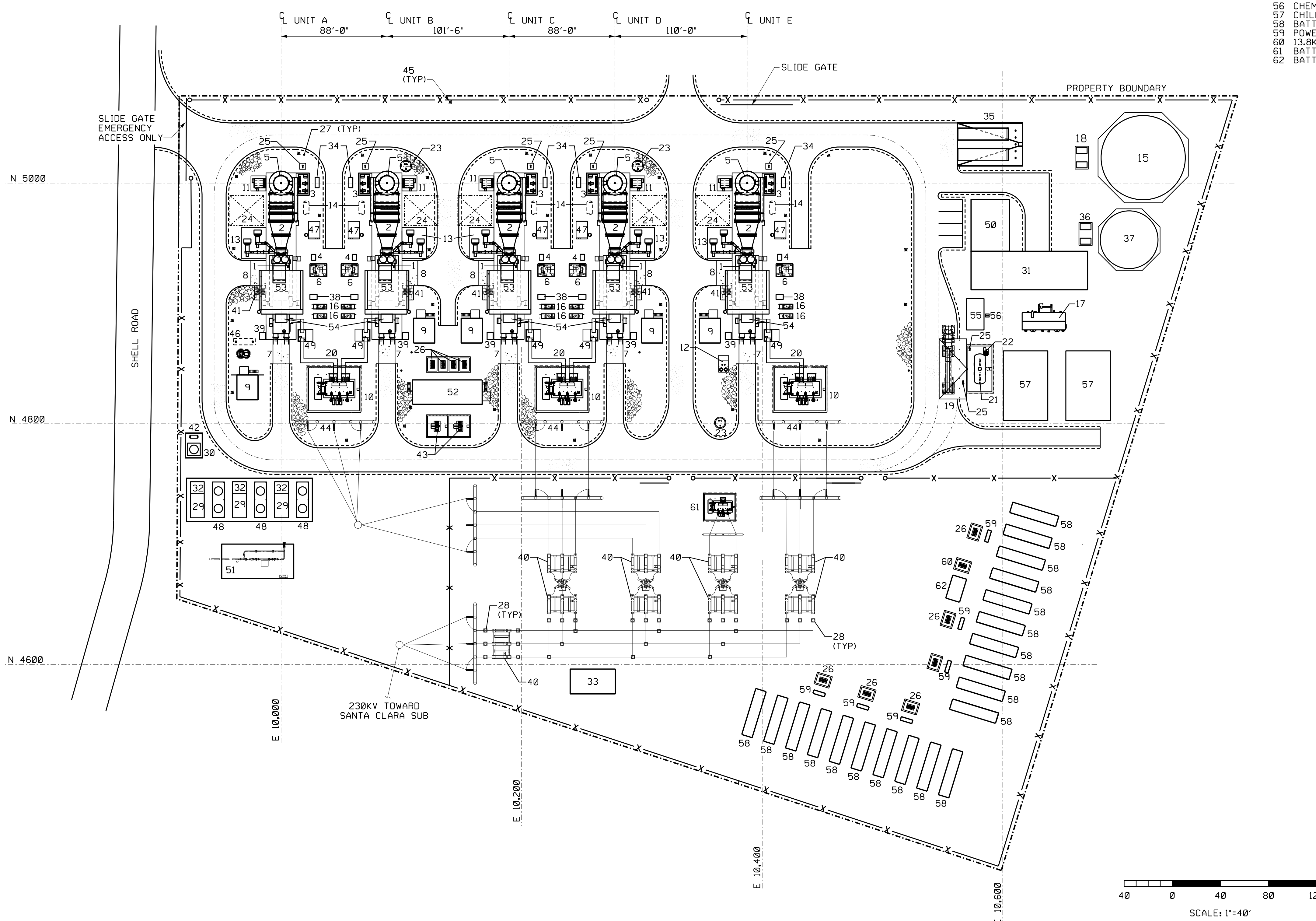


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Figure 2.1-1.
General Arrangement
Mission Rock Energy Center

Source: WorleyParsons, DWG NO. CALP-GNL-DE-G02-0001 SHT 01, REV. E, 11/4/15.

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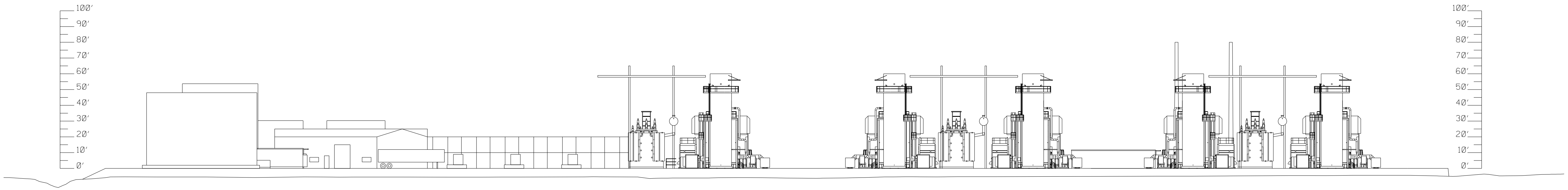
EG11105151015SAC Figure_2.1-1.ai 11-30-15 tdaus



ELEVATION VIEW LOOKING SOUTH

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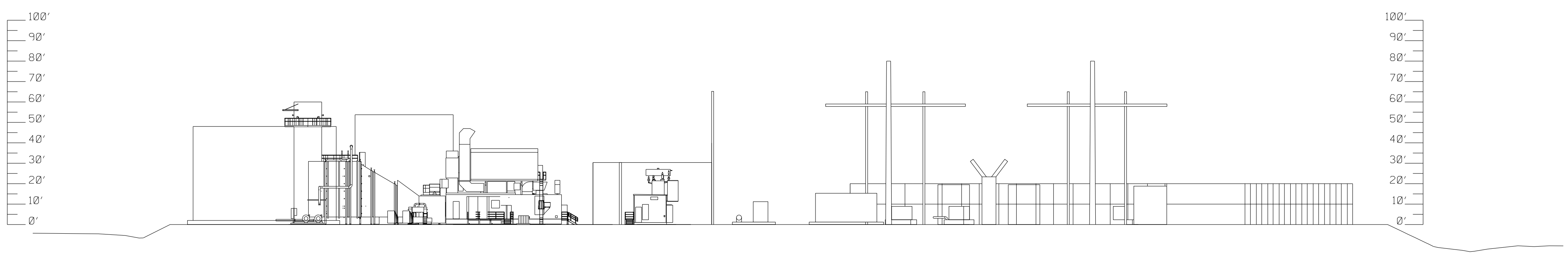

ELEVATION VIEW LOOKING EAST

1" = 30' 0 30 60 90 Scale Feet SCALE REFERENCE

Figure 2.1-2.
Elevations
Mission Rock Energy Center

Source: WorleyParsons, DWG NO. CALP-GNL-DE-G02-0002 SHT 01, REV. C, 11/5/15.

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CALPINE

Case Definition - Major Inputs	
Operating Configuration	5x0
Ambient Temp, deg F	79.2
Ambient RH, %	43%
Ambient Pressure, psia	14.598
CTG Chiller Status	ON
CTG Fuel	NG
Case Results - Major Outputs	
Outputs, MW	
CTG Gross	57.3
Gross Plant	286.5
Auxiliary Load	12.4
Net	274.1
Total Heat Inputs, MMBtu/hr (HHV)	
CTG	552.2
Total	2,760.8
Heat Rates, Btu/kWh	
Net (HHV)	10,223
Notes	
1. Auxiliary loads are preliminary and include transformer losses	
2. HHV = 1.109 * [LHV] (approx.)	
3. Thermodynamic heat balance, not all valves and piping shown	
4. Diagrammatic representation only (not to scale)	
Mission Rock Energy Center	Rev 1
5 X0 Simple Cycle Plant	10-Dec-15
Heat Balance Diagram	

LEGEND	Description	Units
W,W**,W***	Flow	pph,gpm,MMBTU/Hr
P,P**	Pressure	Psia,inches HgA
T	Temperature	Deg F

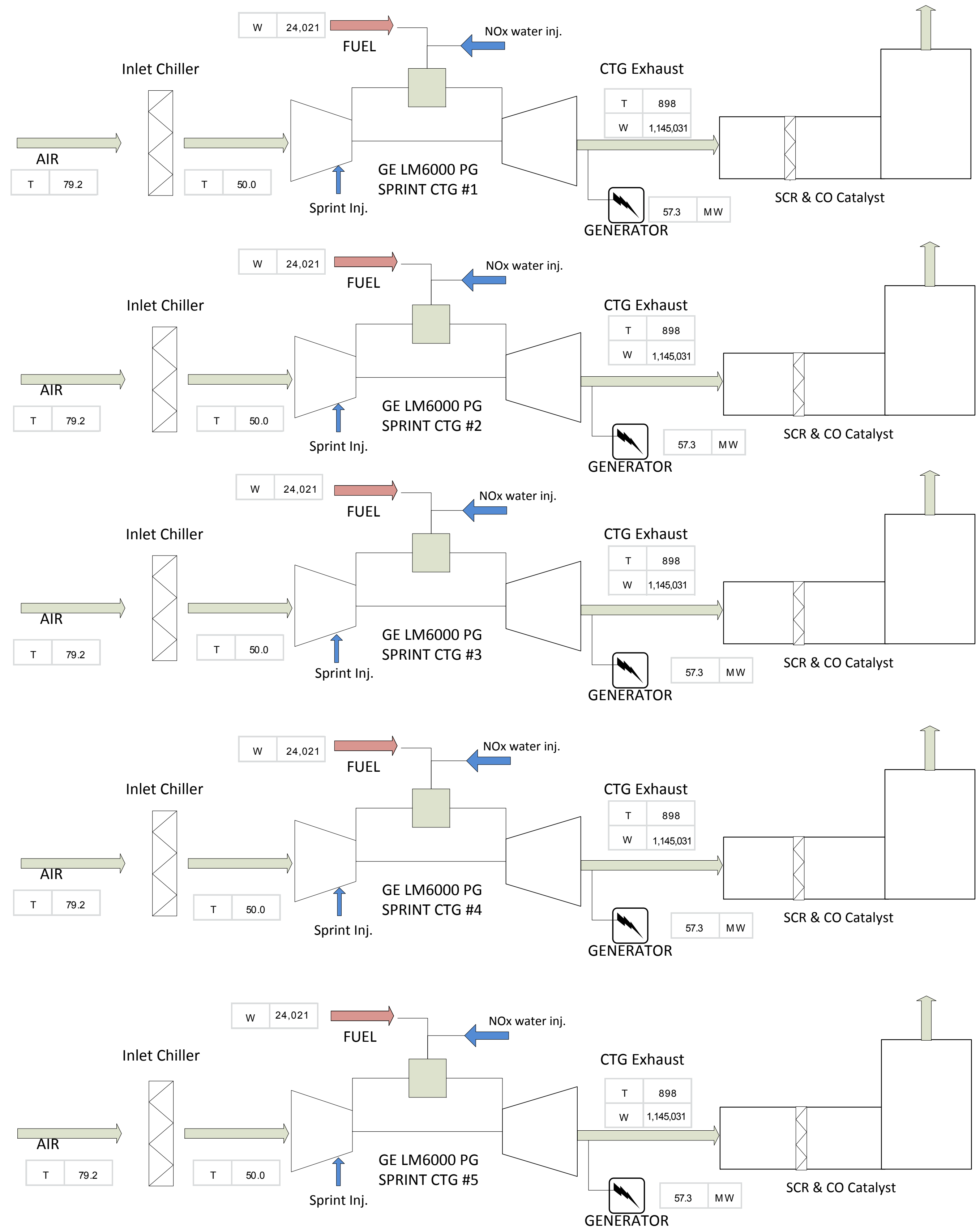

Figure 2.1-3.
Heat Balance
Mission Rock Energy Center

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- Lube oil cooling provided by an air-cooled fin-fan cooler
- Electro-hydraulic start system
- 24-volt direct current (DC) valve regulated lead acid type battery system
- Generator protective relays
- Water injection for NO_x control
- Compressor wash system
- Fire detection and protection system
- Turbine/generator base plate

2.1.6 Major Electrical Equipment and Systems

The electric power generated by the MREC will be transmitted to the electrical grid, with the exception of the power required for onsite auxiliaries such as pumps, fans, gas compressors, and other parasitic loads. The integrated energy storage system will be provide black start capability for critical loads and control systems. Transmission and auxiliary uses are discussed in the following subsections.

2.1.6.1 Alternating Current Power—Transmission

Power will be generated by the five CTGs at 13.8 kV and then stepped up using three 13.8/230-kV, oil-filled generator step-up transformers, to support connection to the local 230-kV network. Surge arrestors protect the transformer from surges in the 230-kV system caused by lightning strikes or other system disturbances.

The transformers will be set on a concrete foundation that includes a secondary oil containment reservoir to contain the transformer oil in the event of a leak or spill. The high-voltage side of the generator step-up transformer will be connected to a single-circuit, three-phase, 230-kV line, which will be connected to the SCE 230-kV switchyard at the Santa Clara Substation located 4.3 miles west of the MREC site, via a 6.6-mile private generator tie-line, across private and county owned lands.

A detailed discussion of the electric transmission system is provided in Section 3.0.

2.1.6.2 Alternating Current Power—Distribution to Auxiliaries

Auxiliary power will be supplied at 4,160 volts and 480 volts through a double-ended, 4,160-volt switchgear lineup, and a double-ended 480-volt switchgear lineup. Each 13.8/4.16-kV unit auxiliary transformer will supply primary power to the medium-voltage switchgear and the corresponding medium-voltage motor control center (MCC). The unit auxiliary transformer primary (13.8 kV) will be connected to the 15-kV switchgear lineup on the low-voltage side of one of the generator step-up transformers. This interface point allows the switchgear to be back-fed from the local grid when the CTGs are not running, or directly from the CTGs when they are in operation. Each CTG will have a 15-kV rated breaker between the generator and the generator step-up transformer for generator synchronization and isolation.

The 4,160-volt switchgear/MCC lineup supplies power to all medium-voltage loads as well as the two station service transformers, rated 4,160/480 volts, for 480-volt power distribution. Each station service transformer will be oil-filled and sized to supply 480-volt, three-phase power to the plant 480-volt MCCs. The MCCs will provide power to the 480-volt motor loads as well as other low-voltage plant loads.

2.1.6.3 125-Volt DC Power Supply System

One common 125-volt DC power supply system consisting of one 100-percent-capacity battery bank, two 100-percent static battery chargers, a switchboard, and two or more distribution panels will be supplied for the BOP and essential CTG equipment. Each CTG will be provided with its own separate battery systems and redundant chargers.

Under normal operating conditions, the battery chargers supply DC power to the DC loads. The battery chargers are fed by 480-volt alternating current (VAC) and continuously charge the battery banks while supplying power to the DC loads.

Under abnormal or emergency conditions, when power from the alternating current (AC) power supply (480-volt) system is unavailable, the batteries supply DC power to the DC system loads. Recharging of a discharged battery occurs whenever 480-volt power becomes available from the AC power supply system. The rate of charge depends on the characteristics of the battery, battery charger, and the connected DC load during charging. The anticipated maximum recharge time will be 12 hours.

The 125-volt DC system will also be used to provide control power to the 4,160-volt switchgear, the 480-volt load centers, critical control circuits, the plant control system, and the emergency DC motors.

2.1.6.4 Uninterruptible Power Supply System

The CTGs and power block will have an essential-service 120-VAC, single-phase, 60-Hz uninterruptible power supply (UPS) supplying power to essential instrumentation, critical equipment loads, and unit protection and safety systems that require uninterrupted AC power.

Redundant UPS inverters will supply 120-VAC, single-phase power to the UPS panel boards that supply critical AC loads. The UPS inverters will be fed from the MREC's 125-volt DC power supply system. Each UPS system will consist of one full-capacity inverter, a static transfer switch, a manual bypass switch, an alternate source transformer, and two or more panelboards.

The normal source of power to the MREC system will be from the 125-volt DC power supply system through the inverter to the panelboard. A solid-state static transfer switch will continuously monitor both the inverter output and the alternate AC source. The transfer switch will automatically transfer essential AC loads without interruption from the inverter output to the alternate source upon loss of the inverter output.

A manual bypass switch will also be included to enable isolation of the inverter for testing and maintenance without interruption to the essential service AC loads.

The supervisory control system (SCS) operator stations will be supplied from the UPS. The CEMS equipment, SCS controllers, and input/output (I/O) modules will be fed using either UPS or 125-volt DC power directly.

2.1.7 Fuel System

The CTGs will be designed to burn only natural gas. The natural gas requirement during base load operation at annual average ambient temperature is approximately 2,780 million British thermal units per hour (MMBtu/hr) (higher heat value [HHV] basis, total for five CTG units), or 45,000 million dry standard cubic feet. Seasonal temperature fluctuations do not significantly influence fuel demand because the inlet combustion air temperature is held at 50°F by inlet air chillers.

Natural gas will be delivered to the MREC via a tap off of existing SoCalGas natural gas Lines 404 and 406 via a 2.4-mile-long pipeline. The pipeline route will run southwest from the MREC along Shell Road and the Southern Pacific Railroad right-of-way to the interconnection point. The new gas supply piping will consist of a 16-inch-diameter pipeline (see Section 4.0). At the MREC, the natural gas will flow through an 8-inch turbine-meter set, gas scrubber/filtering equipment, a gas pressure control station, electric-driven booster compressors coalescing and final fuel filters, and a fuel gas heater prior to entering the combustion turbines. Appendix 2B is the SoCalGas pipeline study commissioned for the MREC.

A minimum floating delivery pressure of 350 pounds per square inch gauge, as measured downstream of a non-regulated meter set, will be provided by SoCalGas. Three 100-percent-capacity, electric-driven fuel gas compressors will be provided to boost the pressure to that required by the CTGs. The gas compressors will be located outdoors and will be housed in an acoustical enclosure to reduce the compressor noise level.

2.1.8 Inlet Air Chiller System

Combustion air will be maintained at an optimum inlet temperature of 50°F through the use of air-cooled inlet air chillers. Two chiller packages will be provided, sized to serve the five CTGs.

The air chillers will cool a water/glycol mixture, which is circulated through coils in the CTG inlet air filter housing. Mission Rock has elected to use R134a as the chiller refrigerant working fluid. The refrigerant is circulated through the shell side of a shell and tube heat exchanger, where it removes heat from the chilled water system before flowing to a compressor. The compressor pumps the fluid through an air-cooled heat exchanger, where the heat is rejected to the atmosphere. The cooled refrigerant is returned to the shell and tube heat exchanger.

2.1.9 Water Supply and Use

This subsection describes the quantity of water required, the sources of the water supply, and water treatment requirements. Two water balance diagrams are included, representing two operating conditions. Figures 2.1-4a and 2.1-4b represent annual average operation at 61°F with five CTGs operating at 100 percent load, and typical summer operation case at 79.2°F with five CTGs operating at 100 percent load respectively.

The MREC will use treated recycled water supplied by the Limoneira Company via a new, 1.7-mile-long water supply pipeline that taps into an existing Limoneira Company recycled water line. This source will also provide water for fire protection and service water. Water provided by the City of Santa Paula via an existing 1-inch-diameter direct hookup to the MREC will be used for potable outlets, safety showers, and sanitary uses.

A detailed description of the water supply system, treatment, and permits is provided below and in Section 5.15, Water Resources.

2.1.9.1 Water Requirements

The MREC will use recycled water for NO_x control and power augmentation for the gas turbines. Under the maximum-permitted operating scenario of 28.5 percent capacity factor at the average annual temperature design case, the MREC will use approximately 67.21 acre-feet of recycled water per year, for all plant uses (assumes 28.5 percent capacity factor). Simple-cycle peakers in California larger than 50 MW generally average a 5 percent capacity factor, so the actual water use is anticipated to be much less. A breakdown of the estimated average daily quantity of water required for operation of the MREC is presented in Table 2.1-1.

The daily water requirements shown are estimated quantities based on the simple-cycle plant operating at full load. Water requirements shown in Table 2.1-1 are based on an ambient temperature of 61°F (approximate annual average dry bulb temperature) and 79.2°F (summer daytime temperature design case), respectively.

Table 2.1-1 Estimated Daily and Annual Water Use for MREC Operations

Water Use	Gallons per minute		Acre-feet per year
	Average Daily Use (61°F)	Summer Daily Use (79.2°F)	Maximum Annual Use
Process water:			
Maximum permitted scenario[a]	116	146	67.21
Expected scenario[b]	22	27	10.13
Sanitary and domestic water:			
Maximum permitted scenario[a]	0.33	0.33	0.15
Expected scenario[b]	0.33	0.33	0.15
Total usage:			
Maximum permitted scenario[a]	116.33	146.33	67.36
Expected scenario[b]	22.33	27.33	10.28

Notes:

[a] Maximum permitted scenario is based on the maximum scenario of 2,500 hours per year plus 150 start and stop cycles (conservatively estimated at 30 minutes per start and 30 minutes per stop), at the annual average temperature design conditions.

[b] Expected scenario is based on the more realistic operating profile of approximately 500 hours per year, at the annual average temperature design conditions.

afy = acre-feet per year

gpm = gallons per minute

2.1.9.2 Water Quality

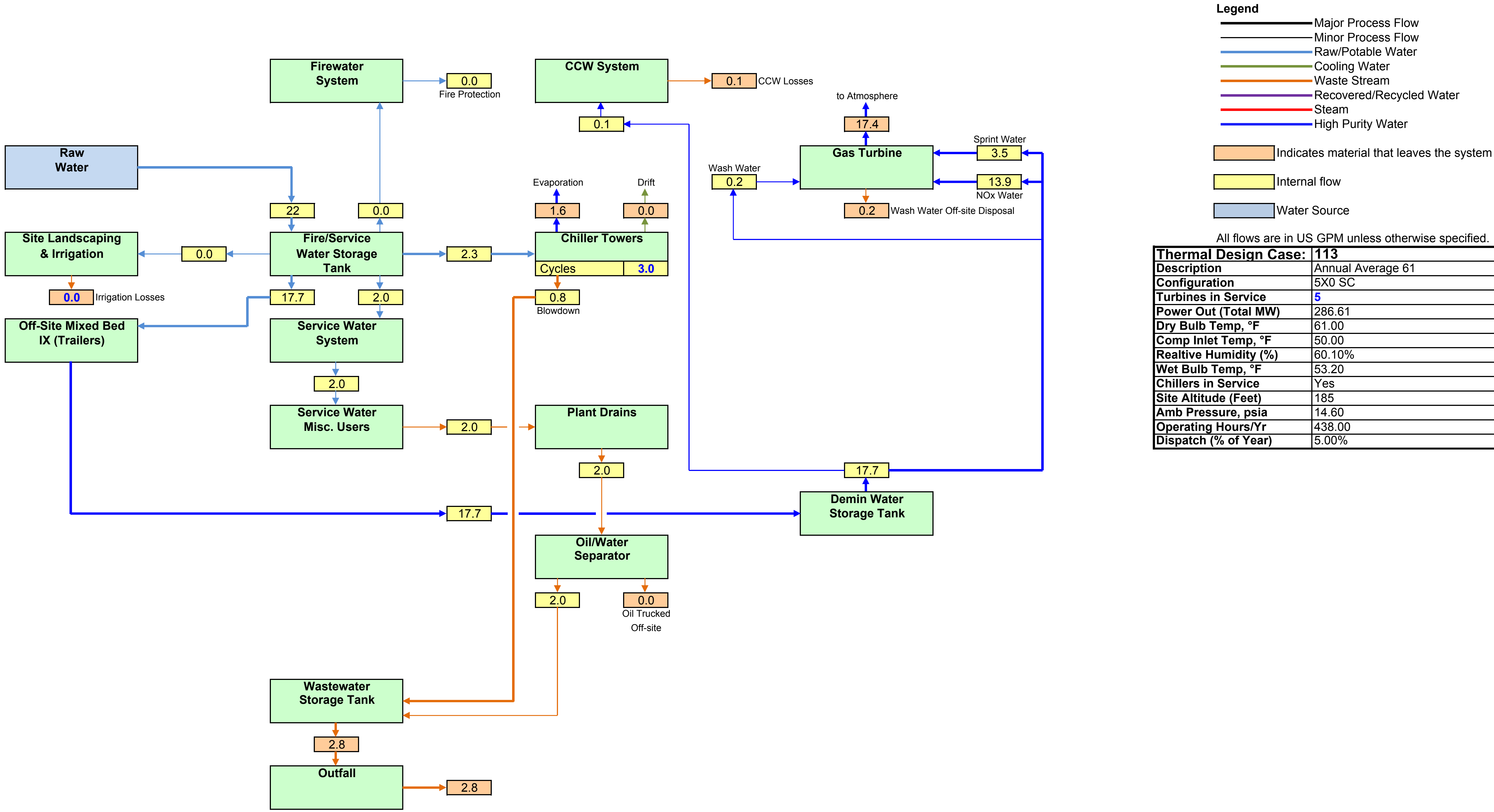
Section 5.15, Water Resources, includes a projection of the water quality based on available testing data from Limoneira.

2.1.9.3 Water Treatment

Recycled water from the Limoneira Company will be used for service water, chiller fill and makeup, and for fire protection, in addition to general (non-potable) needs such as landscaping and hose bibs (equipment and surface washdown).

Rental demineralizer equipment including trailers or portable demineralizer skids will use the recycled water available through the pipeline from the Limoneira Company, demineralize it, and supply it as demineralized water to the plant. A portion of the incoming raw process water will be treated by a demineralizer and then stored in a demineralized water storage tank. The high quality demineralized water will be used for the combustion turbine water injection for NO_x reduction, online water wash of the combustion turbine compressor section, and water injection required for operation. Table 2.1-2 presents the purity requirements for demineralized water.

The product water from the demineralizer system will be stored in an 892,000-gallon demineralized water storage tank, which is nominally sufficient for 32 hours of plant use. Potable water will be provided via a tie from the City of Santa Paula service connection, for safety showers, eye-wash stations, drinking water, and sanitary facilities.

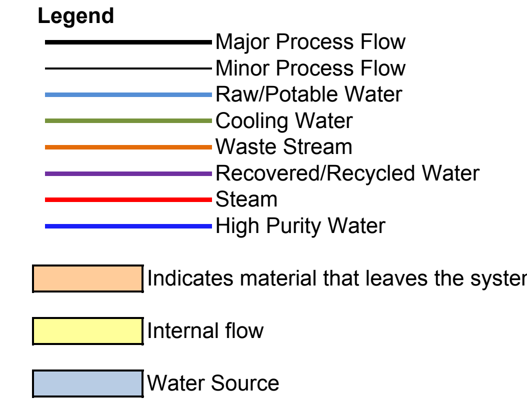


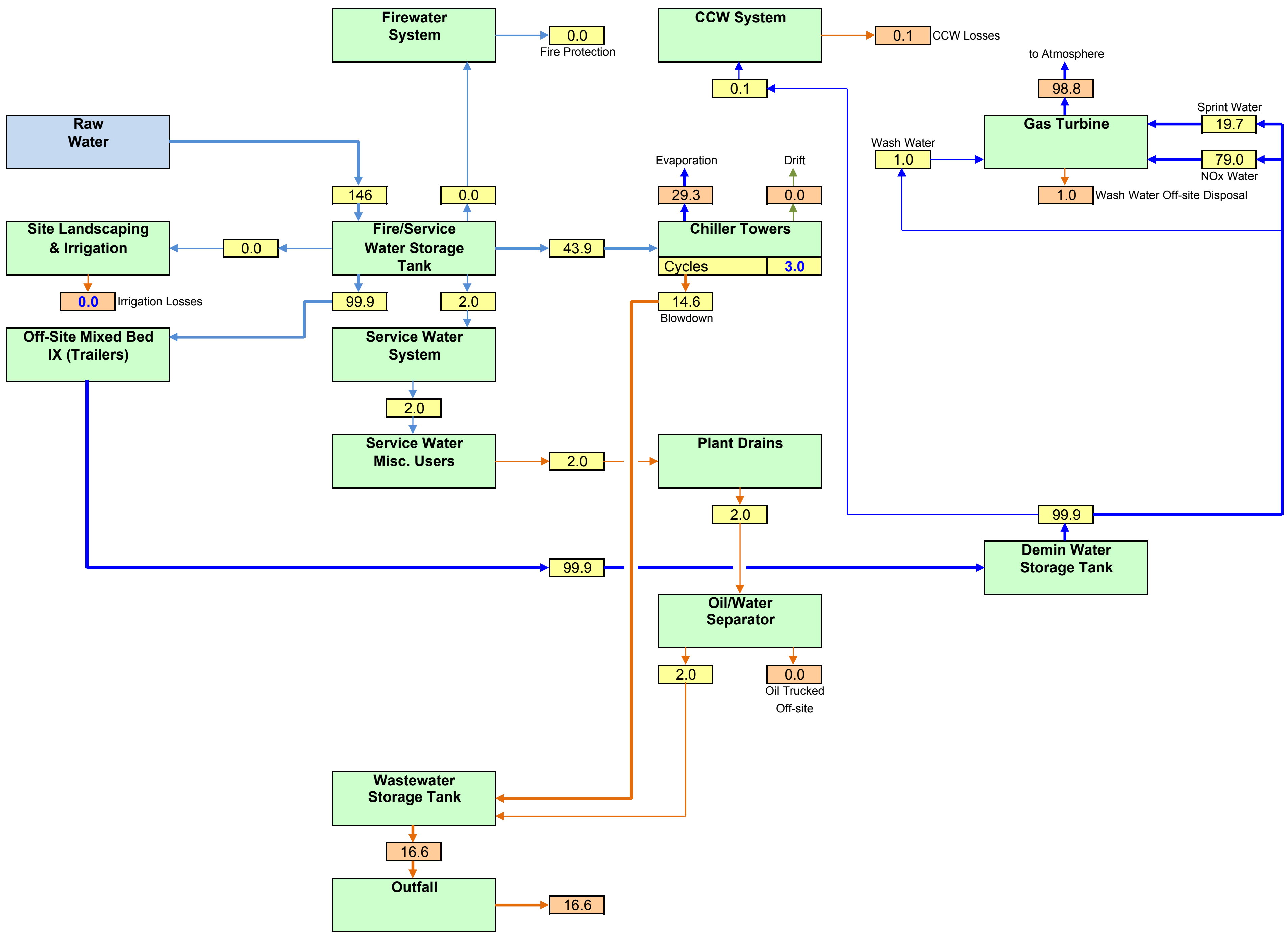
All flows are in US GPM unless otherwise specified.

Thermal Design Case:	113
Description	Annual Average 61
Configuration	5X0 SC
Turbines in Service	5
Power Out (Total MW)	286.61
Dry Bulb Temp, °F	61.00
Comp Inlet Temp, °F	50.00
Realtive Humidity (%)	60.10%
Wet Bulb Temp, °F	53.20
Chillers in Service	Yes
Site Altitude (Feet)	185
Amb Pressure, psia	14.60
Operating Hours/Yr	438.00
Dispatch (% of Year)	5.00%

Figure 2.1-4a.
Water Balance – Annual Average
Mission Rock Energy Center

Source: WorleyParsons, 11/11/15.





All flows are in US GPM unless otherwise specified.

Thermal Design Case:	118
Description	Annual Maximum 79.2
Configuration	5X0 SC
Turbines in Service	5
Power Out (Total MW)	286.51
Dry Bulb Temp, °F	79.20
Comp Inlet Temp, °F	50.00
Realtive Humidity (%)	43.33%
Wet Bulb Temp, °F	63.90
Chillers in Service	Yes
Site Altitude (Feet)	185
Amb Pressure, psia	14.60
Operating Hours/Yr	2500.00
Dispatch (% of Year)	28.54%

Figure 2.1-4b.
Water Balance – Annual Maximum
Mission Rock Energy Center

Source: WorleyParsons, 11/11/15.

Table 2.1-2 LM6000 Demineralized Water Purity Requirements

Parameter	Units of Measure	Value
Total Solids	ppm	5.0
TDS	ppm of TDS	3.0
Silica	mg/L as SiO_2	0.1
Conductivity at 25°C*	micromho/centimeter	0.1
pH*	Standard Unit	6.5 – 7.5
Chloride	mg/L as Chlorine	0.5
Sulfate	mg/L as SO_4^{2-}	0.5

* measured in the absence of carbon dioxide (CO_2)
°C = degrees Celsius
mg/L = milligrams per liter
ppm = parts per million
micromho/centimeter = microsiemens/centimeter
SiO_2 = silicon dioxide
SO_4^2 = sulfate
TDS = total dissolved solids

2.1.10 Waste Management

Waste management is the process whereby all wastes produced at the MREC will be properly collected, treated if necessary, and disposed of. Wastes include process and sanitary wastewater, nonhazardous waste and hazardous waste, both liquid and solid. Waste management is discussed below and in more detail in Section 5.14, Waste Management.

2.1.10.1 Wastewater Collection, Treatment, and Disposal

Process wastewater, principally RO system reject and chiller system cooling tower blowdown, will be discharged through an agreement with Green Compass to the adjacent discharge pipe. Appendix 2D is a can-serve letter from Green Compass. The primary wastewater collection system will collect stormwater runoff from all of the plant equipment areas and route it to sumps and the onsite oil-water separator before discharging. The secondary wastewater collection system will collect sanitary wastewater from sinks, toilets, showers, and other sanitary facilities, and route it to an onsite septic tank for discharge through removal by a licensed waste hauler such as Green Compass for offsite treatment. The water balance diagrams, Figures 2.1-5a and 2.1-5b show the expected MREC wastewater streams and flow rates.

Plant Drains and Oil/Water Separator

Plant drains will collect area washdown, sample drains, and drainage from facility equipment areas. Water from these areas will be collected in a system of floor drains, hub drains, sumps, and piping and will be routed to the wastewater collection system. Drains that could potentially contain oil or grease will first be routed through an oil-water separator. Wastewater from infrequent combustion turbine water washes and from the fuel filtration skid(s) will be collected in holding tanks or sumps and will be discharged into the industrial wastewater effluent pipe to Green Compass. The wastewater will be discharged to the existing oil-water separator, where oil waste will be collected to drums and hauled offsite via a licensed waste hauler.

2.1.10.2 Solid Nonhazardous Wastes

The MREC will produce construction, operation and maintenance nonhazardous solid wastes typical of power generation operations. Construction wastes generally include soil, scrap wood, excess concrete, empty containers, scrap metal, and insulation. Generation plant wastes include oily rags, scrap metal and plastic, insulation material, defective or broken electrical materials, empty containers, and other solid wastes, including the typical refuse generated by workers. Solid wastes will be trucked offsite for recycling or disposal. Waste management is further discussed in Section 5.14.

2.1.10.3 Hazardous Wastes

Several methods will be used to properly manage and dispose of hazardous wastes generated by the MREC. Waste lubricating oil will be recovered and recycled by a waste oil recycling contractor. Spent lubrication oil filters will be disposed of in a Class I landfill. Spent SCR and oxidation catalysts will be recycled by the supplier or disposed of in accordance with regulatory requirements. Workers will be trained to handle hazardous wastes generated at the site.

Chemical cleaning wastes will consist of alkaline and acid cleaning solutions, used during pre-operational chemical cleaning, and turbine washwater effluent. These wastes, which are subject to high metal concentrations, will be temporarily stored onsite in portable tanks or sumps, and disposed of offsite by the chemical cleaning contractor in accordance with applicable regulatory requirements. Hazardous materials management is further discussed in Section 5.5.

2.1.11 Management of Hazardous Materials

A variety of chemicals will be stored and used during the construction and operation of the MREC. The storage, handling, and use of all chemicals will be conducted in accordance with applicable LORS. Chemicals will be stored in appropriate chemical storage facilities. Bulk chemicals will be stored in storage tanks, and most other chemicals will be stored in returnable delivery containers. Chemical storage and chemical feed areas will be designed to contain leaks and spills. Concrete containment pits and drain piping design will allow a full-tank capacity spill without overflowing the containment area. For multiple tanks located within the same containment area, the capacity of the largest single tank will determine the volume of the containment area and drain piping. Drain piping for reactive chemicals will be trapped and isolated from other drains to eliminate noxious or toxic vapors.

The aqueous ammonia storage and delivery area will have spill containment and ammonia vapor detection equipment, as described in Section 5.5, Hazardous Materials Handling.

Safety showers and eyewashes will be provided adjacent to, or in the vicinity of, chemical use and storage areas. Plant personnel will use approved personal protective equipment during chemical spill containment and cleanup activities. Personnel will be properly trained in the handling of these chemicals and instructed in the procedures to follow in case of a chemical spill or accidental release. Adequate supplies of absorbent material will be stored onsite for spill cleanup.

A list of the chemicals anticipated to be used at the MREC and their storage locations is provided in Section 5.5, Hazardous Materials Handling. This list identifies each chemical by type, intended use, and estimated quantity to be stored onsite.

2.1.12 Emission Control and Monitoring

Air emissions from the combustion of natural gas in the CTGs will be controlled to the standards of BACT. To ensure that the systems perform correctly, continuous emissions monitoring for NO_x and CO will be performed. Section 5.1, Air Quality, includes additional information on emission control and monitoring.

2.1.12.1 NO_x Emission Control

The CTGs selected for the MREC will use demineralized water injection and SCR to control emissions of NO_x. One-hour NO_x emissions will be controlled at the stack to 2.5 parts per million by volume (ppmv), dry basis (ppmvd), corrected to 15 percent oxygen. The SCR process will use 19.5-percent aqueous ammonia. Ammonia slip, or the concentration of unreacted ammonia in the stack exhaust, will be limited to 5 ppmv. The SCR equipment will include a reactor chamber, catalyst modules, ammonia storage system, ammonia vaporization and injection system, and monitoring equipment and sensors. The project will use an ammonia delivery system, which consists of a 12,000-gallon ammonia tank, spill containment basin, and refilling station with a spill containment basin and sump.

2.1.12.2 CO and VOC Emission Control

CO and VOC emissions will be controlled by means of CO oxidation catalysts. Oxidation catalysts will limit 1-hour stack CO emissions to 4 ppmvd. VOC emissions will also be limited to 1 ppmvd.

2.1.12.3 Particulate Emission Control

Particulate emissions will be controlled by the use of best combustion practices along with the exclusive use of pipeline quality natural gas, which is low in sulfur, and high efficiency air inlet filtration.

2.1.12.4 Continuous Emission Monitoring

For each CTG, a separate CEMS will sample, analyze, and record fuel gas flow rate, NO_x and CO concentration levels, and percentage of oxygen in the exhaust gas from the stacks. The CEMS sensors will transmit data to a data acquisition system (DAS) that will store the data and generate emission reports in accordance with permit requirements. The DAS will also include alarm features that will send signals to the plant SCS when the emissions approach or exceed pre-selected limits.

2.1.13 Fire Protection

The fire protection system will be designed to protect personnel and limit property loss and plant downtime in the event of a fire. The system will include a fire protection water system, CO_2 fire suppression systems for the CTGs, and portable fire extinguishers. A fire loop will be designed to protect the MREC, and the system will be designed in accordance with:

- Federal, state and local fire codes, occupational health and safety regulations, and other jurisdictional requirements
- California Building Code (CBC)
- National Fire Protection Association (NFPA) standard practices

The fire water supply and pumping system will provide fire-fighting water to yard hydrants, hose stations, and water spray and sprinkler systems. The system will be capable of supplying maximum water demand for any automatic sprinkler system, plus water for fire hydrants and hose stations. Hydraulic calculations will be performed to demonstrate that the fire protection loop has sufficient capacity to provide all the required fire-fighting water for the power plant. A plant firewater loop, designed and installed in accordance with NFPA 24, will be provided to reach all parts of the facility. Both the fire hydrants and the fixed suppression systems will be supplied from the firewater loop. The firewater systems will have sectionalizing valves to allow a failure in any part of the system to be isolated, so that the remainder of the system can continue to function properly. The MREC fire protection system will include a backup diesel fire pump rated at 200 horsepower (hp) or less.

Fixed fire suppression systems will be installed at determined fire risk areas such as the gas compressors and turbine lube oil equipment. Separation criteria, as defined by NFPA and the CBC, shall be used to determine spacing of the transformers, ammonia storage, and other areas that pose a fire risk or health hazard, such as natural gas-fired equipment, lube oil and hydraulic oil piping and containment, ammonia storage and unloading equipment, and the fire pump skid.

Sprinkler systems will also be installed in the control room building, the warehouse/maintenance building, and fire pump enclosure as required by NFPA and local code requirements.

The CO_2 fire-suppression system provided for each CTG will include a CO_2 storage tank, CO_2 piping and nozzles, fire detection sensors, and a control system. The control system will automatically shut down the affected CTG turbines, turn off ventilation, close ventilation openings, and release CO_2 upon detection of a fire. The CO_2 fire suppression systems will cover the turbine enclosure and accessory equipment enclosure of each CTG.

Portable CO_2 and dry chemical extinguishers will be located throughout the power plant site, including switchgear rooms, with size, rating, and spacing in accordance with NFPA 10.

Section 5.5, Hazardous Materials Handling, includes additional information for fire and explosion risk, and Section 5.10, Socioeconomics, provides information on local fire protection capability.

2.1.14 Plant Auxiliaries

The following systems will support, protect, and control the MREC.

2.1.14.1 Lighting

The lighting system provides personnel with illumination for operation under normal conditions and for egress or manual equipment operations under emergency conditions. The system also provides 120-volt convenience receptacles.

The lighting system will be designed in accordance with the Illuminating Engineering Society of North America and calculated average illumination levels with a 0.8 maintenance factor. The lighting plan will include the following components:

- Photo cells to control outdoor lighting
- Frequently switched indoor lighting (such as office and maintenance areas) will be controlled by wall-mounted switches. Infrequently switched indoor lighting (such as in equipment buildings) will be controlled by panel board circuit breakers.
- Self-contained battery-backed emergency lighting and exit signs will be furnished to provide safe personnel egress from buildings during a total loss of plant power. Emergency lighting will be designed to maintain the necessary illumination for a minimum of 90 minutes.
- All 120-volt outdoor receptacles will be fed from ground fault circuit interrupter-type receptacles. Receptacles will be located so equipment at grade can be reached with a 75-foot extension cord.
- Fixtures will be placed to provide lighting levels that are in compliance with the Occupational Safety and Health Administration (OSHA) safety standards.
- Fixtures will be designed to meet standards of light pollution control.

2.1.14.2 Grounding

The MREC electrical system is susceptible to ground faults, lightning, and switching surges that can constitute a hazard to site personnel and electrical equipment. The MREC grounding system provides a path to permit the dissipation of hazardous energy created by these events.

Site ground resistivity readings shall be used to determine quantity of grounding electrodes and grid spacing to ensure safe step and touch potentials under severe fault conditions.

Bare copper conductors will be installed below-grade based on the calculated grid spacing. Each junction of the grid will be electrically bonded together.

All building steel and non-energized metallic parts of electrical equipment shall be electrically bonded to the ground grid.

2.1.14.3 Supervisory Control System

The SCS provides modulating control, digital control, monitoring, and indicating functions for the plant power block systems.

The SCS will provide the following functions:

- Controlling the CTGs and other systems in a coordinated manner
- Controlling the BOP systems in response to plant demands
- Monitoring controlled plant equipment and process parameters and delivery of this information to plant operators
- Providing control displays (printed logs, liquid crustal diode [LCD] video monitors) for signals generated within the system or received from I/O data
- Providing consolidated plant process status information through displays presented in a timely and meaningful manner
- Providing alarms for out-of-limit parameters or parameter trends, displaying on alarm video monitors(s), and recording on an alarm log printer
- Providing storage and retrieval of historical data

The SCS will be a redundant microprocessor-based system and will consist of the following major components:

- PC-based operator consoles with LCD video monitors
- Complete distributed control system equipment and architecture
- I/O cabinets
- Historical data unit
- Printers
- Data links to the combustion turbine and steam turbine control systems

The SCS will have a functionally distributed architecture allowing integration of BOP equipment that may be controlled locally via a programmable logic controller.

The SCS will interface with the control systems furnished by the CTG supplier to provide remote control capabilities, as well as data acquisition, annunciation, and historical storage of turbine and generator operating information.

The system will be designed with sufficient redundancy to preclude a single device failure from significantly affecting overall plant control and operation. The design will also ensure critical control and safety systems have redundancy of control and uninterruptable power sources.

As part of the quality control program, daily operator logs will be available for review to determine the status of the operating equipment.

2.1.14.4 Cathodic Protection

The cathodic protection system will be designed to control the electrochemical corrosion of designated metal piping buried in the soil. Depending on the corrosion potential and the MREC site soils, either passive or impressed current cathodic protection will be provided.

2.1.14.5 Freeze Protection System

Freeze protection for abovegrade and belowgrade piping and instrumentation lines will be evaluated and installed, as necessary, based on the expected minimum ambient temperature at the plant. Given that the record minimum temperature in Santa Paula is 25°F (1974), freeze protection is not expected to be required for large piping, but may be required for instrumentation air tubing.

2.1.14.6 Service Air

The service air system will supply compressed air to hose connections for general plant use. Service air headers will be routed to hose connections located at various points throughout the facility.

2.1.14.7 Instrument Air

The instrument air system will provide dry, filtered air to pneumatic operators and devices. Air from the service air system is dried, filtered, and pressure-regulated before delivery to the instrument air piping network. An instrument air header will be routed to locations within the facility equipment areas and within the water treatment facility where pneumatic operators and devices will be located.

2.1.15 Interconnect to Electrical Grid

The five CTGs and battery array will connect to the regional electrical grid via a new 6.6-mile-long, 230-kV transmission line that will run from the MREC to the SCE Santa Clara Substation (see Section 3.0, Electric Transmission).

2.1.16 Project Construction

Assuming a decision is made approving this AFC within 12 months of when the AFC is deemed data adequate, construction of the generating facility, from site preparation and grading to commercial operation, is expected to take place from November 2018 to September 2020 (approximately 23 months total). Major milestones are listed in Table 2.1-3.

Table 2.1-3 Major Project Milestones

Activity	Date
Begin Construction	November 2018
Startup and Test	April 2020
Commercial Operation	September 2020

There will be an average and peak workforce of 87 and 146, respectively, of construction craft people, supervisory, support, and construction management personnel onsite during construction (see Table 5.10-8).

Typically, noisy construction will be scheduled to occur between 7 a.m. and 7 p.m. on weekdays and 8 a.m. and 5 p.m. on Saturdays. Additional hours may be necessary to make up schedule deficiencies, or to complete critical construction activities (e.g., pouring concrete at night during hot weather, working around time-critical shutdowns and constraints). During some construction periods and during the startup phase of the project, some activities will continue 24 hours per day, 7 days per week.

The peak construction site workforce level is expected to last from month 8 through month 12 of the construction period, with the peak being month 9.

Table 2.1-4 provides an estimate of the average and peak construction traffic during the 23-month construction/commissioning period for the MREC.

Table 2.1-4. Estimated Average and Peak Construction Traffic

Vehicle Type	ADT	Peak Daily Trips
Construction Workers	87	146
Deliveries	9	18
Total		

ADT = average daily trips

Figure 2.1-6 shows the MREC site in relation to the construction laydown and worker parking area.

2.1.17 Generating Facility Operation

The MREC will have an operations and maintenance (O&M) manager, business supervisor, and instrument technician working during the standard 5-day, 8-hours per day work week. Additionally, the facility will be manned by an operator on a 24-hour basis, using rotating 12-hour shifts.

The MREC is expected to have an annual plant availability of 92 to 98 percent, including scheduled outages for maintenance and forced outages. Mission Rock expects to operate the MREC as a peaker unit, with some amount of load following and cycling. It is expected that the primary purpose of theMREC will be to provide generation capacity during peak season (summer) high demand periods. The facility is expected to be operated during high demand times (typically afternoon hours) to supplement base-load and renewable generation capacity. The exact operational profile of the plant, however, cannot be defined in detail since operation of the facility depends on the variable demand in the MREC service area.

The facility may be operated in one or all of the following modes:

- **Load Following**. The facility would be operated at loads that may vary between maximum continuous output (all of the CTGs operating at base load) and minimum load (one CTG operating as low as 25-percent load) to meet electrical demand.
- **Daily Cycling**. During high demand periods, the facility may be operated in daily cycling mode, where the plant is operated at loads up to maximum continuous output during the day and totally shut down at night or on weekends. This mode of operation may occur either with daily nighttime shutdowns or with weekend shutdowns depending on electrical demand, hydroelectric power availability, and other issues. The facility may cycle more than once a day to accommodate the grid's voltage support needs.
- **Storage System.** The energy storage system will be dispatched by the need of CAISO or SCE and can be charged/discharged daily, potentially multiple times, and provide blackstart capability and other ancillary services.
- **Synchronous Condenser.** Any one or multiple generators can be used in synchronous condenser mode when the turbines are not running. To operate in this mode, the turbines will spin the generator to operating speed, then a clutch will disengage the turbine from the generator and the turbine can then be shutdown. During this mode, the generator is held at synchronous speed by the grid and the generator voltage and voltage-ampere reactives can be adjusted as the grid requires to the limit of the generator.

2.2 Engineering

In accordance with CEC regulations, this section, together with the engineering appendix (Appendix 2A, Design Criteria), and Sections 3.0 and 4.0, presents information concerning the design and engineering of the MREC. The LORS applicable to MREC's engineering are provided along with a list of agencies that have jurisdiction, the contact persons within those agencies, and a list of the permits that will be required.

2.2.1 Facility Design

Summary descriptions of the design criteria for all of the major engineering disciplines are included in Appendix 2A, Design Criteria:

Design and engineering information and data for the following systems are found in the following subsections of this AFC:

- Power Generation—See Section 2.3.5, Combustion Turbine Generators. Also see Appendix 2A and Sections 2.3.6 through 2.3.14, which describe the various plant auxiliaries.
- Heat Dissipation—See Section 2.3.8.
- Water Supply System—See Section 2.3.9, Water Supply and Use; and Appendix 2A.
- Air Emission Control System—See Section 2.3.12, Emission Control and Monitoring, and Section 5.1, Air Quality.
- Waste Disposal System—See Section 2.3.10 and Section 5.14, Waste Management.
- Noise Abatement System—See Section 5.7, Noise.
- Switchyards/Transformer Systems—See Section 2.3.6, Major Electrical Equipment and Systems; Section 2.3.14.2, Grounding; Section 2.3.6.1, AC Power—Transmission; Section 2.3.15, Interconnect to Electrical Grid; Section 3.0, Electric Transmission; and Appendix 2A.

2.2.1.1 Facility Safety Design

The MREC will be designed to maximize safe operation. Potential hazards that could affect the facility include earthquake, flood, and fire. Facility operators will be trained in safe operation, maintenance, and emergency response procedures to minimize the risk of personal injury and damage to the plant.

2.2.2 Facility Reliability

This section discusses the expected facility availability, equipment redundancy, fuel availability, water availability, and project quality control measures.

2.2.2.1 Facility Availability

The MREC will be designed to operate between about 5 percent (25 percent of one of five turbines) and 100 percent of base load, or nominally 14 MW to 286 MW, to support dispatch service in response to customer demands for electricity.

The MREC will be designed for an operating life of 35 years. Reliability and availability projections are based on this operating life. Operation and maintenance procedures will be consistent with industry standard practices to maintain the useful life of plant components.

The equivalent availability factor (EAF), which considers the projected percent of energy production capacity achievable. The EAF may be defined as a weighted average of the percent of full energy production capacity achievable. The projected EAF for the MREC is estimated to be approximately 92 to 98 percent.

The EAF, which is a weighted average of the percent of energy production capacity achievable, differs from the "availability of a unit," which is the percent of time that a unit is available for operation, whether at full load, partial load, or standby.

2.2.2.2 Redundancy of Critical Components

The following subsections identify equipment redundancy as it applies to project availability. A summary of equipment redundancy is shown in Table 2.2-1. Final design could differ.

Table 2.2-1 Major Equipment Redundancy

Description	Number of Units
Simple-cycle CTGs	5 - each capable of independent operation
Batteries	20 containers of batteries, 5 inverters, 2 medium voltage transformers
Fuel gas booster compressors	3 - 100-percent capacity
Demineralizer system	2 - 100-percent capacity
Demineralized water forwarding pumps	2 - 100 percent
Recycled water forwarding pumps	3 - 50 percent
Inlet air chiller	2 - 50 percent capacity
Primary chilled water pumps	4 - 50 percent (2 x 50 per chiller package)
Chiller condensing cooling water pumps	4 - 50 percent (2 x 50 per chiller package)
Ammonia transfer pumps	2 - 100 percent
Service water supply pumps	2 - 50 percent
Air compressors	2 - 100 percent
Fire water pump	1 - 100 percent

2.2.2.3 Fuel Availability

Fuel will be delivered via a new 16-inch-diameter pipeline serving the MREC site. This pipeline will interconnect with SoCalGas's existing high-pressure natural gas pipeline (Line 404/406). A pipeline study prepared by SoCalGas is included in Appendix 2B.

2.2.2.4 Water Availability

Potable water for drinking, safety showers, and sanitary uses will be produced by bag filtration and chlorination of local potable water supplied by the City of Santa Paula. Fire protection water, service water, and landscape irrigation uses will be recycled water treated at the Limoneira Company's treatment plant, piped to the facility along a new 1.7-mile pipeline route that connects with the Limoneira Company's existing recycled water line.

The availability of water to meet the MREC's needs is discussed in more detail in Section 5.15, Water Resources. A will-serve letter from the Limoneira Company is included in Appendix 2C.

2.2.2.5 Project Quality Control

The quality control program that will be applied to the MREC is summarized in this subsection. The objective of the Quality Control Program is to ensure that all systems and components have the appropriate quality measures applied; whether during design, procurement, fabrication, construction, or operation. The goal of the quality control program is to achieve the desired levels of safety, reliability, availability, operability, constructability, and maintainability for the generation of electricity.

The required quality assurance for a system is obtained by applying controls to various activities, according to the activity being performed. For example, the appropriate controls for design work are checking and review, and the appropriate controls for manufacturing and construction are inspection and testing. Appropriate controls will be applied to each of the various activities for the MREC.

Project Stages

For quality assurance planning purposes, the MREC activities have been divided into eight stages that apply to specific periods during the project. As the MREC progresses, the design, procurement, fabrication, erection, and checkout of each generating facility system will progress through the eight stages defined below:

- Conceptual Design Criteria - Activities such as definition of requirements and engineering analyses.
- Detail Design - Activities such as the preparation of calculations, drawings, and lists needed to describe, illustrate, or define systems, structures, or components.
- Procurement Specification Preparation - Activities necessary to compile and document the contractual, technical, and quality provisions for procurement specifications for plant systems, components, or services.
- Manufacturer's Control and Surveillance - Activities necessary to ensure that the manufacturers conform to the provisions of the procurement specifications.
- Manufacturer Data Review - Activities required to review manufacturers' drawings, data, instructions, procedures, plans, and other documents to ensure coordination of plant systems and components, and conformance to procurement specifications.
- Receipt Inspection - Inspection and review of product at the time of delivery to the construction site.
- Construction/Installation - Inspection and review of storage, installation, cleaning, and initial testing of systems or components at the facility.
- System/Component Testing - Actual operation of generating facility components in a system in a controlled manner to ensure that the performance of systems and components conform to specified requirements.

2.1.1.1.1 Quality Control Records

The following quality control records will be maintained for review and reference:

- Project instructions manual
- Design calculations
- Project design manual
- Quality assurance audit reports
- Conformance to construction records drawings
- Procurement specifications (contract issue and change orders)
- Purchase orders and change orders
- Project correspondence

For procured component purchase orders, a list of qualified suppliers and subcontractors will be developed. Before contracts are awarded, the subcontractors' capabilities will be evaluated. The evaluation will consider suppliers' and subcontractors' personnel, production capability, past performance, and quality assurance program.

During construction, field activities are accomplished during the last four stages of the project: receipt inspection, construction/installation, system/component testing, and plant operations. The construction contractor will be contractually responsible for performing the work in accordance with the quality requirements specified by contract.

The subcontractors' quality compliance will be surveyed through inspections, audits, and administration of independent testing contracts.

A plant operation and maintenance program, typical of a project this size, will be implemented by MREC to control operation and maintenance quality. A specific program for this project will be defined and implemented during initial plant startup.

2.2.3 Thermal Efficiency

The maximum thermal efficiency that can be expected from a natural gas-fired simple-cycle plant using GE LM6000 combustion turbine units is approximately 40 percent on an HHV basis, and 55 to 56 percent on a lower heating value basis. This level of efficiency is achieved when a facility is base-loaded at annual average ambient conditions. Other types of operations, particularly those at less than full gas turbine output, will result in lower efficiencies. The basis of MREC operations will be system dispatch within California's power generation and transmission system. It is expected that MREC will be primarily operated in load following or cycling service. The number of startup and shutdown cycles is expected to range between zero and 150 per year per CTG.

Plant fuel consumption will depend on the operating profile of the power plant. It is estimated that the range of fuel consumed by the power plant will be from a minimum of near zero British thermal units (Btu) per hour to a maximum of approximately 2,780 MMBtu per hour (HHV basis) at 100-percent load and average ambient conditions.

The net annual electrical production of MREC cannot be accurately forecasted at the present time due to uncertainties in the system load dispatching model and the associated policies. The maximum annual generation possible from the facility is estimated to be approximately 711.5 gigawatt hours per year, based on a permitted operating limitation of combined total of 12,483 CTG operating hours per year.

2.3 Facility Closure

MREC closure can be temporary or permanent. Temporary closure is defined as a shutdown for a period exceeding the time required for normal maintenance, with an intent to restart in the future. Causes for temporary closure include a disruption in the supply of natural gas or damage to the plant from earthquake, fire, storm, or other natural acts. Permanent closure is defined as a cessation in operations with no intent to restart operations. Section 2.3.1 discusses temporary facility closure and Section 2.3.2 discusses permanent facility closure.

2.3.1 Temporary Closure

For a temporary closure where there is no release of hazardous materials, Mission Rock will maintain security of the MREC facilities and will notify the CEC and other responsible agencies, as required by law. Where the temporary closure includes damage to the MREC, and there is a release or threatened release of regulated substances or other hazardous materials into the environment, procedures will be followed as set forth in a Risk Management Plan and a HMBP to be developed as described in Section 5.5. Procedures will include methods to control releases, notification of applicable authorities and the public, emergency response, and training for plant personnel in responding to and controlling releases of hazardous materials. Once the immediate problem is solved, and the regulated substance/hazardous material release is contained and cleaned up, temporary closure will proceed as described above for a closure where there is no release of hazardous materials.

2.3.2 Permanent Closure

If the facility is permanently closed, the closure procedure will follow a plan that will be developed as described below.

The conditions that would affect the decommissioning decision are largely unknown at this time, and therefore these conditions would be presented to the CEC when more information is available and the timing for decommissioning is more imminent.

To ensure that public health and safety and the environment are protected during decommissioning, a decommissioning plan will be submitted to the CEC for approval prior to decommissioning. The plan will discuss the following:

- Proposed decommissioning activities for the MREC and all appurtenant facilities constructed as part of the MREC
- Conformance of the proposed decommissioning activities to all applicable LORS and local/regional plans
- Activities necessary to restore the MREC if the plan requires removal of all equipment and appurtenant facilities
- Decommissioning alternatives other than complete restoration
- Associated costs of the proposed decommissioning and the source of funds to pay for the decommissioning

In general, the decommissioning plan for the MREC will attempt to maximize the recycling or reuse of all facility components. All nonhazardous wastes will be collected and disposed of in appropriate landfills or waste collection facilities. All hazardous wastes will be disposed of according to all applicable LORS.

2.4 References

Federal Emergency Management Agency (FEMA). Flood Map Service Center. http://msc.fema.gov/portal. Accessed September 2015.