DOCKETED

Docket Number:	79-AFC-05C
Project Title:	Compliance - Application for Certification for PG&E Geysers Unit 16 (78-NOI-6)
TN #:	222036
Document Title:	PTA Geysers-16, Quicksilver, Diesel Generator for Cooling Tower Wetting System
Description:	Petition to Amend (PTA) to install a permanent diesel generator for the cooling tower wetting system
Filer:	Patty Paul
Organization:	Geysers Power Company, LLC
Submitter Role:	Applicant
Submission Date:	12/21/2017 12:10:14 PM
Docketed Date:	12/21/2017

NYSE CPN

GEYSERS POWER COMPANY, LLC
10350 SOCRATES MINE ROAD
MIDDLETOWN, CA 95461

December 18, 2017

GPC 17-046

Mr. Eric Veerkamp
Compliance Project Manager
California Energy Commission
1516 Ninth Street, MS-2000
Sacramento, CA 95814

Subject: Permits - Minor Improvements to Fire Prevention Cooling Tower Wet-down Systems at

GPC Quicksilver Power Plant	Geysers Unit 16 Docket: 79-AFC-05C
GPC Socrates Power Plant	Geysers Unit 18 Docket: 79-AFC-03C
GPC Grant Power Plant	Geysers Unit 20 Docket: 82-AFC-01C

Dear Mr. Veerkamp:

Pursuant to Section 1769 of the California Energy Commission ("CEC") Siting Regulations, Geysers Power Company, LLC ("GPC") hereby submits these consolidated Petitions for Staff Approved Modifications to replace temporary portable emergency diesel engines with stationary emergency diesel engines for the cooling tower wet down systems at the Quicksilver, Socrates and Grant geothermal power plants (**Attachment II**, these "Petitions"). Fees in the amounts of $5,000 for each facility ($15,000 total) are attached herein as required for the commission staff to process these petitions (**Attachment I**).

In 2016, GPC began the installation of the staff reviewed cooling tower wet down systems at all of the Geysers power plants. GPC has operated the installed cooling tower wet down systems with temporary portable emergency diesel engines permitted by CARB in the portable equipment registration program (PERP). GPC has carefully reviewed the fire prevention systems at the Geysers. In light of recent northern California wild fires, GPC is making further minor improvements to enhance availability and reliability of the fire prevention systems.

Permanent stationary engines are necessary to improve the availability and reliability of the wet-down systems during a wild land fire, in the event of a power failure. Applications for Authority to Construct permits for stationary emergency standby diesel engines have been submitted to the local air districts (**Attachment III**). Consistent with the District's Rules and standard practices, the Authority to Construct Permits have been issued by NSCAPCD for the emergency standby wet-down pump diesel drive engines at the Socrates and Grant power plants (**Attachment IV**). GPC expects approval from the LCAQMD for the Quicksilver power plant in the near future. Installation of these engines is needed early in the first quarter of 2018 in order to meet a schedule for operational readiness of the systems by the beginning of May 2018.

Replacement of the temporary portable engines with permanent stationary engines will not result in a significant effect on the environment. The Project will continue to comply with all applicable laws, ordinances, regulations, and standards ("LORS). The facilities will continue to meet all existing emissions limits established in the existing permits. There are no conditions or certifications that need to be changed for these facilities. Accordingly, the consolidated Petitions should be approved as Staff Approved Modifications in each respective Docket.

Please contact Bruce Carlsen at (707) 431-6198 if you have any questions.

James Kluesener

James Kluesener
Regional Vice President, Geothermal Operation

Attachments

Attachment I

GPC Checks totaling $15,000

(Required to accompany all petitions requesting the commission staff consideration)

- **GPC Check (1000098476): in the amount of $5,000 for Quicksilver -Geysers Unit 16 Docket: 79-AFC-05C**
- **GPC Check (1000098478): in the amount of $5,000 for Socrates - Geysers Unit 18 Docket: 79-AFC-03C**
- **GPC Check (1000098477): in the amount of $5,000 for Grant - Geysers Unit 20 Docket: 82-AFC-01C**

CALPINE
GEYSERS PWR CO, LLC
5000 John Kingeade Road
Middletown, CA 95461

90-4150/1222
9080015043

Check Number 1000098476

DATE Dec/18/2017

PAY ****FIVE THOUSAND AND XX / 100 DOLLAR****

$5,000.00

CALIFORNIA ENERGY COMMISSION

VOID

CALPINE
GEYSERS PWR CO, LLC
5000 John Kingeade Road
Middletown, CA 95461

90-4150/1222
9080015043

Check Number 1000098478

DATE Dec/18/2017

PAY ****FIVE THOUSAND AND XX / 100 DOLLAR****

$5,000.00

CALIFORNIA ENERGY COMMISSION

VOID

CALPINE
GEYSERS PWR CO, LLC
5000 John Kingeade Road
Middletown, CA 95461

90-4150/1222
9080015043

Check Number 1000098477

DATE Dec/18/2017

PAY ****FIVE THOUSAND AND XX / 100 DOLLAR****

$5,000.00

TO THE ORDER OF CALIFORNIA ENERGY COMMISSION
1516 NINTH STREET MS 15
SACRAMENTO, CA 95814-5512

VOID

MUFG UNION BANK, N.A.
San Francisco, CA

Authorized Signature

VOID

Security features included. Details on back.

⑈1000098477⑈ ⑆122241501⑆ 9080015043⑈

Attachment II

GEYSERS POWER COMPANY, LLC

CONSOLIDATED PETITION FOR A STAFF APPROVED MODIFICATIONS

GPC Quicksilver Power Plant	**Geysers Unit 16 Docket: 79-AFC-05C**
GPC Socrates Power Plant	**Geysers Unit 18 Docket: 79-AFC-03C**
GPC Grant Power Plant	**Geysers Unit 20 Docket: 82-AFC-01C**

Pursuant to Section 1769 of the California Energy Commission's Siting Regulations, Geysers Power Company, LLC (GPC) hereby submits the following information in support of a staff approved modification.

Section 1769 (a)(l)(A) and (B): a description of the proposed modifications, including new language for affected conditions and the necessity for the modifications.

In 2016 GPC began the installation of the Commission-approved cooling tower wet down systems at all of the Geysers power plants. GPC has operated the installed cooling tower wet down systems with temporary portable emergency diesel engines permitted by CARB in the portable equipment registration program (PERP). GPC plans to replace the temporary PERP engines used for fire prevention with stationary emergency standby wet-down pump diesel drive engines.

Approval of the Petition will not result in a significant effect on the environment. The facilities will continue to comply with all applicable laws, ordinances, regulations, and standards ("LORS"). The facilities will continue to meet all existing emissions limits established in the existing permits. There are no conditions or certifications that need to be changed for these facilities.

Section 1769(a)(l)(C): whether the modification is based on information that was known by the petitioner during the certification proceeding, and an explanation of why the issue was not raised at that time.

The proposed modifications are not based upon information that was known during the certification proceeding for the facilities. The modifications are part of CPC's overall efforts to increase fire prevention in light recent northern California fires threatening the facilities.

Section 1769(a)(l)(D): whether the modification is based on new information that changes or undermines the assumptions, rationale, findings, or other bases of the final decision, and explanation of why the change should be permitted.

The modifications do not change or undermine the assumptions, rationale, findings, or other bases of the Commission's decision certifying the facilities. The changes should be permitted to enhance fire protection capabilities.

Section 1769(a)(l)(E): the potential impacts the modifications may have on the environment and proposed measures to mitigate any significant adverse impacts.

The Districts' approvals through their CEQA-compliant processes confirm that there is no possibility that the proposed modifications will result in any significant adverse environmental impacts; thus, no additional mitigation measures are required. The facilities will continue to meet all existing emissions limits established in the existing permits

Attachment II

GEYSERS POWER COMPANY, LLC

CONSOLIDATED PETITION FOR A STAFF APPROVED MODIFICATIONS

GPC Quicksilver Power Plant	**Geysers Unit 16 Docket: 79-AFC-05C**
GPC Socrates Power Plant	**Geysers Unit 18 Docket: 79-AFC-03C**
GPC Grant Power Plant	**Geysers Unit 20 Docket: 82-AFC-01C**

Section 1769(a)(l)(F): the potential impact of the modification on the facility's ability to comply with applicable laws, ordinances, regulations, and standards.

The District's approvals confirm that the proposed modifications will not impact the facilities ability to comply with applicable laws, ordinances, regulations, and standards ("LORS").

Section 1769(a)(l)(G): how the modifications affect the public.

As the Districts' approvals confirm, the proposed modification will not adversely affect the public. The modifications will not negatively impact the environment or public health. Therefore, there are no significant adverse effects on property owners that will result from the proposed modification.

Section 1769(a)(l)(H): property owners potentially affected by the modification.

The proposed modifications will have no significant environmental effects and will be in compliance with applicable LORS. Therefore, no property owners will be potentially affected by the modifications.

Section 1769(a)(l)(I): potential effect on nearby property owners, the public and the parties in the application proceeding.

The proposed modifications will have no significant environmental effects and will be in compliance with applicable LORS. Therefore, the proposed changes will have no impact on property owners, the public, or any other parties.

Attachment III

Authority to Construct Permit Applications

- **Attachment III - Exhibit A**: Unit 18 Emergency Standby wet-down Pump Diesel Drive Engine, Application for and Authority to Construct.
- **Attachment III – Exhibit B:** Unit 20 Emergency Standby wet-down Pump Diesel Drive Engine, Application for and Authority to Construct.
- **Attachment III - Exhibit C:** Unit 16 Emergency Standby wet-down Pump Diesel Drive Engine, Application for and Authority to Construct,
- **Attachment III - Exhibit D:** Cummins Diesel Engine Specification, (common to each application)
- **Attachment III - Exhibit E:** EPA Certificate of Conformance (common to each application)

Attachment III
Authority to Construct Permit Applications

Exhibit A:

Unit 18 Emergency Standby Wet-down Pump Diesel Drive Engine

NORTHERN SONOMA COUNTY
AIR POLLUTION CONTROL DISTRICT
PERMIT APPLICATION FORM

BUSINESS NAME: **Geyser Power Company LLC** FACILITY ID # **6015**

Socrates Power Plant: Location of The Emergency Diesel Engine is shown on **Attachment 1**

TYPE OF PERMIT APPLIED FOR:

AUTHORITY TO CONSTRUCT	☑	EPA ID	**CAT080011521**
PERMIT TO OPERATE	☑	SIC CODE	**4911**
TRANSFER OF OWNERSHIP	☐		
PERMIT MODIFICATION	☐		

GENERAL INFORMATION

Other Business Name Geysers Power Company LLC Parent Company Calpine Corporation (if any)

Mailing Address: 10330 Socrates Mine Road, Middletown, CA 95461
Street address or P.O. Box City State Zip Code

Phone Number: (707) 431-6266 Fax Number: 707) 431-6246

Plant Address: 10330 Socrates Mine Road Middletown, CA 95461
Street address or P.O. Box City State Zip Code

Phone Number: (707) 431-6266 Fax Number: 707) 431-6246

Principal Product / Operation: Geothermal Electric Power Generation

Name of Responsible Official: James Kluesener Title: VP Geothermal Region

Total # of Sources:	2	# of Permitted	2
# of Exempt Sources		Emission Sources:	2
Plant Area (Acres)	5.7	# of Employees:	~300

Is the business/facility/operation located within 1,000 feet of the outer boundary of a school or school site?

YES _____ NO **X**

Are all major sources (emissions >25 tons per year) owned or operated by application in California in compliance with all air pollution rules and regulations?

YES **X** NO _____ N/A _____

If not in compliance above, is(are) the source(s) on a schedule for compliance with all applicable emission limitations and standards?

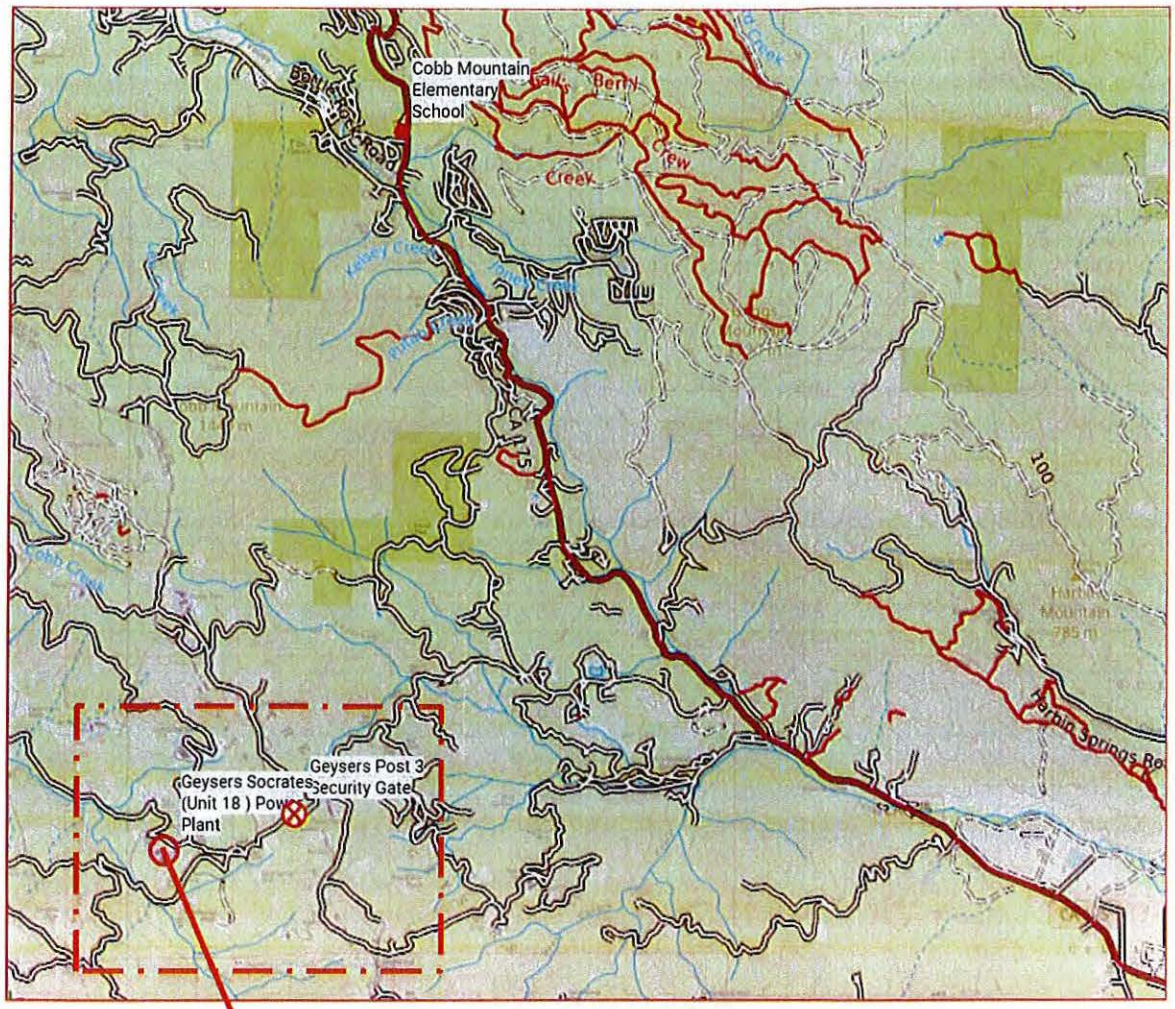
YES _____ NO _____ N/A **X**

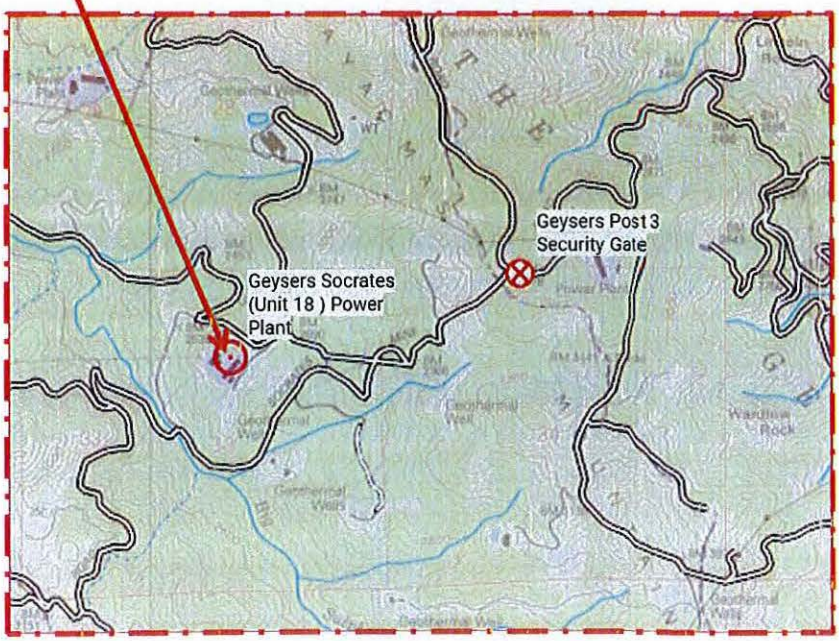
Name: **Brian Berndt** Title: **EHS Manager**
(Printed)

Signature  Date: 11/6/2017

Fees **$943.00** Receipt # _____ Date Received _____

Map Showing location of Geysers Socrates (Unit 18) Power Plant





Project Description, For the Emergency Standby Wet Down Pump Diesel Drive Engine at the Socrates (Unit 18) Power Plant

BACKGROUND:

Cooling tower wet down systems are common on wood cooling towers and are used to keep the normally wetted surfaces of the cooling tower structure wet when the cooling tower is not in operation to preserve the wood. Typically when a plant shuts down for an overhaul and the cooling tower is not circulating water, auxiliary or fire pumps are turned on to sprinkle areas of the cooling tower that can dry out, become damaged and more vulnerable to fire. These systems are not subject to NFPA or other codes. Impact spray nozzles (Rainbird™-style) are often used because they provide large coverage areas.

The desire for wetting is particularly true of cooling towers that use geothermal steam condensate for cooling. This is because, as hydrogen sulfide contained in the geothermal steam condensate is oxidized to soluble sulfur compounds, it becomes elemental sulfur for a period of time and can coat the wetted surfaces of the tower. Sulfur is a flammable solid that has a relatively low ignition temperature. Utilizing a wet down system has been very successful in preventing the ignition of cooling towers in the geothermal industry during outages.

Wet down systems are not to be confused with fire suppression systems. A wet down system prevents the ignition of vulnerable surfaces while fire suppression systems are designed to douse fires after ignition occurs. Typically the water pumping capacity of a fire suppression system is very large and the coverage area is very small and focused (able to cover a couple of cells). Deluge systems that typically do not cover the fan or hot water decks and have limited coverage are judged not a good defense against wild land fires.

During the 2015 Valley Fire, four and one half cooling towers were fire damaged at several Geysers power plants. Some of these cooling towers ignited while there was full cooling circulation water flow. Analysis of the burned cooling towers indicates that the center of the cooling towers burned in the non-wetted areas such as the fan deck and the area below the fans (plenum area). Field observations on cooling towers that did not burn showed indications that burning embers were deposited on the fan deck by the wild land fire as it passed the power plant.

NEW COOLING TOWER AT THE SOCRATES POWER PLANT

The new cooling tower is constructed with fire resistant fiber reinforced plastic (FRP). This is a great improvement over more combustible treated wood cooling towers. Nonetheless, a wet down system is installed in the new cooling tower to wet areas where sulfur may be found, including spray coverage in the non-wetted areas such as the fan deck, hot water basin, plenum and perimeter outboard areas for increased protection from wild land fire embers.

Project Description, For the Emergency Standby Wet Down Pump Diesel Drive Engine at the Socrates (Unit 18) Power Plant

PROJECT DESCRIPTION

A permanent emergency standby wet down pump diesel drive engine is being added for use in the event of a plant evacuation due to the threat of an approaching wild land fire. The location of the emergency standby wet down pump diesel drive engine is shown adjacent to the cooling tower circulating water pit on the Socrates Power Plant Plot Plan (**Attachment 1**).

The emergency standby wet-down pump diesel drive engine will be manually started prior to evacuation of the power plant due to an approaching wild land fire to provide continued wet down of the cooling tower for approximately 24 hours or longer depending on fuel consumed. Particulate and other exhaust emissions resulting from the operation of the diesel engine would be consistent with manufacturer's specifications for this Tier 3 engine. The exhaust emissions from the engine during emergency use would be virtually undetectable amidst the combustion emissions resulting from an uncontrolled wild land fire.

TESTING AND MAINTENANCE:

Annual testing and maintenance operation hours are limited to no more than 50 hours. Test operation routines will vary through the year with more frequent test operations occurring during the dry season and less frequent test operation occurring during wet seasons. The hour meter indications will be logged as a result of routine inspections and at the start and completion of test and maintenance operations to ensure that annual hours of emergency use, and annual hours of test and maintenance operation are recorded.

APPLICABLE REGULATIONS

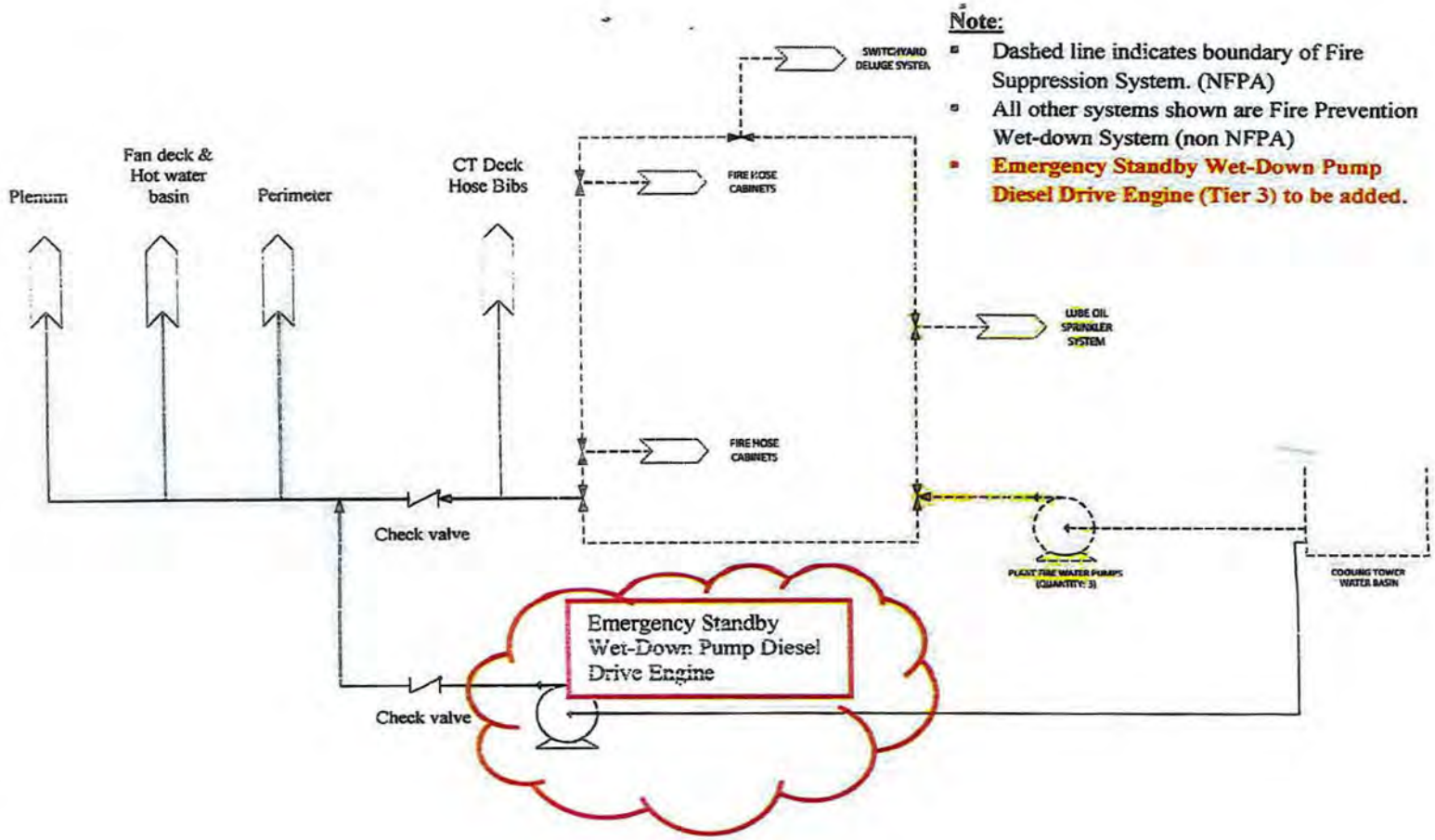
Title 17, California Code of Regulations section 93115 Airborne Toxic Control Measure for Stationary Compression Ignition (CI) Engines.

The Emergency Standby Wet-Down Pump Diesel Drive Engine meets the required criteria of § 93115.4 (29) for definition as an "Emergency Standby Engine" pursuant to (29) (A), (B), (C), (D), and (E).

Operation of the Emergency Standby Wet-Down Pump Diesel Drive Engine meets multiple criteria of § 93115.4 (30) for definition as "Emergency Use" pursuant to (30) (A), (B), and (D), and (F).

The Emergency Standby Wet Down Diesel Drive Engine meets the requirement of 93115.6(a)(3)(A)(1) Table 1: Emission Standards for New Stationary Emergency Standby Diesel-Fueled CI Engines.

Figure 1
Flow Diagram Showing Emergency Standby Wet Down Pump Diesel Drive Engine
Cummins Model CFP7EVS-F40



NORTHERN SONOMA COUNTY
AIR POLLUTION CONTROL DISTRICT

150 MATHESON STREET
HEALDSBURG, CA 95448
(707) 433-5911

DIESEL ENGINE
PERMIT APPLICATION FORM

1. Business Name **Geysers Power Company LLC (Socrates Power Plant)**

2. Engine Manufacturer **Cummins**

   Engine Family **HCEXL0409AAB** Model **CFP7E-F40 or CFP7VS-40 series QSB6.7**

   Serial Number **To be Provided Upon Delivery** Year of Manufacture **2017**

   Rated Brake Horsepower Rating **204**

3. Engine Emission Factors (g/bhp-hr)

   NOx **2.475** PM **0.111** NMHC **0.062** NMHC + NOx **2.537** CO **1.193**

   Control Equipment: [X] Turbocharger [] Aftercooler [] Injection Timing Retard [] Catalyst [] Diesel Particulate Filter [X] **Other Charge Air Cooled**

4. Fuel Used: [X] CARB Diesel [] Diesel [] Other _____

5. Operation Information:

   Engine Operating Time for Testing and Maintenance: **50** hrs/yr

   Typical load **100** % of maximum bhp rating

   Total annual hours of operation **>50** hrs/yr

   Fuel usage rate **10.6** gallons/hr

6. Does the engine participate in an Interruptible Service Contract (ISC) **No**

7. Person completing this form **Brian Berndt** Date **11/6/2017**

Manufacturers Specification Sheet for the diesel engine provided (**Attachment 2**).

U.S. EPA Certificate of Conformity with the Clean Air Act provided (**Attachment 3**).

NORTHERN SONOMA COUNTY
AIR POLLUTION CONTROL DISTRICT

150 MATHESON STREET
HEALDSBURG, CA 95448
(707) 433-5911

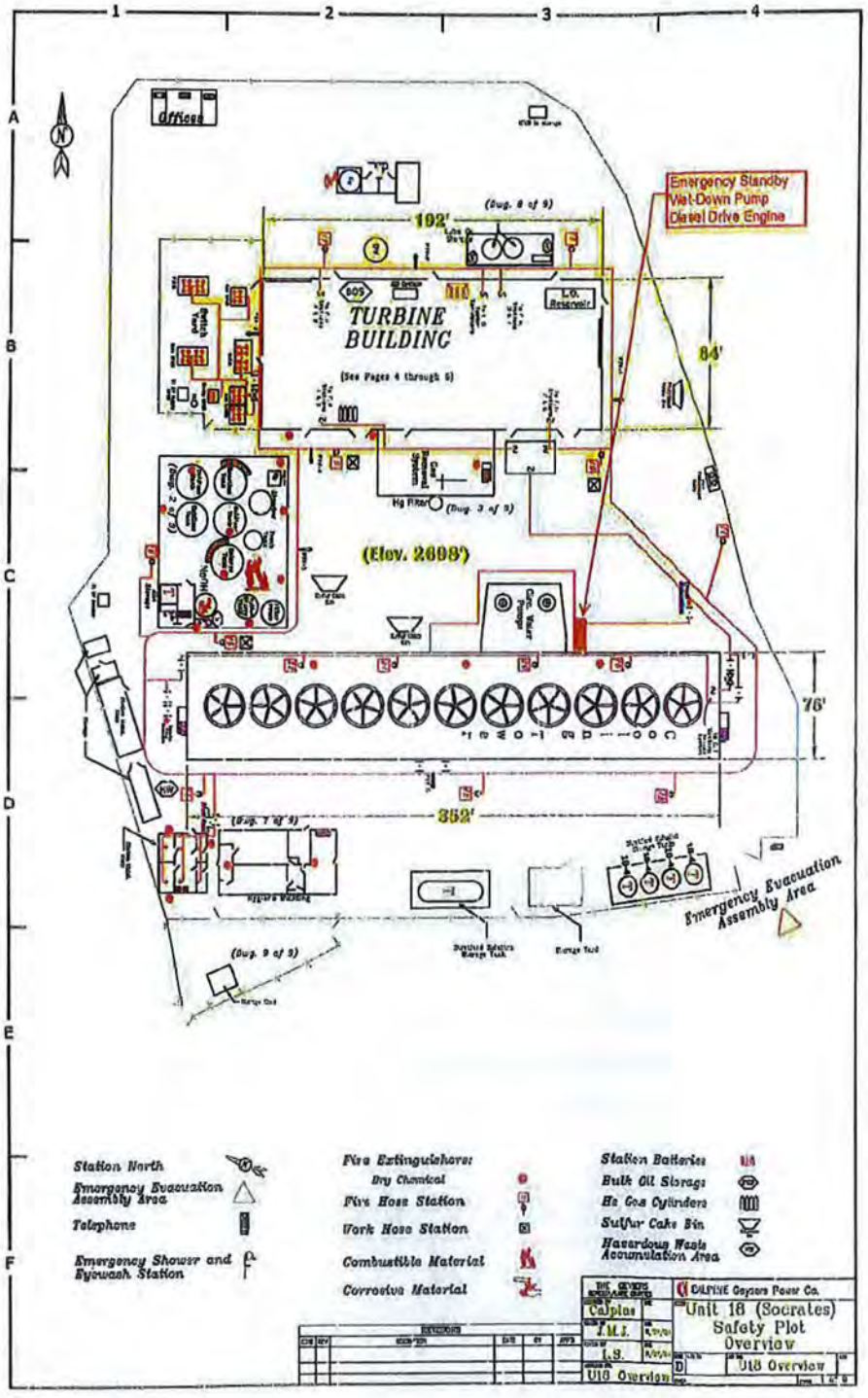
EXHAUST STACK AND BUILDING DIMENSIONS FORM

1. Business Name **Geysers Power Company LLC, (Socrates Power Plant)**
2. Exhaust Stack Height Above Ground **~9.8** ft
3. Exhaust Stack Height Above Top of Building **51.8** ft (Exhaust stack will be below the top of the adjacent building.)
4. Exhaust Stack Diameter **0.333** ft
5. Exhaust Stack Flowrate **1,218** CFM
6. Exhaust Stack Direction [X] Up [] Down [] Side Raincap [X] Yes [] No
7. Exhaust Stack Gas Temperature **853** °F
8. Nearest Building Dimensions L **352.7'** W **78.2'** H **61.6'**
9. Distance from stack to nearest property line **4,200** ft *
10. Distance to nearest school grounds **4.4** mi**
11. Person completing this form **Brian Berndt** Date 11/16/2017

* Distance given is from the engine stack to the property gate at the Socrates mine road Gate Post 3.

** Distance given is from the engine stack to the Cobb Mountain Elementary School.

Attachment 1
Socrates Power Plant Plot Plan Showing the Emergency Standby Wet-Down Pump Diesel Drive Engine Location



Attachment III

Authority to Construct Permit Applications

Exhibit B:

Unit 20 Emergency Standby Wet-down Pump Diesel Drive Engine

NORTHERN SONOMA COUNTY
AIR POLLUTION CONTROL DISTRICT
PERMIT APPLICATION FORM

BUSINESS NAME: **Geyser Power Company LLC** FACILITY ID # **6016**

Grant Power Plant: Location of The Emergency Diesel Engine is shown on **Attachment 1**

TYPE OF PERMIT APPLIED FOR:

AUTHORITY TO CONSTRUCT	☑	EPA ID	**CAT080011521**
PERMIT TO OPERATE	☑	SIC CODE	**4911**
TRANSFER OF OWNERSHIP	☐		
PERMIT MODIFICATION	☐		

GENERAL INFORMATION

Other Business Name Geysers Power Company LLC Parent Company (if any) Calpine Corporation

Mailing Address: 10330 Socrates Mine Road, Middletown, CA 95461
Street address or P.O. Box / City / State / Zip Code

Phone Number: (707) 431-6266 Fax Number: 707) 431-6246

Plant Address: 9500 Geysers Road Cloverdale CA 95425
Street address or P.O. Box / City / State / Zip Code

Phone Number: (707) 431-6701 Fax Number: 707) 431-6801

Principal Product / Operation: Geothermal Electric Power Generation

Name of Responsible Official: James Kluesener Title: VP Geothermal Region

Total # of Sources:	2	# of Permitted Emission Sources:	2
# of Exempt Sources			
Plant Area (Acres)	6.6	# of Employees:	~300

Is the business/facility/operation located within 1,000 feet of the outer boundary of a school or school site?

YES _____ NO **X**

Are all major sources (emissions >25 tons per year) owned or operated by application in California in compliance with all air pollution rules and regulations?

YES **X** NO _____ N/A _____

If not in compliance above, is(are) the source(s) on a schedule for compliance with all applicable emission limitations and standards?

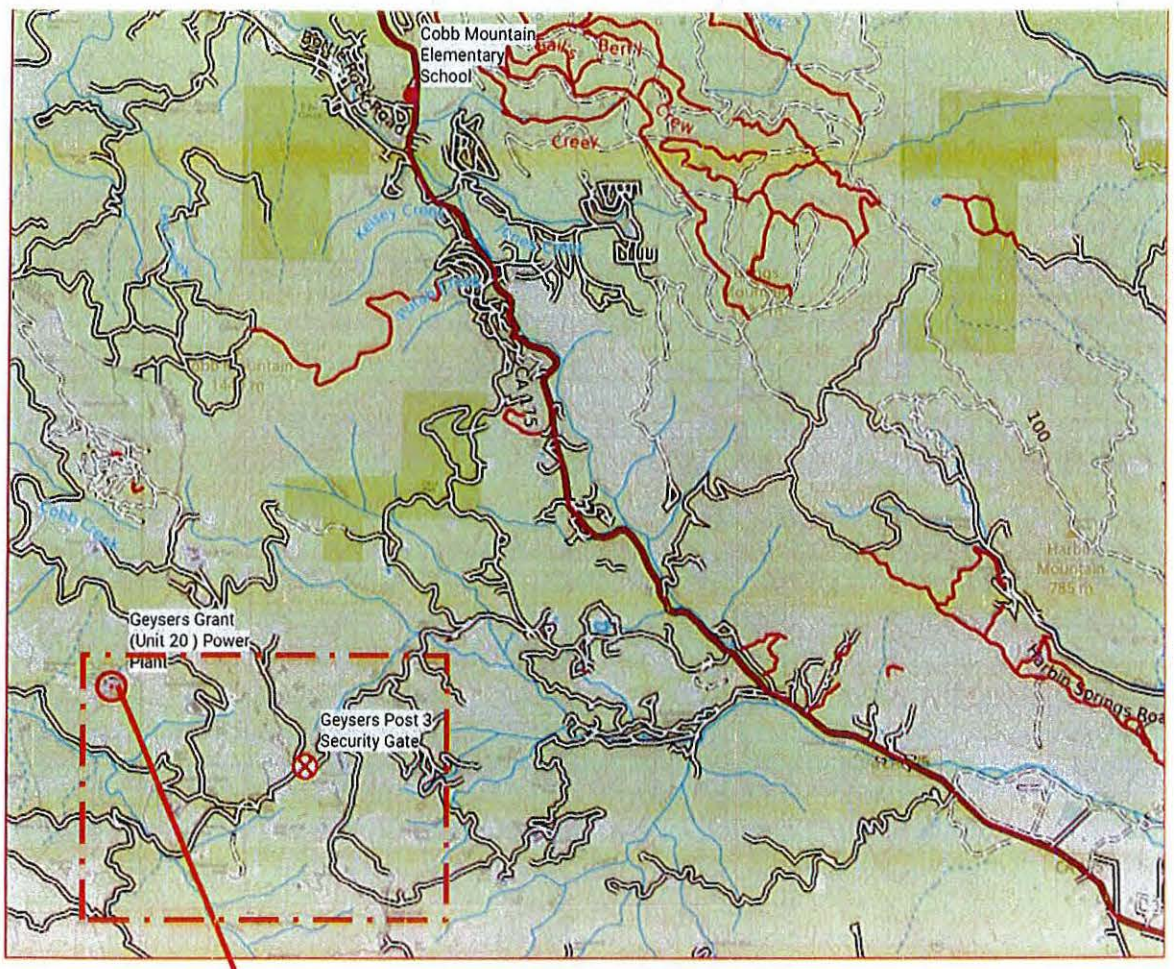
YES _____ NO _____ N/A **X**

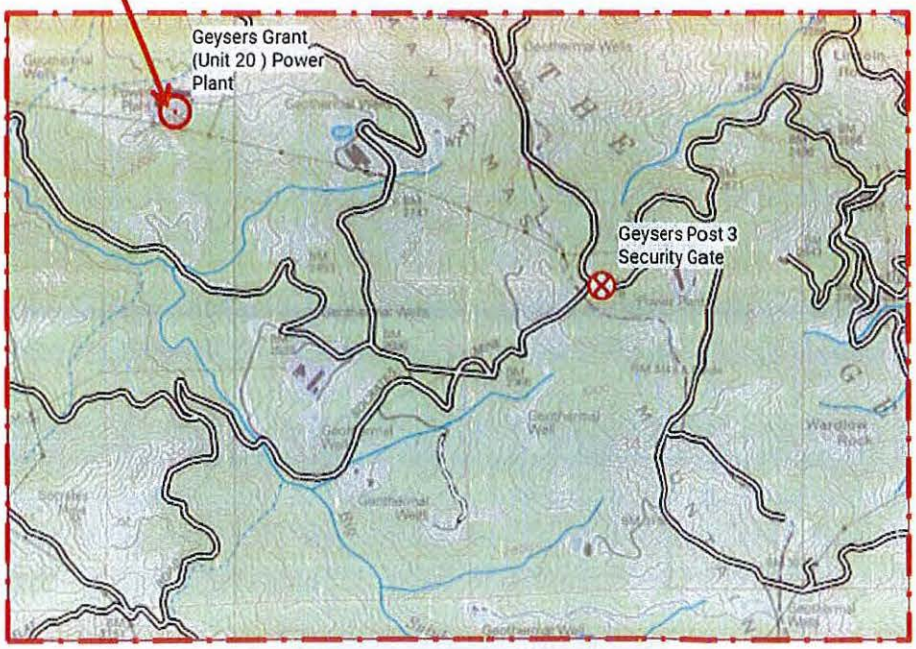
Name: **Brian Berndt** (Printed) Title: **EHS Manager**

Signature _____ Date: 11/6/2017

Fees **$943.00** Receipt # _____ Date Received _____

Map Showing location of Geysers Grant (Unit 20) Power Plant





Project Description, For the Emergency Standby Wet Down Pump Diesel Drive Engine at the Grant (Unit 20) Power Plant

BACKGROUND:

Cooling tower wet down systems are common on wood cooling towers and are used to keep the normally wetted surfaces of the cooling tower structure wet when the cooling tower is not in operation to preserve the wood. Typically when a plant shuts down for an overhaul and the cooling tower is not circulating water, auxiliary or fire pumps are turned on to sprinkle areas of the cooling tower that can dry out, become damaged and more vulnerable to fire. These systems are not subject to NFPA or other codes. Impact spray nozzles (Rainbird™-style) are often used because they provide large coverage areas.

The desire for wetting is particularly true of cooling towers that use geothermal steam condensate for cooling. This is because, as hydrogen sulfide contained in the geothermal steam condensate is oxidized to soluble sulfur compounds, it becomes elemental sulfur for a period of time and can coat the wetted surfaces of the tower. Sulfur is a flammable solid that has a relatively low ignition temperature. Utilizing a wet down system has been very successful in preventing the ignition of cooling towers in the geothermal industry during outages.

Wet down systems are not to be confused with fire suppression systems. A wet down system prevents the ignition of vulnerable surfaces while fire suppression systems are designed to douse fires after ignition occurs. Typically the water pumping capacity of a fire suppression system is very large and the coverage area is very small and focused (able to cover a couple of cells). Deluge systems that typically do not cover the fan or hot water decks and have limited coverage are judged not a good defense against wild land fires.

During the 2015 Valley Fire, four and one half cooling towers were fire damaged at several Geysers power plants. Some of these cooling towers ignited while there was full cooling circulation water flow. Analysis of the burned cooling towers indicates that the center of the cooling towers burned in the non-wetted areas such as the fan deck and the area below the fans (plenum area). Field observations on cooling towers that did not burn showed indications that burning embers were deposited on the fan deck by the wild land fire as it passed the power plant.

NEW COOLING TOWER AT THE GRANT POWER PLANT

The new cooling tower is constructed with fire resistant fiber reinforced plastic (FRP). This is a great improvement over more combustible treated wood cooling towers. Nonetheless, a wet down system is installed in the new cooling tower to wet areas where sulfur may be found, including spray coverage in the non-wetted areas such as the fan deck, hot water basin, plenum and perimeter outboard areas for increased protection from wild land fire embers.

Project Description, For the Emergency Standby Wet Down Pump Diesel Drive Engine at the Grant (Unit 20) Power Plant

PROJECT DESCRIPTION

A permanent emergency standby wet down pump diesel drive engine is being added for use in the event of a plant evacuation due to the threat of an approaching wild land fire. The location of the emergency standby wet down pump diesel drive engine is shown adjacent to the cooling tower circulating water pit on the Grant Power Plant Plot Plan (**Attachment 1**).

The emergency standby wet-down pump diesel drive engine will be manually started prior to evacuation of the power plant due to an approaching wild land fire to provide continued wet down of the cooling tower for approximately 24 hours or longer depending on fuel consumed. Particulate and other exhaust emissions resulting from the operation of the diesel engine would be consistent with manufacturer's specifications for this Tier 3 engine. The exhaust emissions from the engine during emergency use would be virtually undetectable amidst the combustion emissions resulting from an uncontrolled wild land fire.

TESTING AND MAINTENANCE:

Annual testing and maintenance operation hours are limited to no more than 50 hours. Test operation routines will vary through the year with more frequent test operations occurring during the dry season and less frequent test operation occurring during wet seasons. The hour meter indications will be logged as a result of routine inspections and at the start and completion of test and maintenance operations to ensure that annual hours of emergency use, and annual hours of test and maintenance operation are recorded.

APPLICABLE REGULATIONS

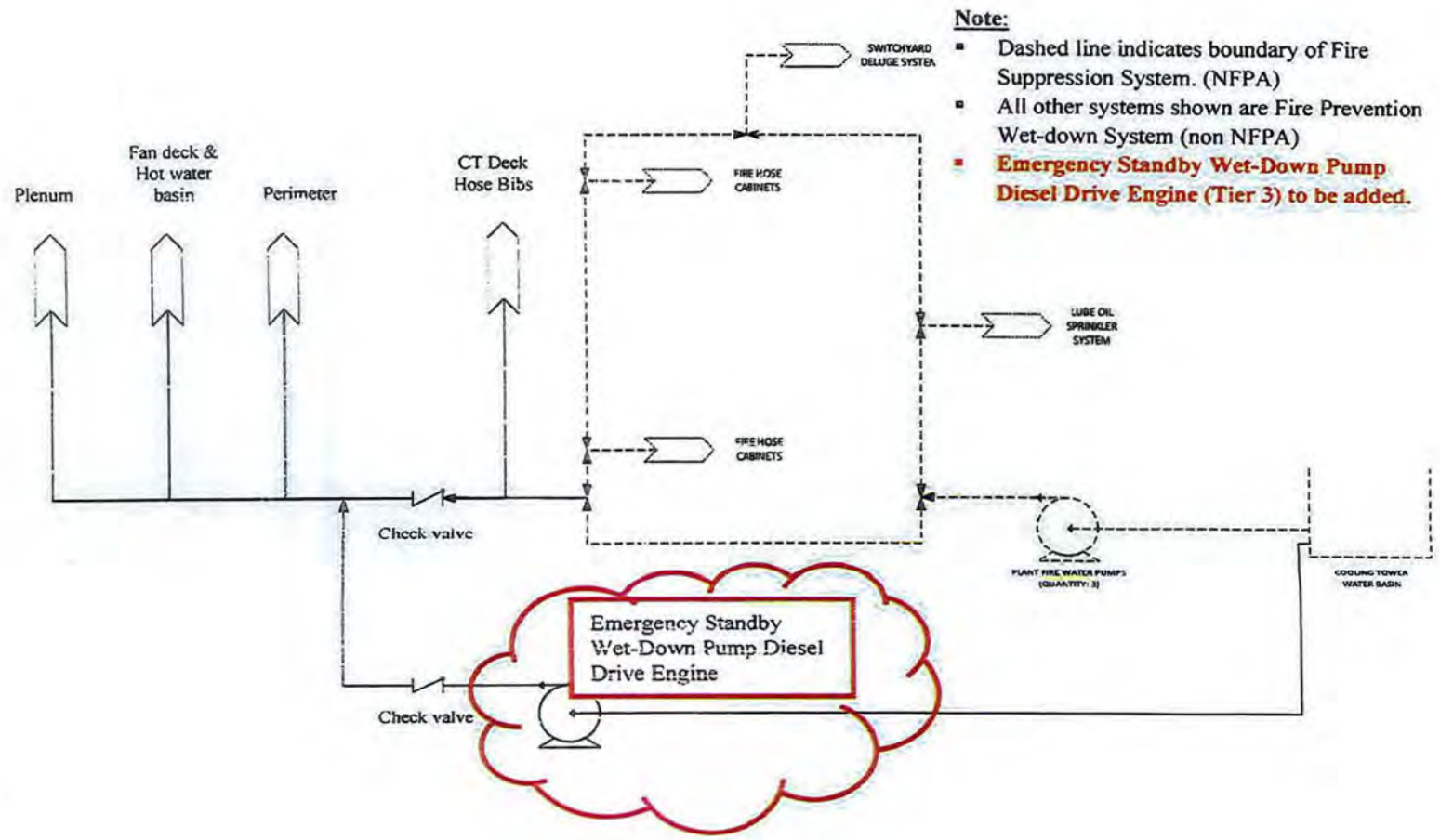
Title 17, California Code of Regulations section 93115 Airborne Toxic Control Measure for Stationary Compression Ignition (CI) Engines.

The Emergency Standby Wet-Down Pump Diesel Drive Engine meets the required criteria of § 93115.4 (29) for definition as an "Emergency Standby Engine" pursuant to (29) (A), (B), (C), (D), and (E).

Operation of the Emergency Standby Wet-Down Pump Diesel Drive Engine meets multiple criteria of § 93115.4 (30) for definition as "Emergency Use" pursuant to (30) (A), (B), and (D), and (F).

The Emergency Standby Wet Down Diesel Drive Engine meets the requirement of 93115.6(a)(3)(A)(1) Table 1: Emission Standards for New Stationary Emergency Standby Diesel-Fueled CI Engines.

Figure 1
Flow Diagram Showing Emergency Standby Wet Down Pump Diesel Drive Engine
Cummins Model CFP7EVS-F40



NORTHERN SONOMA COUNTY
AIR POLLUTION CONTROL DISTRICT

150 MATHESON STREET
HEALDSBURG, CA 95448
(707) 433-5911

DIESEL ENGINE
PERMIT APPLICATION FORM

1. Business Name **Geysers Power Company LLC (Grant Power Plant)**

2. Engine Manufacturer **Cummins**

   Engine Family **HCEXL0409AAB** Model **CFP7E-F40 or CFP7VS-40 series QSB6.7**

   Serial Number **To be Provided Upon Delivery** Year of Manufacture **2017**

   Rated Brake Horsepower Rating **204**

3. Engine Emission Factors (g/bhp-hr)

   NOx **2.475** PM **0.111** NMHC **0.062** NMHC + NOx **2.537** CO **1.193**

   Control Equipment: [X] Turbocharger [] Aftercooler [] Injection Timing Retard [] Catalyst []
   Diesel Particulate Filter [X] **Other Charge Air Cooled**

4. Fuel Used: [X] CARB Diesel [] Diesel [] Other _____

5. Operation Information:

   Engine Operating Time for Testing and Maintenance: **50** hrs/yr

   Typical load **100** % of maximum bhp rating

   Total annual hours of operation **>50** hrs/yr

   Fuel usage rate **10.6** gallons/hr

6. Does the engine participate in an Interruptible Service Contract (ISC) **No**

7. Person completing this form **Brian Berndt** Date **11/6/2017**

Manufacturers Specification Sheet for the diesel engine provided (**Attachment 2**).

U.S. EPA Certificate of Conformity with the Clean Air Act provided (**Attachment 3**).

NORTHERN SONOMA COUNTY
AIR POLLUTION CONTROL DISTRICT

150 MATHESON STREET
HEALDSBURG, CA 95448
(707) 433-5911

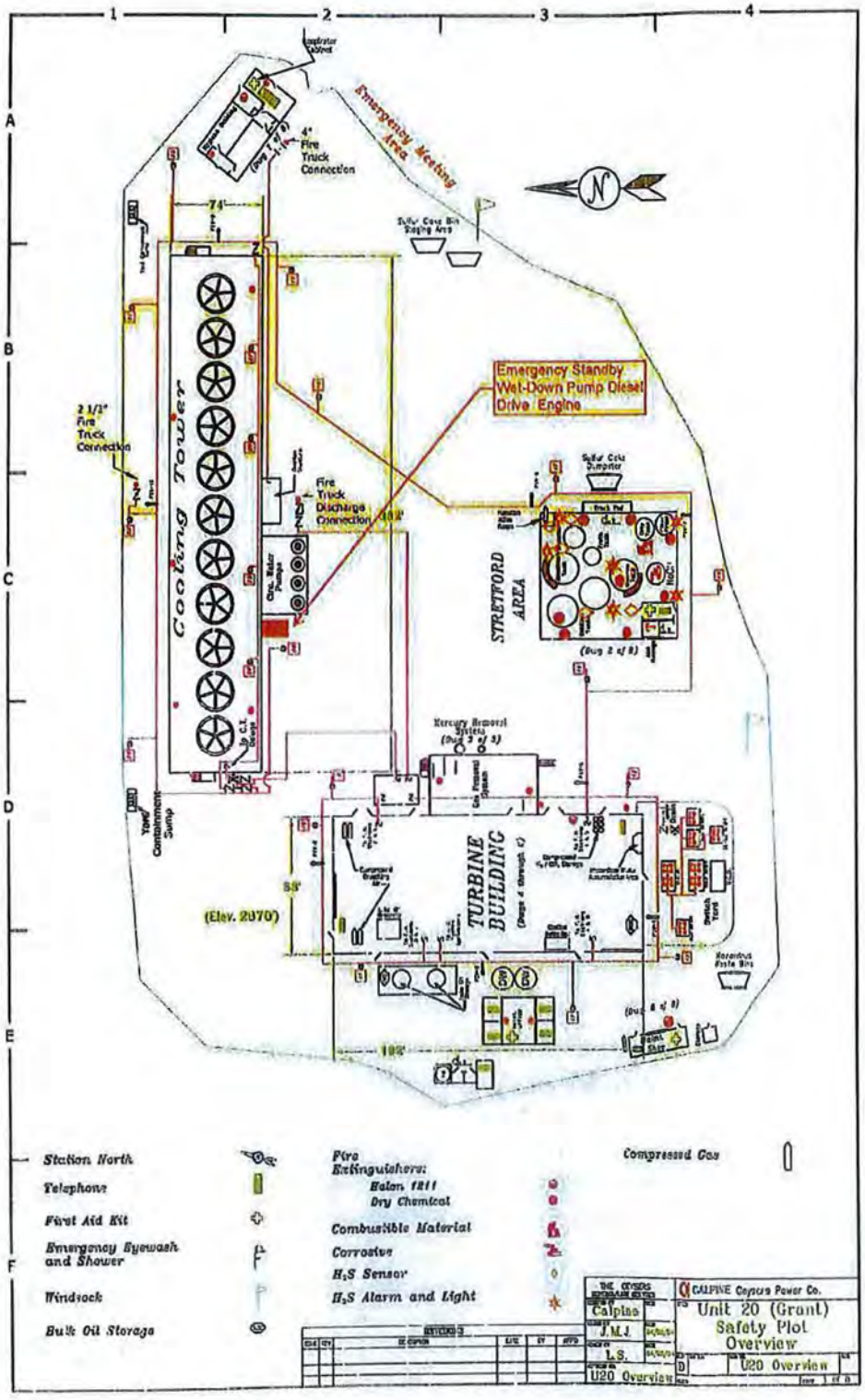
EXHAUST STACK AND BUILDING DIMENSIONS FORM

1. Business Name **Geysers Power Company LLC, (Grant Power Plant)**
2. Exhaust Stack Height Above Ground **~9.8** ft
3. Exhaust Stack Height Above Top of Building **51.8** ft (Exhaust stack will be below the top of the adjacent building.)
4. Exhaust Stack Diameter **0.333** ft
5. Exhaust Stack Flowrate **1,218** CFM
6. Exhaust Stack Direction [X] Up [] Down [] Side Raincap [X] Yes [] No
7. Exhaust Stack Gas Temperature **853** °F
8. Nearest Building Dimensions L **352.7'** W **78.2'** H **61.6'**
9. Distance from stack to nearest property line **6,600** ft *
10. Distance to nearest school grounds **3.8** mi**
11. Person completing this form **Brian Berndt** Date 11/16/2017

* Distance given is from the engine stack to the property gate at the Socrates mine road Gate Post 3.

** Distance given is from the engine stack to the Cobb Mountain Elementary School.

Attachment 1
Grant Power Plant Plot Plan Showing the Emergency Standby Wet-Down Pump Diesel Drive Engine Location



Attachment III

Authority to Construct Permit Applications

Exhibit C:

Unit 16 Emergency Standby Wet-down Pump Diesel Drive Engine

Lake County Air Quality Management District
2617 South Main Street
Lakeport, CA 95453
707-263-7000 / fax 263-0421

Douglas G. Gearhart
Air Pollution Control Officer
dougg@lcaqmd.net

Application For An Authority To Construct (& Attached List and Criteria)

Type of Application: ☐ New Facility ☒ Modification ☐ Existing Facility, Not Previously Permitted

Contact Name: **Brian Berndt**
Business Name: **Geysers Power Company LLC**
Mailing Address: **10350 Socrates Mine Road**
Middletown, CA 95461

Facility Name:
Quicksilver Power Plant (Geysers Unit 16)
Facility or Project Name:
Emergency Standby Wet Down Pump Diesel Drive Engine

Permit #: _____ Category: **II**

Description of the Process/Purpose of the Facility:
The Emergency Standby Wet Down Pump Diesel Drive Engine is part of the Cooling Tower fire prevention system.

Equipment Location/Legal Description:
Section 35, T11N, R8W MDB&M Lake County

Estimated Construction dates:
Start - **January 2018** Completion - **May 2018**

Diagram/Plot Plan of Facility Enclosed? ☒ Yes ☐ No
See **Attachment 1**

Description of equipment by make, model, size and type:
See **Attachments 2&3.**

Additional List and Criteria Data Attached: Yes X No ____ (List and Criteria are attached)

If no give reason: _____

Operating Schedule*: **<0.95** Hours/Day **1** Days/Week **<52** Weeks/Year Lat•N: 38.765398°
* Routine testing will vary through the year, combined with maintenance operation hours will not exceed 50 hours / year.

Production Rates: **10.6 gal /Hour**, _____ /Day, _____ /Year (Specify Units) Long•W: -122.707678°

Amount, nature, and duration of emissions: **Maintenance and Testing Operation of Emergency Standby Diesel Engine for will be less than 50 hours/year. Emissions for this Diesel engine are summarized on the attached Project Description, List and Criteria Data Summary.**

Attach a Facility and Equipment Diagram, Specification Sheet(s), and Process Flow Diagram. Show the location and distance to adjacent residences, businesses, schools and hospitals.

See Attachments 2&3, Project Description, List and Criteria Data Summary.

Type and efficiency of air pollution control equipment: **The proposed Diesel Engine is compliant with Tier 3 EPA Standards for Emergency Standby Diesel Engines and the CARB Air Toxic Control Standards (ATCM)**

Type and Estimated Quantity of fuel use: **DFO #3, ~535 gal/year** (%S): **0.0015% by weight**

Ten year projected expansion plans:

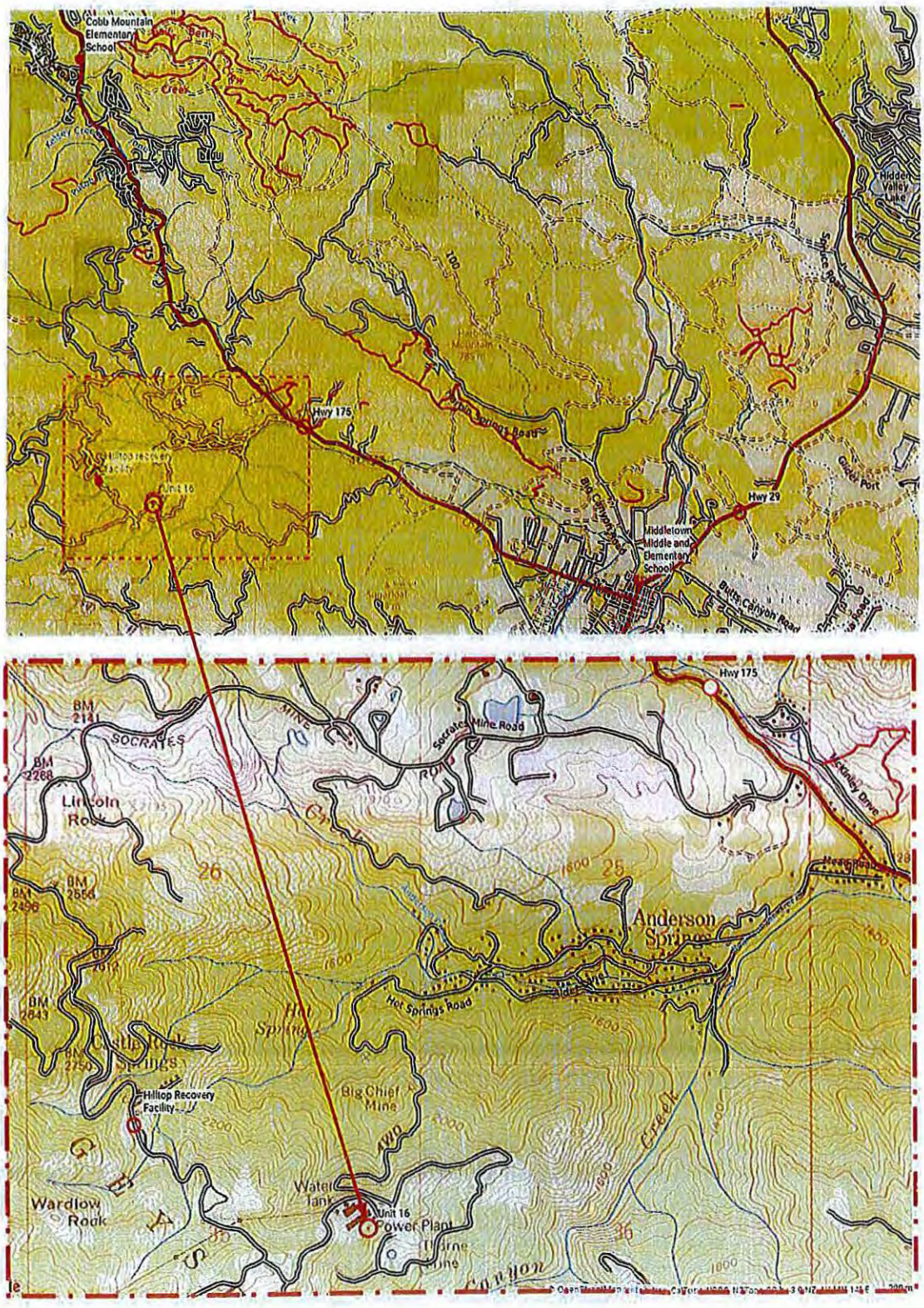
I have read and understand the LCAQMD's List and Criteria for Authority to Construct Permits. I understand that I am responsible for any information listed herein or requested pursuant to this application. Based on information and belief formed after reasonable inquiry, the statements and information presented in this application and supplemental documentation are true, accurate, and complete.

_____ Date: 11/16/2017
Signature of authorized representative of firm

Name: Brian Berndt Title: EHS Manager Geysers Telephone: (707)431-6266

FAX: (707)431-6246

Map Showing location of Geysers Quicksilver (Unit 16) Power Plant



Project Description, List and Criteria Data Summary For the Emergency Standby Wet Down Pump Diesel Drive Engine at the Quicksilver (Unit 16) Power Plant

BACKGROUND:

Cooling tower wet down systems are common on wood cooling towers and are used to keep the normally wetted surfaces of the cooling tower structure wet when the cooling tower is not in operation to preserve the wood. Typically when a plant shuts down for an overhaul and the cooling tower is not circulating water, auxiliary or fire pumps are turned on to sprinkle areas of the cooling tower that can dry out, become damaged and more vulnerable to fire. These systems are not subject to NFPA or other codes. Impact spray nozzles (Rainbird™-style) are often used because they provide large coverage areas.

The desire for wetting is particularly true of cooling towers that use geothermal steam condensate for cooling. This is because, as hydrogen sulfide contained in the geothermal steam condensate is oxidized to soluble sulfur compounds, it becomes elemental sulfur for a period of time and can coat the wetted surfaces of the tower. Sulfur is a flammable solid that has a relatively low ignition temperature. Utilizing a wet down system has been very successful in preventing the ignition of cooling towers in the geothermal industry during outages.

Wet down systems are not to be confused with fire suppression systems. A wet down system prevents the ignition of vulnerable surfaces while fire suppression systems are designed to douse fires after ignition occurs. Typically the water pumping capacity of a fire suppression system is very large and the coverage area is very small and focused (able to cover a couple of cells). Deluge systems that typically do not cover the fan or hot water decks and have limited coverage are judged not a good defense against wild land fires.

During the 2015 Valley Fire, four and one half cooling towers were fire damaged at several Geysers power plants. Some of these cooling towers ignited while there was full cooling circulation water flow. Analysis of the burned cooling towers indicates that the center of the cooling towers burned in the non-wetted areas such as the fan deck and the area below the fans (plenum area). Field observations on cooling towers that did not burn showed indications that burning embers were deposited on the fan deck by the wild land fire as it passed the power plant.

NEW COOLING TOWER AT THE QUICKSILVER POWER PLANT

The new cooling tower is constructed with fire resistant fiber reinforced plastic (FRP). This is a great improvement over more combustible treated wood cooling towers. Nonetheless, a wet down system is installed in the new cooling tower to wet areas where sulfur may be found, including spray coverage in the non-wetted areas such as the fan deck, hot water basin, plenum and perimeter outboard areas for increased protection from wild land fire embers.

Project Description, List and Criteria Data Summary For the Emergency Standby Wet Down Pump Diesel Drive Engine at the Quicksilver (Unit 16) Power Plant

PROJECT DESCRIPTION

A permanent emergency standby wet down pump diesel drive engine is being added for use in the event of a plant evacuation due to the threat of an approaching wild land fire. The location of the emergency standby wet down pump diesel drive engine is shown adjacent to the cooling tower circulating water pit on the Quicksilver Power Plant Plot Plan (**Attachment 1**).

The emergency wet down pump diesel drive engine will be manually started prior to evacuation of the power plant due to an approaching wild land fire to provide continued wet down of the cooling tower for approximately 24 hours or longer depending on fuel consumed. Particulate and other exhaust emissions resulting from the operation of the diesel engine would be consistent with manufacturer's specifications for this Tier 3 engine. The exhaust emissions from the engine during emergency use would be virtually undetectable amidst the emissions resulting from an uncontrolled wild land fire.

TESTING AND MAINTENANCE:

Annual testing and maintenance operation hours are limited to no more than 50 hours. Test operation routines will vary through the year with more frequent test operations occurring during the dry season and less frequent test operation occurring during wet seasons. The hour meter indications will be logged as a result of routine inspections and at the start and completion of test and maintenance operations to ensure that annual hours of emergency use, and annual hours of test and maintenance operation are recorded.

APPLICABLE REGULATIONS

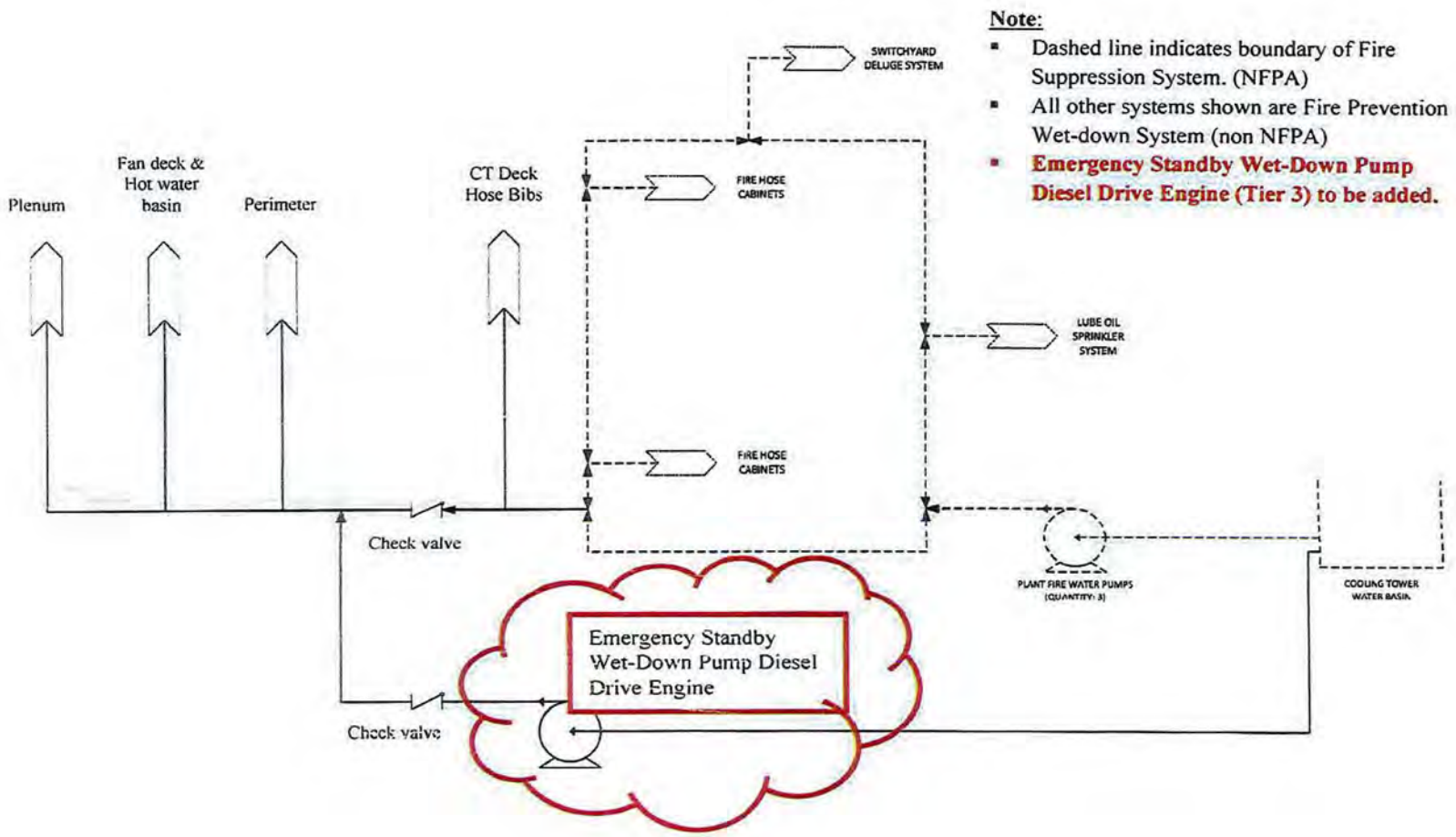
Title 17, California Code of Regulations section 93115 Airborne Toxic Control Measure for Stationary Compression Ignition (CI) Engines.

The Emergency Standby Wet-Down Pump Diesel Drive Engine meets the required criteria of § 93115.4 (29) for definition as an "Emergency Standby Engine" pursuant to (29) (A), (B), (C), (D), and (E).

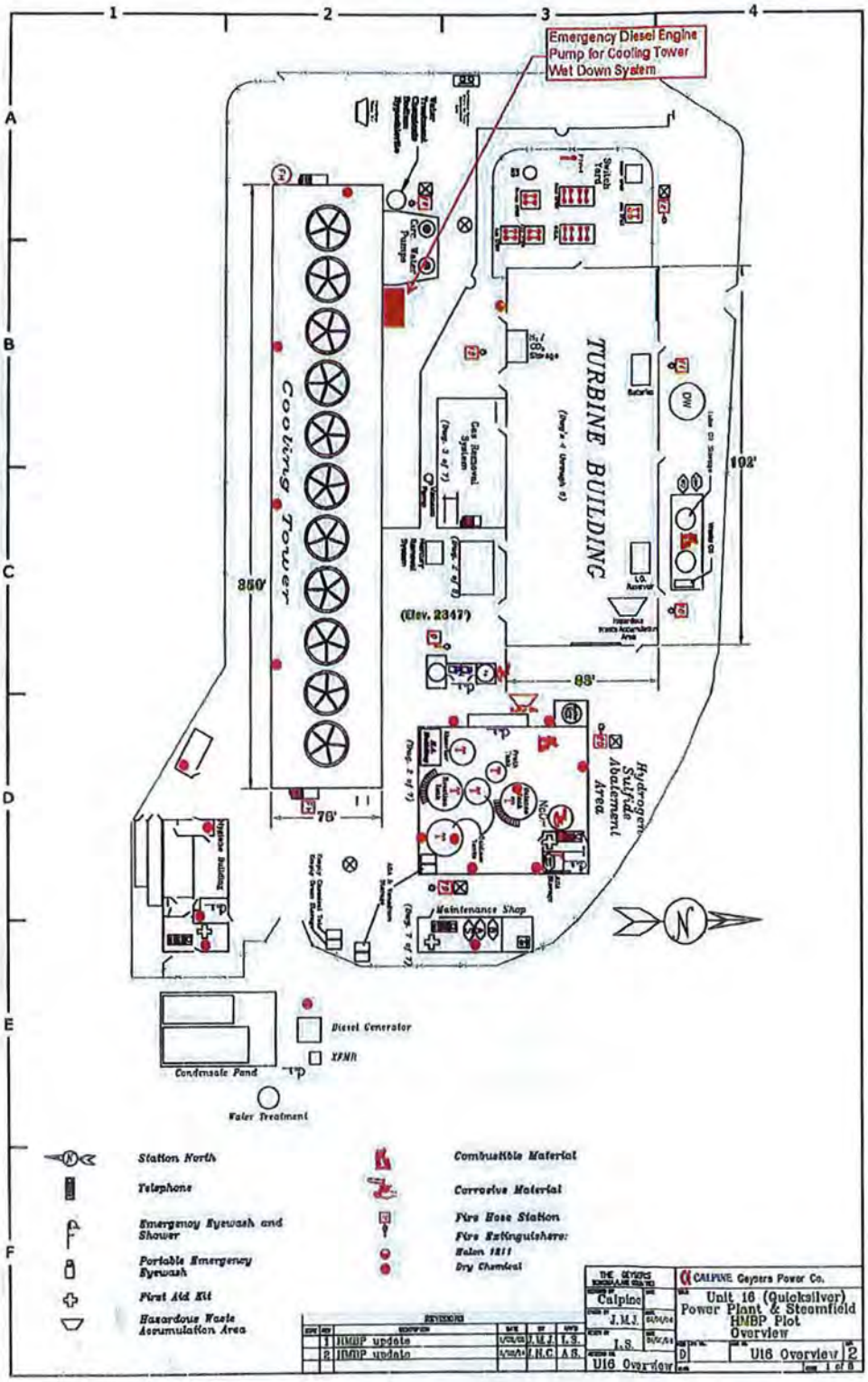
Operation of the Emergency Standby Wet-Down Pump Diesel Drive Engine meets multiple criteria of § 93115.4 (30) for definition as "Emergency Use" pursuant to (30) (A), (B), and (D), and (F).

The Emergency Standby Wet Down Diesel Drive Engine meets the requirement of 93115.6(a)(3)(A)(1) Table 1: Emission Standards for New Stationary Emergency Standby Diesel-Fueled CI Engines.

Figure 1
Flow Diagram Showing Emergency Standby Wet Down Pump Diesel Drive Engine
Cummins Model CFP7EVS-F40



Attachment 1
Quicksilver Power Plant Plot Plan Showing the Location of the Emergency Standby Wet Down Pump Diesel Drive Engine



Project Description, List and Criteria Data Summary For the Emergency Standby Wet Down Pump Diesel Drive Engine, Exhaust Stack and Building Dimensions

DATA SUMMARY FOR EMERGENCY STANDBY WET-DOWN PUMP DIESEL DRIVE ENGINE

Business Name **Geysers Power Company LLC, Quicksilver (Unit 16) Power Plant**

Engine Manufacturer **Cummins**

Engine Family[+] **HCEXL0409AAB** Model **CFP7VS-40, series QSB6.7**

Serial Number **Available Upon Delivery** Year of Manufacture **2017**

Rated Brake Horsepower Rating **204**

Engine Emission Factors (g/bhp-hr)[++]

NOx **2.475** PM **0.111** NMHC **0.062** NMHC + NOx **2.537** CO **1.193** .

Control Equipment: [X] **Turbocharger** [] Aftercooler [] Injection Timing Retard [] Catalyst []

Diesel Particulate Filter [X] **Other and Charge Air Cooled**

Fuel Used: **[X] CARB Ultra Low Sulfur Diesel** [ ] Diesel [] Other _____

Operation Information:

Engine Operating Time for Testing and Maintenance: **50** **hrs/yr**

Typical load **100** % of maximum bhp rating

Total annual hours of operation **50 hours /yr (Testing and maintenance)**

Fuel usage rate **10.6** gallons/hr

[+] Manufacturers Specification Sheet for the diesel engine provided (**Attachment 2**).

[++] U.S. EPA Certificate of Conformity with the Clean Air Act provided (**Attachment 3**).

EXHAUST STACK AND BUILDING DIMENSION DATA

Exhaust Stack Height Above Ground **~9.8** ft*

Exhaust Stack Height Above Top of Building **-51.7** ft , Exhaust stack will be below the top of the adjacent building (cooling tower.)

Exhaust Stack Diameter **0.333** ft

Exhaust Stack Flowrate **1,218** CFM

Exhaust Stack Direction [X] Up [ ] Down [ ] Side Raincap [X] Yes [ ] No

Exhaust Stack Gas Temperature **853** °F

Nearest Building Dimensions L: **352.7'** W: **78'** H: **61.5'**

Distance from stack to nearest property line **2,700** ft**

Distance to nearest school grounds **4.4** mi***

[*] Exhaust Height may vary by +- 3 ft depending on final enclosure design.

[**] Distance given is from the engine stack to the property gate at the Hilltop Recovery Facility Property.

[***] Distance given is from the engine stack to the Cobb Mountain Elementary School.

Attachment III

Authority to Construct Permit Applications

Exhibit D:

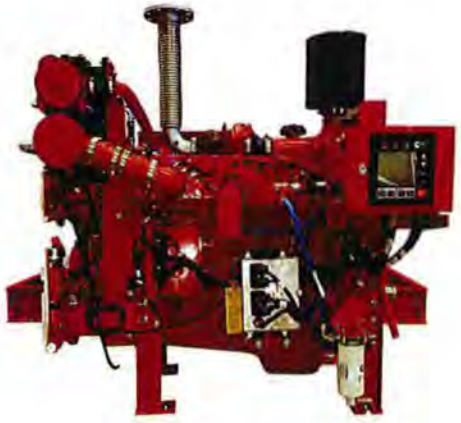
Cummins Diesel Engine Specification, (common to each application)

Cummins 's Specification for the Emergency Standby Diesel Drive Engine

Specification sheet

Fire Pump Drive Engine

CFP7E-F40
CFP7EVS-F40



Description

Engine Series - Cummins QSB6.7
Exhaust Emissions - EPA Tier 3

When performance matters, we take notice. Our engines are an assurance of safety specifically designed to fit your needs. The Cummins CFP7E fire pump drive engine features a cast-iron parent bore block structurally designed to reduce noise and increase durability.

Features

Control System - The industry-leading, state-of-the-art Fire Pump Digital Panel (FPDP) provides total fire pump drive engine system integration and intuitive operation, including:

- Color touchscreen;
- Dual microprocessors for critical signal redundancy;
- Standard J1939 parameter and Cummins fault code display;
- Engine idling;
- Electronic Control Module (ECM) self-diagnosis; and
- Optional Modbus® protonode remote messaging capability.

Variable Speed Pressure Limiting Control (VSPLC) - Cummins' VSPLC-equipped fire pump drive engines are capable of maintaining a constant pump discharge pressure by controlling the engine speed down to 1200 RPM, while still maintaining T3 emissions certification. VSPLC fire pump drive engines provide design flexibility in the fire pump system for high-rise applications; compensate for varying discharge pressure; allow the system architect to apply a larger pump and/or a pump with a steeper curve; and significantly reduce water consumption during the weekly test.

Warranty and Service - Our models are backed by a comprehensive warranty and worldwide distributor network.

Certified Power - The CFP7E-F40 complies with NFPA 20 and is UL 1247-listed and FM 1333-approved. The CFP7EVS-F40 complies with NFPA 20 and is FM 1333-approved.

Ratings in HP (kW)

Operating Speed (RPM)	1470		1760		1900		2100		2350		2600	
CFP7E-F40	192	(143)	220	(164)	204	(152)	215	(160)	216	(161)	219	(163)
CFP7EVS-F40	192	(143)	220	(164)	204	(152)	215	(160)	216	(161)	219	(163)

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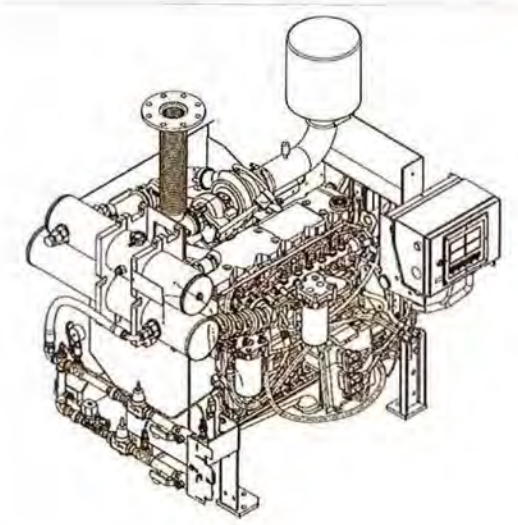

General Engine Data

Engine Family	Industrial
Engine Type	4 Cycle; In-Line, 6 Cylinder
Aspiration	Turbocharged and Charge-Air Cooled
Bore and Stroke	4.21 x 4.88 in. (107 x 124 mm)
Displacement	409 in^3 (6.7 L)
Rotation	Counterclockwise from flywheel end
Compression Ratio	17.2:1
Valves per Cylinder	Intake - 2 Exhaust - 2
Fuel System	Bosch Electronic Common Rail
Maximum Allowable Bending Moment @ Rear Face of Block	1000 lb.-ft. (1356 N-m)
Estimated Wet Weight*	TBD

* Weight includes engine, cooling loop, heat exchanger, dual Electronic Control Modules (ECMs), Fire Pump Digital Panel (FPDP), standard air cleaner, standard exhaust flex, and all fluids.

Equipment	Standard	Optional
Air Cleaner	Disposable; treated for high humidity, indoor service	Heavy-duty, two-stage with replaceable elements
Alternator	12V-DC, 95 amps; includes belt guard	24V-DC, 45 amps with belt guard
Cooling Loop (maximum pressure of 300 PSI)	3/4" diameter for fresh water; includes alarm sensors and FM-approval	Cu Ni construction available for sea water applications; approved loops up to 1 1/4"
Cooling System	Tube and shell type, 60 PSI with NPTF connections	Radiator[1]; sea water tube and shell
Engine Heater	120V-AC, 1500 watts	240V-AC, 1500 watts
Exhaust Protection	Metal guards on manifolds and turbocharger	N/A
Exhaust Flex Connection	Steel, flanged	Stainless steel flex, NPT
Flywheel Power Take-Off	Flywheel	Driveshaft system, stub shaft
Fuel Connections	Fire-resistant flexible supply and return lines	N/A
Fuel Filter	Primary and secondary	N/A
Governor, Speed	Constant speed, adjustable	VSPLC[2]
Fire Pump Digital Panel (FPDP)	7" color touchscreen; enclosure rated as Type 2/Type 4X; Imperial and metric values	Optional 316SS construction; custom gauges with digital panel expansion module (DPEM)
Lube Oil Cooler	Engine-water-cooled, plate type	N/A
Lube Oil Filter	Full-flow with by-pass valve	N/A
Lube Oil Pump	Gear-driven	N/A
Manual Start Controls	On FPDP and/or contactors	N/A
Overspeed Controls	Electronic with reset and test on FPDP	N/A
Starter	12V-DC	24V-DC

[1] Not UL-listed and not FM-approved.

[2] FM-approved, but not UL-listed.

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Air Induction System

Maximum Temperature Rise Between Ambient Air and Engine Air Inlet	30.6 °F (17 °C)
Maximum Inlet Restriction with Dirty Filter	25 in. H_2O (635 mm H_2O)
Recommended Air Cleaner Element - (Standard)	Cummins Filtration AH1196
Recommended Air Cleaner Element - (Heavy Duty)	Optional: primary element AF26124; secondary element AF26125

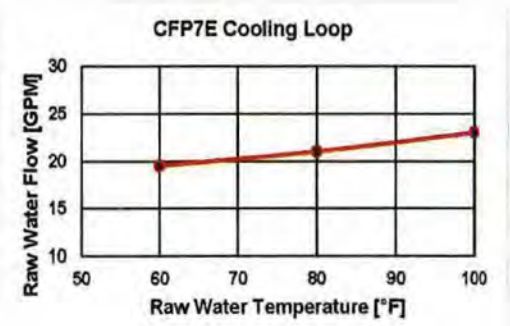
Lubrication System

Oil Pressure Range at Rated	40-70 PSI (276-483 kPa)
Oil Capacity of Pan (High - Low)	15-13 qt. (16-14 L)
Total System Capacity	4 gal. (15.1 L)
Recommended Lube Oil Filter	Cummins Filtration LF3970

Cooling System*

Raw Water Working Pressure Range at Heat Exchanger	60 PSI (413 kPa) MAX
Recommended Minimum Water Supply Pipe Size to Heat Exchanger	.75 in. (19.05 mm)
Recommended Minimum Water Discharge Pipe Size From Heat Exchanger	1.00 in. (25.40 mm)
Coolant Water Capacity (Engine Only)	3.75 gal. (14.2 L)
Standard Thermostat - Type	Modulating
Standard Thermostat - Range	180-199 °F (82-93 °C)
Minimum Raw Water Flow:	
- with Water Temperatures to 60 °F (16 °C)	19.5 GPM (1.23 L/sec)
- with Water Temperatures to 80 °F (27 °C)	21 GPM (1.32 L/sec)
- with Water Temperatures to 100 °F (38 °C)	23 GPM (1.45 L/sec)

* A jacket water heater is mandatory on this engine. The recommended heater wattage is 1500 down to 40 °F (4 °C)



Exhaust System

Maximum Allowable Back Pressure by Complete Exhaust System	40.8 in. H_2O (10.2 kPa)
Exhaust Pipe Size Normally Acceptable	4 in. (102 mm)

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Noise Emissions - The noise emission values are estimated sound pressure levels at 3.3 ft. (1 m).

Top	92.5 dBa
Right Side	94.3 dBa
Left Side	93.8 dBa
Front	92.1 dBa
Exhaust	114.2 dBa

Fuel Supply/Drain System

Operating Speed in RPM	1470		1760		1900		2100		2350		2600	
Fuel Rate - Gal/hr (L/hr)	9.9	(37.6)	11.4	(43.0)	10.6	(40.0)	11.3	(42.6)	11.6	(43.8)	12.3	(46.7)

Fuel Type	No. 2 diesel only
Minimum Supply Line Size	0.5 in. (12.70 mm)
Minimum Drain Line Size	0.375 in. (9.53 mm)
Maximum Fuel Height above C/L Fuel Pump	360 in. (9.1 m)
Recommended Fuel Filter - Primary	Cummins Filtration FF5612
Recommended Fuel Filter - Secondary	Cummins Filtration FS1212
Maximum Restriction @ Lift Pump-Inlet - With Clean Filter	5.0 in. Hg (127 mm Hg)
Maximum Restriction @ Lift Pump-Inlet - With Dirty Filter	10.0 in. Hg (254 mm Hg)
Maximum Return Line Restriction - Without Check Valves	5.9 in. Hg (150 mm Hg)
Minimum Fuel Tank Vent Capability	7.1 ft^3/hr (0.21 m^3/hr)
Maximum Fuel Temperature @ Lift Pump Inlet	158 °F (70 °C)

Starting and Electrical System

Min. Recommended Battery Capacity - Cold Soak at 0 °F (-18 °C) or Above	12V	24V
Engine Only - Cold Cranking Amperes	1400 CCA*	900 CCA*
Engine Only - Reserve Capacity	430 minutes*	430 minutes*

*Based on FM requirement for a minimum of 900 CCA and 430 Reserve Capacity Minutes

Battery Cable Size - Minimum of 2/0 AWG and Maximum Cable Length Not to Exceed 6 ft. (1.5 m)	12V	24V
Maximum Resistance of Starting Circuit	0.001 Ohms	0.002 Ohms
Typical Cranking Speed	120 RPM	120 RPM
Alternator (Standard), Internally Regulated	95 amps	70 amps

Operating Conditions

Operating Speed in RPM	1470		1760		1900		2100		2350		2600	
Output - BHP (kW)	192	(143)	220	(164)	204	(152)	215	(160)	216	(161)	219	(163)
Ventilation Air Required - CFM (litre/sec)	435	(205)	487	(230)	511	(241)	571	(270)	629	(297)	691.9	(327)
Exhaust Gas Flow - CFM (litre/sec)	1055	(498)	1219	(575)	1218	(575)	1363	(643)	1500	(708)	1650	(779)
Exhaust Gas Temperature - °F (°C)	954	(512)	911	(488)	853	(456)	874	(468)	897	(481)	986.7	(530)
Heat Rejection to Coolant - BTU/min. (kW)	3803	(67)	4186	(74)	3926	(69)	4263	(75)	4707	(83)	5178	(91)
Heat Rejection to Ambient - BTU/min. (kW)	1026	(18)	1091	(19)	1186	(21)	1282	(23)	1256	(22)	1231	(22)

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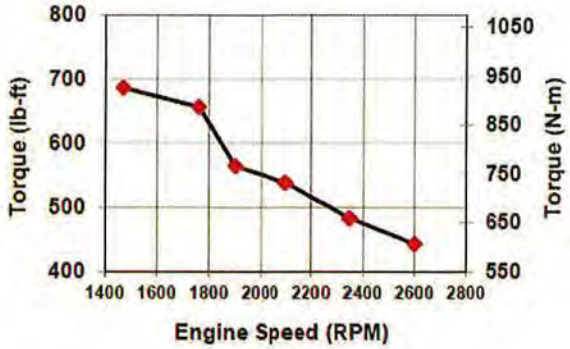
Engine Performance Curve for CFP7E-F40 and CFP7EVS-F40

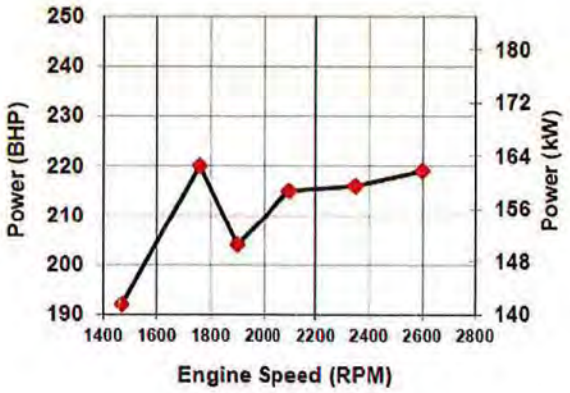
Torque Output

RPM	lb-ft	N-m
1470	686	930
1760	657	890
1900	564	765
2100	538	729
2350	483	655
2600	442	600



Horsepower Output

RPM	BHP	kW
1470	192	143
1760	220	184
1900	204	152
2100	215	160
2350	216	161
2600	219	163



Performance Data

All data is based on the engine operating with a fuel system, water pump, lubricating oil pump, air cleaner, and alternator. The compressor, fan, optional equipment, and driven components are not included. Data is based on operation at SAE standard J1394 conditions of 300 ft. (91.4 m) altitude, 29.61 in. (752 mm) Hg dry barometer, and 77 °F (25 °C) intake air temperature, using No. 2 diesel fuel only.

Altitude above which output should be limited*:	300 ft. (91.4 m)
Correction factor per 1000 ft. (305 m) above altitude limit:	3%
Temperature above which output should be limited:	77 °F (25 °C)
Correction factor per 10 °F (11 °C) above temperature limit:	1% (2%)

* Above 2,000 feet, contact Cummins for derate information.

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EPA Tier 3 Emission Data
Fire Pump NSPS Compliant

CFP7E-F40 Fire Pump Drive Engine
CFP7EVS-F40 Fire Pump Drive Engine

15 PPM Diesel Fuel																
RPM	BHP	Consumption		D2 Cycle Exhaust Emissions*										Exhaust		
				Grams per BHP - HR					Grams per kW - HR					Temperature		Gas Flow	
		Gal/hr	L/hr	NMHC	NO_x	NMHC + NO_x	CO	PM	NMHC	NO_x	NMHC + NO_x	CO	PM	°F	°C	CFM	L/sec
1470	192	9.9	37.5	0.062	2.475	2.537	1.193	0.111	0.083	3.319	3.402	1.600	0.149	954	512	1055	498
1760	220	11.4	43.2											911	488	1219	575
1900	204	10.6	40.1											853	456	1218	575
2100	215	11.3	42.8											874	468	1363	643
2350	216	11.6	43.9											897	481	1500	708
2600	219	12.3	46.6											987	531	1650	779

*The emissions values above are based on CARB approved calculations for converting EPA (500 ppm) fuel to CARB (15 ppm) fuel.

300-4000 PPM Diesel Fuel																
RPM	BHP	Consumption		D2 Cycle Exhaust Emissions*										Exhaust		
				Grams per BHP - HR					Grams per kW - HR					Temperature		Gas Flow	
		Gal/hr	L/hr	NMHC	NO_x	NMHC + NO_x	CO	PM	NMHC	NO_x	NMHC + NO_x	CO	PM	°F	°C	CFM	L/sec
1470	192	9.9	37.5	0.075	2.685	2.759	1.193	0.127	0.1	3.600	3.700	1.600	0.170	954	512	1055	498
1760	220	11.4	43.2											911	488	1219	575
1900	204	10.6	40.1											853	456	1218	575
2100	215	11.3	42.8											874	468	1363	643
2350	216	11.6	43.9											897	481	1500	708
2600	219	12.3	46.6											987	531	1650	779

QSB6.7 Base Model Manufactured by Cummins Inc. - using fuel rating 91422

Reference EPA Standard Engine Family: FCEXL0409AAB

No special options are needed to meet current regulation emissions for all fifty states.

Test Methods: EPA Nonroad emissions recorded per 40CFR89 (ref. ISO8178-1) and weighted at load points prescribed in Subpart E, Appendix A, for Constant Speed Engines (ref. ISO8178-4, D2).

Diesel Fuel Specifications:

- Cetane Number: 40-48
- Reference: ASTM D975 No. 2-D

Reference Conditions:

- Air Inlet Temperature: 25 °C (77 °F)
- Fuel Inlet Temperature: 40 °C (104 °F)
- Barometric Pressure: 100 kPa (29.53 in Hg)
- Humidity: 107 g H_2O/kg (75 grains H_2O/lb) of dry air; required for NO_x correction
- Restrictions: Intake Restriction set to a maximum allowable limit for clean filter; Exhaust Back Pressure set to maximum allowable limit.

Tests conducted using alternate test methods, instrumentation, fuel, or reference conditions can yield different results.

Doc. A042J595 Rev. 1

Fire Pump Digital Panel (FPDP)

The Cummins FPDP is an integrated microprocessor-based control system that provides full digital technology with enhanced accuracy and built-in redundancy.

Reliable design - Designed and tested with isolated mounting to minimize vibration for longer life and durability, the Cummins FPDP proves reliable in harsh environments.

Advanced control methodology - The Cummins FPDP allows for Input/Output (I/O) expansion and remote monitoring capabilities, as well as automatic Electronic Control Module (ECM) switching for electronic engines.

Certified Quality - The Cummins FPDP is UL 1247-listed and FM 1333-approved.

Operator Panel Features

Operator/Display Panel

- 7" TFT LCD (thin-film-transistor liquid-crystal display) - color, 24-bit, 800x480 (WVGA).
- Auto, manual, start, stop, and fault reset.
- Assembly enclosure that meets Type 2 and Type 4X design requirements and is water, corrosion, fire, and impact-resistant.

Electronic Engine Communications - SAE J1939 protocol.

- Comprehensive full-authority engine (FAE) data: oil pressure and temperature; coolant temperature; and intake manifold pressure and temperature.
- Cummins fault code display.
- Sensor failure indication.
- Optional RS-485 serial - Modbus® RTU/Modbus® TCP/IP.

Variable Speed Pressure Limiting Control (VSPLC) Capabilities

- Display indicates when VSPLC is active.
- Pump discharge pressure display.
- Ability to run the engine at fixed speed from the FPDP at start-up for commissioning.

Other Control Features

- Digital Panel Expansion Module (DPEM) for additional analog/digital inputs and configurable dry relay contact output.
- Ability to idle at start-up for commissioning of electronic engines.
- Idle cool down for electronic engines.
- DC voltage.

Functional

- Configurable display units for temperature in degrees Fahrenheit or Celsius and pressure in PSI or kPa.
- Manual ECM selector switch on electronic engines.
- Ability to crank the fire pump drive engine from Battery A, Battery B, or both.
- Fixed engine speed adjustments in +/- 10 RPM increments.
- Overspeed shutdown.

Environmental

- Operating temperature - 4 to 158 °F (minus 20 to 70 °C).
- Storage temperature - minus 22 to 176 °F (minus 30 to 80 °C).
- Meets CISPR 11 Class B radiated emissions.
- Vibration: 7 G_{PEAK}; three-axis.

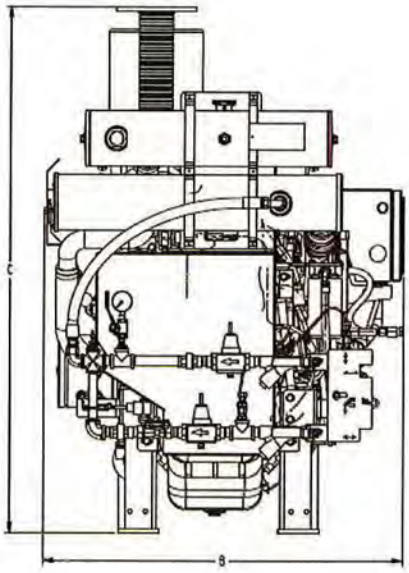
Electrical

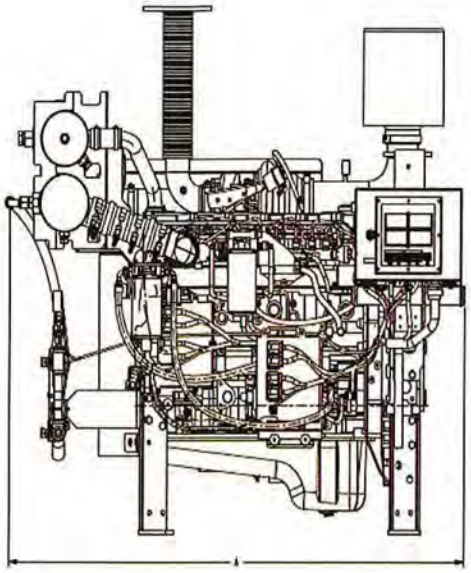
- 8-30 VDC operating voltage.
- Reverse polarity protected.
- Spring cage terminal block interface.
- Built-in dual micro controllers for increased reliability.

Mechanical

- 1 3/8" pre-cut customer conduit knockout for easy field installation.
- Simplified internal design for efficiency and ease of customer connections.
- 16GA ASTM A366 material - 316 stainless steel optional.
- RAL3001 red powder coat finish.

Doc. A042J595 Rev. 1





This outline drawing is for reference only.
Do not use for installation design.

	Dim "A" in. (mm)	Dim "B" in. (mm)	Dim "C" in. (mm)
CFP7E	60 (1514)	40 (1025)	57 (1457)

NOTE: Consult drawings or contact the factory for additional information.

NOTE: Codes or standards compliance may not be available with all model configurations - consult factory for availability.
Specifications are subject to change without notice.

This product has been manufactured under the controls established by a Bureau Veritas Certification approved management system that conforms with ISO 9001:2015.

Cummins Sales and Service
875 Lawrence Drive
DePere, Wisconsin 54115
1 920 337 9750

www.cumminsfirepower.com

Doc. A042J595 Rev. 1

Attachment III

Authority to Construct Permit Applications

Exhibit E:

EPA Certificate of Conformance (common to each application)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
2017 MODEL YEAR
CERTIFICATE OF CONFORMITY
WITH THE CLEAN AIR ACT

OFFICE OF TRANSPORTATION AND AIR QUALITY
ANN ARBOR, MICHIGAN 48105

Certificate Issued To: Cummins Inc.
(U.S. Manufacturer or Importer)

Certificate Number: HCEXL0409AAB-027

Effective Date: 11/17/2016

Expiration Date: 12/31/2017

Byron J. Bunker, Division Director
Compliance Division

Issue Date: 11/17/2016

Revision Date: N/A

Model Year: 2017
Manufacturer Type: Original Engine Manufacturer
Engine Family: HCEXL0409AAB

Mobile/Stationary Indicator: Stationary
Emissions Power Category: 130<=kW<225
Fuel Type: Diesel
After Treatment Devices: No After Treatment Devices Installed
Non-after Treatment Devices: No Non-After Treatment Devices Installed

Pursuant to Section 111 and Section 213 of the Clean Air Act (42 U.S.C. sections 7411 and 7547) and 40 CFR Part 60, and subject to the terms and conditions prescribed in those provisions, this certificate of conformity is hereby issued with respect to the test engines which have been found to conform to applicable requirements and which represent the following engines, by engine family, more fully described in the documentation required by 40 CFR Part 60 and produced in the stated model year.

This certificate of conformity covers only those new compression-ignition engines which conform in all material respects to the design specifications that applied to those engines described in the documentation required by 40 CFR Part 60 and which are produced during the model year stated on this certificate of the said manufacturer, as defined in 40 CFR Part 60.

It is a term of this certificate that the manufacturer shall consent to all inspections described in 40 CFR 1068 and authorized in a warrant or court order. Failure to comply with the requirements of such a warrant or court order may lead to revocation or suspension of this certificate for reasons specified in 40 CFR Part 60. It is also a term of this certificate that this certificate may be revoked or suspended or rendered void *ab initio* for other reasons specified in 40 CFR Part 60.

This certificate does not cover engines sold, offered for sale, or introduced, or delivered for introduction, into commerce in the U.S. prior to the effective date of the certificate.

Attachment IV

Authority to Construct Permits

Issued by NSCAPCD on 12/6/2017

- **Exhibit IV.A**: ATC 17-09 Emergency Standby Wet-down Pump Diesel Drive Engine at Unit 18
- **Exhibit IV.B**: ATC 17-10 Emergency Standby Wet-down Pump Diesel Drive Engine at Unit 20

Attachment IV

Authority to Construct Permits

Issued by NSCAPCD on 12/6/2017

Exhibit A:

ATC 17-09

Emergency Standby Wet-down Pump Diesel Drive Engine at Unit 18

NORTHERN SONOMA COUNTY AIR POLLUTION CONTROL DISTRICT
150 Matheson Street Healdsburg CA 95448
Telephone (707) 433-5911

Authority to Construct/Temporary Permit to Operate 17-09

COMPANY: Geysers Power Company
10330 Socrates Mine Road
Middletown, CA, 95461

EQUIPMENT DESCRIPTION:

S-1 204 HP Emergency Standby Wet-Down Pump Diesel Drive Engine,
Cummins Model CFP7E-F40 (Tier 3, Manufactured 2017)

LOCATED AT: Socrates Power Plant (Unit 18)
9500 Geysers Road
Cloverdale, CA

Whereas application for an Authority to Construct/Temporary Permit to Operate has been made by the Geysers Power Company (hereinafter called the Operator) pursuant to Regulation 1 of the Rules and Regulations of the Northern Sonoma County Air Pollution Control District (hereinafter called the District), and said application has been reviewed and considered by the Air Pollution Control Officer of said District (hereinafter referred to as the Control Officer or NSCAPCD).

This is your Authority to Construct/Temporary Permit to Operate (hereinafter called PERMIT) subject to the following terms and conditions:

PERMIT CONDITIONS

A. Production Limit

1. Total operating hours used for testing and maintenance of S-1, emergency standby wet-down pump diesel drive engine, shall not exceed 50 hours in any consecutive 12-month period. The total hours of operation do not include use during emergencies.

B. Emission Limits

1. Visible particulate emissions shall not exceed an opacity as to obscure an observer's view to a degree equal to or greater than Ringelmann 2.0 or 40 per cent opacity for a period or periods exceeding 3 minutes in any one hour.

2. Particulate emissions shall not exceed an emission rate of 0.15 g/bhp-hr.

3. Combined non-methane hydrocarbons and nitrogen oxide emissions shall not exceed an emission rate of 3.0 g/bhp-hr.

4. Carbon monoxide emissions shall not exceed and emission rate of 2.6 g/bhp-hr.

C. Operational Limits and Requirements

1. S-1, emergency standby wet-down pump diesel drive engine, shall only be used because of a failure or loss of all or part of normal electrical power service, except for testing and maintenance as defined in CA HSC 93115.4 (30).

2. S-1, emergency standby wet-down pump diesel drive engine, shall be equipped with a non-resettable hour counting meter to indicate the number of hours the engine is operated.

3. S-1, emergency standby wet-down pump diesel drive engine, shall be operated exclusively on California Air Resources Board (CARB) Diesel Fuel.

4. S-1, emergency standby wet-down pump diesel drive engine, shall be operated according to manufacturer specifications.

D. Monitoring and Testing:

1. At any time as specified by the Control Officer, the operator of this source shall conduct a District approved source test to determine NOx and particulate emissions from the diesel powered generator. The test results shall be provided to the District within 30 days of the test.

E. Recordkeeping

1. In order to demonstrate compliance with the above permit conditions, records shall be maintained in a District approved log, shall be kept on site, and made available for District inspection for a period of 5 years from the date on which a record is made. The records shall include the following information summarized on a monthly basis:

    a. total engine operating hours.
    b. emergency use hours of operation.
    c. maintenance and testing hours of operation.
    d. Hours of operation to comply with the requirements of NFPA 25.
    e. type and amount of fuel purchased.

F. Administrative Requirements

1. Facilities Operation

   a. Operation under this permit must be conducted in compliance with all data and specifications included in the application which attest to the operator's ability to comply with District Rules and Regulations. This permit must be posted in a conspicuous place nearby or, as per rule 240.

   b. All equipment of this PERMIT shall at all times be maintained in good working order and be operated as efficiently as possible so as to minimize air pollutant emissions. [NSCAPCD Rule 240.d]

2. Permit Expiration

   This Authority to Construct is valid for one year and may be extended by an additional year with the payment of the annual renewal fee. After construction of the listed equipment, the permit to operate shall remain valid provided the annual renewal fees are paid in accordance with District Rule 300 and all Permit conditions are met. [NSCAPCD Rule 300.5.1]

3. Severability

   The provisions of this PERMIT are severable, and, if any provision of this PERMIT is held invalid, the remainder of this PERMIT shall not be affected.

4. Notification Requirements

   a. Applicant shall notify the District at least 3 days prior to the start-up of this source

   b. Upsets and Breakdowns - In the event of any failure of process or abatement equipment to operate in a normal manner which results in an increase in emissions above any allowable emissions limit stated in District Rules or in conditions to this PERMIT the Operator shall notify the District as provided by Rule 540 regarding upset breakdown conditions to petition for shelter from enforcement actions. In order to qualify for such shelter an initial notification of the equipment failure must be given within one hour of the failures discovery. [NSCAPCD Rule 540]:

   c. Transfer of Ownership - In the event of any changes in control or ownership of facilities to be constructed or modified, this PERMIT together with its terms and conditions shall be binding on all subsequent owners and operators. The Applicant shall notify the succeeding owner and operator of the existence of this PERMIT and its conditions by letter, a copy of which shall be forwarded to the Control Officer. [NSCAPCD Rule 240.j.]

5. Right to Entry

The Control Officer, The Chairman of the California Air Resources Board, The Regional Administrator of USEPA, and/or their authorized representatives, upon the presentation of credentials, shall be permitted:

a. To enter upon the premises where the source is located or in which any records are required to be kept under the terms and conditions of this PERMIT; and

b. At reasonable times to have access to and copy any records required to be kept under the terms and conditions of this PERMIT; and

c. To inspect any equipment, operation, or method required in this PERMIT; and

d. To sample emissions from the source.
[NSCAPCD Rule 240.e]

THIS PERMIT BECOMES VOID UPON ANY ALTERATION OF EQUIPMENT

This permit does not authorize the emission of air contaminants in excess of those allowed by the Health and Safety Code of the State of California or the Rules and Regulations of the Northern Sonoma County Air Pollution Control District. This permit cannot be considered as permission to violate existing laws, ordinances, regulation or statutes of other governmental agencies.

DATE: 12/6/17

BY: _____

Rob Bamford
Air Pollution Control Officer

Permit Number 17-09

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Attachment IV

Authority to Construct Permits

Issued by NSCAPCD on 12/6/2017

Exhibit B:

ATC 17-10

Emergency Standby Wet-down Pump Diesel Drive Engine at Unit 20

NORTHERN SONOMA COUNTY AIR POLLUTION CONTROL DISTRICT
150 Matheson Street Healdsburg CA 95448
Telephone (707) 433-5911

Authority to Construct/Temporary Permit to Operate 17-10

COMPANY: Geysers Power Company
10330 Socrates Mine Road
Middletown, CA, 95461

EQUIPMENT DESCRIPTION:

S-1 204 HP Emergency Standby Wet-Down Pump Diesel Drive Engine,
Cummins Model CFP7E-F40 (Tier 3, Manufactured 2017)

LOCATED AT: Grant Power Plant (Unit 20)
9500 Geysers Road
Cloverdale, CA

Whereas application for an Authority to Construct/Temporary Permit to Operate has been made by the Geysers Power Company (hereinafter called the Operator) pursuant to Regulation 1 of the Rules and Regulations of the Northern Sonoma County Air Pollution Control District (hereinafter called the District), and said application has been reviewed and considered by the Air Pollution Control Officer of said District (hereinafter referred to as the Control Officer or NSCAPCD).

This is your Authority to Construct/Temporary Permit to Operate (hereinafter called PERMIT) subject to the following terms and conditions:

PERMIT CONDITIONS

A. Production Limit

1. Total operating hours used for testing and maintenance of S-1, emergency standby wet-down pump diesel drive engine, shall not exceed 50 hours in any consecutive 12-month period. The total hours of operation do not include use during emergencies.

B. Emission Limits

1. Visible particulate emissions shall not exceed an opacity as to obscure an observer's view to a degree equal to or greater than Ringelmann 2.0 or 40 per cent opacity for a period or periods exceeding 3 minutes in any one hour.

2. Particulate emissions shall not exceed an emission rate of 0.15 g/bhp-hr.

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   a. Applicant shall notify the District at least 3 days prior to the start-up of this source

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   c. Transfer of Ownership - In the event of any changes in control or ownership of facilities to be constructed or modified, this PERMIT together with its terms and conditions shall be binding on all subsequent owners and operators. The Applicant shall notify the succeeding owner and operator of the existence of this PERMIT and its conditions by letter, a copy of which shall be forwarded to the Control Officer. [NSCAPCD Rule 240.j.]

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b. At reasonable times to have access to and copy any records required to be kept under the terms and conditions of this PERMIT; and

c. To inspect any equipment, operation, or method required in this PERMIT; and

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DATE: 12/6/17

BY: _____
Rob Bamford
Air Pollution Control Officer

Permit Number 17-10

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