Northern Sonoma County Air Pollution Control District
Title V Operating Permit

150 Matheson Street
Healdsburg, CA 95448
(707) 433-5911

TITLE V OPERATING PERMIT

Geysers Power Company, LLC
Geysers Power Plant
Units 7 and 8 (Ridge Line)

PLANT ADDRESS:

5000 John Kingcade Road
27 miles NE of Healdsburg, CA 95448
(707) 431-6059

MAILING ADDRESS:

10350 Socrates Mine Road
Middletown, CA 95461

Responsible Official – Michael Rogers
Facility Contact- James Kluesener

Type of Facility:	Geothermal Power Plant	Issue Date:	12/20/13
Primary SIC:	4911	Effective Date	January 4, 2014
Product:	Electricity	Expiration Date	January 4, 2019

ISSUED BY THE NORTHERN SONOMA COUNTY AIR POLLUTION CONTROL DISTRICT

Barbara A. Lee, Air Pollution Control Officer

12/20/13
Date

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I. EQUIPMENT LIST

A. PERMITTED SOURCE LIST Each of the following sources has been issued a Permit to Operate pursuant to the requirements of NSCAPCD Regulation 1, Chapter II Permits. The equipment and capacities listed in Tables I.A and I.B are based on information provided by the permit holder. Routine maintenance, repair, or replacement with identical or equivalent equipment that does not result in an increase, or potential increase, in emissions of any air pollutant subject to District control does not require a permit modification. Replacement equipment that is within 5% of the listed capacity shall be considered equivalent for the purposes of this permit.

Pumps listed with a capacity range may be replaced with pumps within the listed range without notification to the District. Any replacement of pumps outside the listed range shall receive District approval prior to replacement;

Power Plant		
		UNIT 7
S-#	**Description**	**Nominal Capacity**
1	Steam Turbine	968,000 lb Steam/hr
2	Generator	55 MW gross nameplate capacity
3	Direct Contact Condenser with Steam Operated 3 Stage Gas Ejector System	852,000,000 BTU/Hr
4	Cooling Tower, Cross Flow Mechanical Draft Type with 0.002% rated drift eliminators and with 5 fans	50,000 gpm 150 hp
		UNIT 8
S-#	**Description**	**Nominal Capacity**
1	Steam Turbine	968,000 lb Steam/hr
2	Generator	55 MW gross nameplate capacity
3	Direct Contact Condenser with Steam Operated 3 Stage Gas Ejector System	852,000,000 BTU/Hr
4	Cooling Tower, Cross Flow Mechanical Draft Type with 0.002% rated drift eliminators and with 5 fans	50,000 gpm 150 hp

B. ABATEMENT DEVICE LIST

Hydrogen Sulfide Control System consisting of:		
A-#	**Description**	**Nominal Capacity**
1	**Burner/Scrubber with:**	516 lb/hr H2S
A	Three Combustion Air Blowers	20-25 hp each
B	Auxiliary Fuel Storage Tank, Propane	4,500 gallon
C	Quench Tank	
D	Two Fresh Water Scrubber Spray Supply Pumps	20 - 50 gpm
E	Two Quench and Scrubber water Supply Pumps with standby spare that may be added as needed	2000 - 4000 gpm design
F	Two SO2 Scrubber Vessels	
G	Flue Gas Analyzer with Alarm	
2	**Backup H2S Scrubber Consisting of:**	
A	One Caustic Pump for Unit 7 One Caustic Pump for Unit 8 One Spare Caustic Pump (Common)	Unit 7 250-500 gph Unit 8 150-500 gph Spare 250-500 gph
B	One Flow Meter and Alarm for Unit 7 One Flow Meter and Alarm for Unit 8	
3	**Circulating Water H2S Abatement Solution Injection (For H2S Control) System Consisting of:**	
A	Abatement Solution Storage Tanks	10,000 gallons
B	One Abatement Solution Feed Pump for Unit 7 One Abatement Solution Feed Pump for Unit 8 One Spare Abatement Solution Feed Pump (Common)	20-150 gph
C	One Mass Flow Meter and Flow Alarm for Unit 7 One Mass Flow Meter and Flow Alarm for Unit 8	
4	**Caustic Injection System (for pH control) consisting of:**	
A	Caustic Storage Tank	16,000 gallons
B	One Caustic Pump for pH adjustment	25-200 gph
5	**Air Oxidation System Consisting of:**	
A	Air Compressor	500 scfm rating (equipment may be portable and need not be present when not in service)
B	Abatement Solution Automatic Dump Tank	100 gallons
C	One Low Air Flow Alarm for Unit 7	
D	One Low Air Flow Alarm for Unit 8	
6	Mercury Emission Abatement System	
A	Mercury Adsorption Vessel	8' Dia x 24' tall
B	Oxidant Generator	

II. PERMIT CONDITIONS

Permit conditions are designated federally (**F**), state (**S**), and/or locally (**L**) enforceable. Where a condition references a specific District regulation, the text of the referenced regulation can be found in Appendix A.

A. POWER PLANT AND ABATEMENT SYSTEMS

I. Emission Limits

Emission Limits for H2S and SO2

1. The Units 7 and 8 power plant and associated abatement systems shall comply with Regulation 1 Rule 455 (b)-Geothermal Emission Standards. Total emissions of H2S from each individual unit shall not exceed 11.0 kilograms averaged over any one hour period unless operating under a District approved Alternative Compliance Plan (ACP) in accordance with note 8 of Regulation 1 Rule 455(b). Total H2S emissions shall be the cumulative emissions to the atmosphere from the power plant and associated abatement equipment. *ref. Rule 455(b), PTO 75-50 Cond. 19.A.* **S L**

2. The exit concentration in the process piping leading from the burner/scrubber shall not exceed 1000 ppmv H2S or 1000 ppmv SO2 , for greater than 15 minutes in any consecutive 60 minute period and/or 60 minutes in any consecutive 24 hour period when the burner is in service unless operating under a District approved Alternative Compliance Plan (ACP). When the burner is out of service the concentration in the process piping leading from the scrubber shall not exceed 1000 ppmv H2S except as provided in Condition II.14 in conjunction with Conditions II.13 through II.19 of the Burner Trip Transition Period. *ref. PTO 75-50 Cond. 19.B.* **S L**

3. The power plant and associated abatement systems shall comply with Regulation 1 Rule 440-Sulfur Oxide Emissions; no person shall discharge into the atmosphere emissions of sulfur oxides, calculated as sulfur dioxide, in excess of 1,000 ppmv. *ref. Rule 440* **F S L**

4. The power plant and associated abatement systems shall comply with Regulation 1 Rule 455 (a)-Geothermal Emission Standards; no person shall discharge into the atmosphere from any geothermal operation sulfur compounds, calculated as sulfur dioxide, in excess of 1,000 ppmv. *ref. Rule 455(a)* **F S L**

Emission Limits for Particulate Matter

5. Particulate emissions from the burner/scrubber shall not exceed 3.1 lb/hr. *ref. PTO 83-14 Cond. 18.* **S L**

6. The power plant and associated abatement systems shall comply with Regulation 1 Rule 420 (d) Non-Combustion Sources- Particulate Matter; no person shall discharge particulate matter into the atmosphere from a non-combustion source in excess of 0.2 grains per cubic foot of exhaust gas or in total quantities in excess of the amount shown in Table I. (40 lb/hr) which ever is the more restrictive condition. *ref. Rule 420(d)* **F S L**

Emission Limits for Nitrogen Oxides, Carbon Monoxide and Sulfur Dioxide

7. Emissions of nitrogen oxides, sulfur dioxides and carbon monoxide from the burner scrubber shall not exceed: **S L**

   NOx = 9.1 lbs/hr
   SO2 = 9.1 lbs/hr
   CO = 22.0 lbs/hr
   ref. Rule 220, PTO 83-14 Cond. 19

II. Operational Limits and Requirements

1. The permit holder shall operate, and maintain an H2S burner/scrubber, H2S abatement chemical feed system, caustic feed system and other abatement systems in good working order and as necessary in order to limit H2S, SO2, and particulate emissions on a continuous basis from the power plant as specified in condition I.1, I.2, I.3, I.4, I.5, I.6 and I.7. *ref. Rule 240.d* **F S L**

2. The monitoring system must alarm the operator when the burner/scrubber, exit gas oxygen concentration falls below 0,5%, for longer than a 15 consecutive minute period. The operator shall respond to the alarm with appropriate mitigation measures. *ref. PTO 83-14 Cond. 17* **S L**

3. The abatement solution storage tank shall have a minimum of 1000 gallons of abatement solution at all times when the plant is in operation. All continuously operated chemical feed pumps shall under normal conditions have a standby spare available, a readily accessible flowmeter readable in appropriate units and equipped with alarms signaling no or low flow. Flowmeter accuracy shall be plus or minus 10% of flow. *ref. PTO 75-50 Cond. 18* **S L**

4. The caustic storage tank shall have a minimum of 1000 gallons at all times when the plant is in operation. The abatement solution and backup caustic chemical feed pumps shall have a standby spare pump available, a readily accessible flowmeter readable in appropriate units and equipped with alarms signaling no or low flow. Flowmeter accuracy shall be plus or minus 10% of flow. *ref. PTO 75-50 Cond. 18* **S L**

5. Except for justifiable reasons during performance testing or under operation of an ACP, for which the permit holder has received prior District written approval, the circulating scrubbing solution shall be kept to the following specification: (1) Circulating water iron chelate concentration shall be maintained at or above the ppmw recommended in the power plant operating chemical feed charts necessary to abate H2S emissions from the power plant to the emission limit specified in Condition I.1. , and (2) the pH of the circulating water shall be maintained at or above 5.9 when the burner is in service. The pH shall be raised to 7.3 or greater for unit 7 and to 7.8 or greater for unit 8 within 45 minutes of activation of the backup scrubber when each unit is operating at 25 MW or less. The pH shall remain at or above the stipulated levels when the backup scrubber is in service and each unit is operating at 25 MW or less. The pH for each unit shall be raised to 8.0 or greater prior to raising load above 25 MW and shall remain at 8.0 or greater when the backup scrubber is in service *ref. PTO 83-14 Cond. 17* **S L**

6. The permit holder shall operate the air oxidation system as necessary in order to meet the emission limits specified in Conditions I.1. This system shall be equipped with an alarm system that will signal the plant operator when the air compressor experiences an overcurrent/shutdown trip or low flow condition. *ref. PTO 75-50 Cond. 18.* **S L**

7. To assure maximum reliability of Units 7 and 8 meeting their emission limits, the burner/scrubber system, when in use, shall be backed up by maintaining in operational readiness the following: (1) existing caustic backup scrubber control system such that it will receive and treat H2S in the full non-condensable gas flow and (2) the existing H2S condensate treatment system (abatement solution injection) such that it will provide necessary control of H2S in the condensate. *ref. PTO 83-14 Cond. 17.* **S L**

8. The propane storage tanks for the burner/scrubber shall have minimum supply of at least 500 gallons when the plant is in operation. *ref. PTO 83-14 Cond. 17.* **S L**

9. All the abatement systems shall be properly winterized and maintained to ensure proper and reliable functioning. All primary pressure gauges and flow meters associated with abatement equipment shall be readily identified, maintained in good operating condition and calibrated on a quarterly basis. Alarm systems associated with abatement equipment shall be tested on a quarterly basis. Calibration and maintenance shall be performed according to manufacturer's recommendations or per the permit holders maintenance schedule as needed to maintain the equipment in good working order. *ref. PTO 75-50 Cond. 15.* **S L**

10. Untreated vent gas shall be directed through the vent to the atmosphere only during upset/breakdown situations pursuant to Regulation 1 Rule 540. During periods of cold start-ups the vent gas H2S treatment system shall be operated to preclude the release of untreated vent gases to the atmosphere above the permitted emission limits specified in Condition I.1 and I.4.. *ref. PTO 75-50 Cond. 16.* **F S L**

11. All areas in the immediate vicinity and under the permit holders responsibility shall be properly treated to control fugitive dust. *ref. PTO 75-50 Cond. 20.* **S L**

12. Fugitive Leaks

    a. Noncondensible gas leaks: Valves, flanges, seals on pumps and compressors, piping and duct systems shall be inspected, maintained and repaired to prevent the emission of non-condensable gases to the atmosphere. Valves, flanges and seals shall be tightened, adjusted, or have gasket material added using the best modern practices for the purpose of stopping or reducing leakage to the atmosphere. **F S L**

    Non-condensable gas leaks shall not (i) exceed (as measured within 1 cm of such leak) <u>1000 ppm (vol) H2S</u> nor 10,000 ppm(vol) methane nor (ii) exceed emission limits of Rule 440. Such leaks shall be repaired within 24 hours, unless the leak is from essential equipment. If the leak is from essential equipment, the leak must be minimized within 24 hours using best modern practices and eliminated at the next prolonged outage of the process unit unless an extension is approved by the APCO.

    Essential Equipment is defined as equipment which cannot be taken out of service without shutting down the process unit which it serves.

    Leak Minimization is defined as the tightening, adjusting, or addition of packing material which surrounds the leak, or the replacement of the valve or flange for the purpose of stopping or reducing leakage to the atmosphere, using best modern practices

b. Steam and condensate leaks: Valves, flanges, seals on pumps and compressors, piping and duct systems shall be inspected, maintained and repaired to prevent the emission of steam and condensate to the atmosphere. Valves, flanges and seals shall be tightened, adjusted, or have gasket material added using the best modern practices for the purpose of stopping or reducing leakage to the atmosphere. Valves, flanges, drip legs, threaded fittings and seals on pipelines shall be maintained to prevent or reduce the emission of steam and condensate to the atmosphere as noted below: **S L**

Liquid leak rate in pressurized steam and condensate lines shall not exceed 20 ml in 3 minute. Liquid leak rates in excess of 20 ml in 3 minutes shall be repaired within 15 calendar days, excepting those leaks from essential equipment. If the leak is from essential equipment, the leak must be minimized within 15 days using best modern practices and eliminated at the next prolonged outage of the process unit unless an extension is approved by the APCO.

Essential Equipment is defined as equipment which cannot be taken out of service without shutting down the process unit which it serves.

Leak Minimization is defined as the tightening, adjusting, or addition of packing material which surrounds the leak, or the replacement of the valve or flange for the purpose of stopping or reducing leakage to the atmosphere, using best modern practices.

The permit holder shall check the power plant for fugitive leaks at least once per quarter. *ref. PTO 75-50 Cond. 20.*

Burner Trip Transition Period

13. Immediately following a burner trip the permit holder shall place into operation the backup hydrogen sulfide abatement system. *ref. Rule 240 (d).* **S L**

14. The power plant load at each unit shall be rolled back to 25 MW or less within 15 minutes of a burner outage. Within 30 minutes of activation, the exit concentration from the backup caustic scrubber shall not exceed 1000 ppmv H2S unless the plant is operating under a District approved ACP. *ref. Rule 240 (d).* **S L**

15. Within 45 minutes of a burner trip and at least once per shift during operation, plant operators shall inspect and verify operation of the backup hydrogen sulfide abatement equipment. Verification of operation shall include recording the delivery rates of caustic to the after condenser and abatement solution to the circulating water in a District approved log. *ref. Rule 240 (d).* **S L**

16. After condenser (back-up caustic scrubber) vent gas shall be measured using a District approved method for hydrogen sulfide within 30 minutes of a burner outage and recorded in a District approved log. The permit holder shall sample and record the vent gas concentration once per operating shift when operating the back-up scrubber. *ref. Rule 240 (d).* **S L**

17. The circulating water pH shall be measured using a District approved method within 45 minutes of the burner outage and recorded in a District approved log unless the burner is restarted in that time period. The permit holder shall measure and record the circulating water pH at least once per operating shift when operating the back-up scrubber. The power plant load may be increased above 25 MW once the circulating water pH and abatement solution concentration levels have reached the burner out of service targets specified in the abatement guidelines and the exit concentration from the backup caustic scrubber remains below 1000 ppmv H2S. *ref. Rule 240 (d).* **S L**

18. An alternative burner trip transition period and operating conditions may be utilized in place of one or more of these conditions if submitted as an ACP and approved by the APCO. *ref. Rule 240 (d).* **S L**

19. Permit Conditions II.13 through II.18 shall not apply to units which are tripped off-line within 15 minutes of a burner trip or if the burner is restarted within 15 minutes. *ref. Rule 240 (d).* **S L**

20. *Alternative Compliance Plan*

a The permit holder may propose an Alternative Compliance Plan (ACP) which allows for operating flexibility of the power plant, including burner transition periods, while maintaining compliance with all applicable emission limits of Conditions I.3, I.4, and I.6. The ACP shall list operating parameters such as power output (MW), target pH, abatement solution concentration levels, and burner/scrubber exit concentrations which shall be met in order to meet all applicable emission limits listed above. The ACP shall be submitted to the APCO for approval. The APCO shall approve, disapprove or modify the plan within 30 days of receipt of the ACP. An APCO approved ACP shall consist of all parametric operating guidelines which shall be used to determine compliance with Conditions I.3, I.4, and I.6. The ACP shall list the specific operating conditions the ACP will supersede. **F S L**

b. The permit holder may propose an Alternative Compliance Plan (ACP) which allows for operating flexibility of the power plant, including burner transition periods, while maintaining compliance with all applicable emission limits of Conditions I.1, I.5, and I.7. The ACP shall list operating parameters such as power output (MW), target pH, abatement solution concentration levels, and burner/scrubber exit concentrations which shall be met in order to meet all applicable emission limits listed above. The ACP shall be submitted to the APCO for approval. The APCO shall approve, disapprove or modify the plan within 30 days of receipt of the ACP. An APCO approved ACP shall consist of all parametric operating guidelines which shall be used to determine compliance with Conditions I.1, I.5, , and I.7. The ACP shall list the specific operating conditions the ACP will supersede. **S L**

Facilities Operation

21. All equipment, facilities, and systems installed or used to achieve compliance with the terms and conditions of this Permit shall at all times be maintained in good working order. The equipment shall be operated in a manner necessary to meet all emission limits of the permit. *ref. Rule 240(d)* **S L**

22. The cooling tower shall be maintained in good operating condition. The permit holder shall conduct an integrity inspection of the cooling tower during each scheduled plant overhaul and carry out any repairs necessary to correct all deficiencies encountered. *ref. Rule 240(d).* **S L**

III. Monitoring, Testing and Analysis

Performance Tests

1. The permit holder shall, on a monthly basis, conduct a source test of each cooling tower to determine the H2S emission rate to verify compliance with condition I.1. District Method 102 shall be utilized to determine the H2S emission rate. The permit holder may propose an Alternative Compliance Plan (ACP) which allows for operating flexibility of the power plant, including periods when accessing the cooling tower is not possible, while maintaining compliance with all applicable emission limits of Conditions I.1. The ACP shall list operating parameters such as power output (MW), target pH, abatement solution concentration levels, and burner/scrubber exit concentrations which shall be met in order to meet all applicable emission limits listed above. The ACP shall be submitted to the APCO for approval. The APCO shall approve, disapprove or modify the plan within 30 days of receipt of the ACP. An APCO approved ACP shall consist of all parametric operating guidelines that shall be used to determine compliance with Conditions I.1. The ACP shall list the specific operating conditions the ACP will supersede. *ref. PTO 75-50 Cond. 22.* **S L**

2. The permit holder shall provide platforms, electrical power and safe access to sampling ports to enable representatives of the District and ARB to collect samples from the main steam supply, treated and untreated condensate, circulating water upstream of the cooling tower, cooling tower stacks, untreated and treated non-condensable gas stream to and from the backup caustic scrubber, and any off gas bypass vents to the atmosphere *ref. PTO 83-14 Cond. 12.* **S L**

3. The permit holder, shall conduct a District approved performance test for NOX, CO, particulate matter (PM), SOX at a minimum of every five years prior to Operating Permit renewal and following any significant process modification authorized by the Control Officer. **S L**

   The permit holder, as requested by the Control Officer, shall conduct a District approved performance test for NOX, CO, particulate matter (PM), SOX, H2S, other species (i.e. benzene, mercury, arsenic, TRS, mercaptans, radon , other nitrogen compounds (amines) and compounds listed under NESHAPS and/ or AB 2588 from the burner/scrubber. Upon written request of the Control Officer, the permit holder shall submit to the District at least 45 days prior to testing a detailed performance test plan. The District shall approve, disapprove or modify the plan within 45 days of receipt of the plan. The permit holder shall incorporate the District's comments or modifications to the plan which are required to assure compliance with the District's regulations. The Control Officer shall be notified 15 days prior to the test date in order to arrange for an observer to be present for the test. The test results shall be provided to the District within 45 days of the test date unless a different submittal schedule is approved in advance by the Control Officer. *ref. PTO 83-14 Cond 11.*

4. Compliance with the particulate mass emission limitation shall be based on the evaporative cooling tower manufacturers design drift eliminator drift rate, 0.002 percent, multiplied by the circulating water rate and, total dissolved solids (TDS) and total suspended solids (TSS). A circulating water sample shall be collected and analyzed for TDS and TSS on a monthly basis. *ref. PTO 75-50 Cond. 21* **F S L**

5. Main steam supply H2S concentrations shall be determined minimally on a weekly basis and any additional times as required by the operating protocol or ACP. *Ref. PTO 75-50 Cond.19.* **S L**

6. The permit holder shall perform an abatement solution concentration test and a pH measurement of the cooling tower circulating water once per operating shift. The testing equipment shall be kept calibrated per the manufacturer's specifications. *ref. PTO 75-50 Cond.19* **S L**

7. ***Instruments used for the measurement of H2S or Total Organic Gases to satisfy District permit conditions or regulations shall receive District approval prior to use. Test plans shall be submitted for District approval of instruments used for the measurement of H2S or Total Organic Gases to satisfy District permit conditions or regulations.*** *ref. Rule 240(d)* **S L**

8. All sampling protocols, chemical feed charts, targets and operational guidelines for using said charts and targets, necessary to abate H2S emissions from the power plant to the emission limits specified in Conditions I.1 and I.2 must be developed using good engineering judgment and supporting data. The APCO may review such sampling protocols, chemical feed charts, targets and guidelines upon request. If the APCO determines that any of the protocols, feed charts, targets, or guidelines are not sufficient to maintain compliance with Conditions I.1 and I.2, the APCO shall require the permit holder to develop revised protocols, feed charts, targets and guidelines. *ref. Rule 240(d)* **S L**

Continuous Compliance Monitoring (CCM)

9. The permit holder shall operate a continuous compliance monitor capable of measuring the concentrations of H2S and SO2 in the exhaust stream from the burner/scrubber in order to verify compliance with conditions I.1 and I.2. The monitoring system must alarm the operator when H2S in the treated gas is in excess of 250 ppmv or when SO2 is in excess of 250 ppmv. The permit holder shall respond to the alarm with appropriate mitigative measures. Mitigative measures taken shall be logged in the power plant abatement log book. The monitors of H2S and SO2 shall have a full range of at least 1000 ppmv . The monitor shall meet the following operational specifications: an accuracy of plus or minus 10% of full scale, provide measurements at least every 15 minutes, provide a continuous strip chart record or a District approved alternative, and provide monthly data capture of at least 90%. The District must be notified when the concentration of H2S exceeds 1000 ppmv or SO2 exceeds 1000 ppmv for greater than 15 minutes in any consecutive 60 minute period. **S L**

The Control Officer may allow modifications to the above specifications under an ACP upon written request with justification by the permit holder as long as emissions from the power plant do not exceed 9.1 lb SO2/hr or the "total" H2S emission limitations of condition I.1. Written notification from the Control Officer must be received by the permit holder prior to any change in monitoring specifications. *ref. PTO 83-14 Cond. 21.*

Ambient Air Monitoring

IV. Recordkeeping

1. All records and logs shall be retained for a period of at least 5 years from the date the record or log was made and shall be submitted to the NSCAPCD upon request. *Ref. Rule 240 (d)* **F S L**

2. The permit holder shall maintain a weekly propane, abatement solution and caustic inventory log available for on-site inspection. *ref. Rule 220* **S L**

3. The permit holder shall maintain a strip chart or other District approved data recording device of H2S and SO2 readings measured by the CCM. All measurements, records, and data shall be maintained by the permit holder for at least five (5) years. The permit holder shall report all exceedances of Condition I.2 lasting greater than 5 minutes in duration in the quarterly report as required in V.1. The report shall include a description of all measures taken to bring the burner/scrubber back into compliance with Condition I.2. The permit holder shall include in the report a copy of the output from the H2S/SO2 CCM or alternative District approved data during the upset condition. *ref. Rule 220* **S L**

4. The permit holder shall maintain copies of the source test results as required in condition III.1. *ref. PTO 75-50 cond. 22.* **S L**

5. Fugitive Leak Records

   a. Any noncondensible gas leak in excess of the limitations of condition II.12.a which has been detected by the permit holder and is awaiting repair shall be identified in a manner which is readily verifiable by a District inspector. Any leak in the above listed pieces of equipment exceeding the limitations of II.12.a and not identified by the permit holder and which is found by the District shall constitute a violation of this Permit. The permit holder shall maintain a current listing of such leaks awaiting repair and shall make this list available to the District upon request **F S L**

   b. Any valve, flange, drip leg threaded fitting or seal on a pipeline or condensate collection system with a leak in excess of the limitations of condition II.12 which has been detected by the permit holder and is awaiting repair shall be identified in a manner which is readily verifiable by a District inspector. Any leak in the above listed pieces of equipment exceeding the limitations of II.12 and not identified by the permit holder and which is found by the District shall constitute a violation of this Permit. The permit holder shall maintain a current listing of such leaks awaiting repair and shall make this list available to the District upon request. *ref. PTO 75-50 cond. 20.* **S L**

6. Records of Deviation from Permit conditions: The permit holder shall maintain records detailing: **F S L**

   a. any periods of significant abatement equipment malfunction, reasons for malfunctions and corrective action.
   b. dates and hours in which the emission rates were in excess of the emission limitations specified in permit conditions I.3, I.4,and I.6.
   c fugitive non-condensable gas emission source inspections, leak rates, repairs and maintenance
   d. total dissolved solids and total suspended solids in the circulating water

7. Compliance and Operating Records The permit holder shall maintain operating records detailing: **S L**

   a. hours of operation.
   b. a summary of any irregularities that occurred with a continuous compliance monitor.
   c. types, concentrations and amounts of chemicals used for quencher/scrubber solution and used for condensate treatment including target levels for pH and abatement solution.
   d. the dates and hours in which the emission rates were in excess of the emission limitations specified in permit conditions I.1, I.2, I.5, and I.7.
   e. Any period of time the vent gas burner/scrubber is out of service or taken off-line.

f. H_2S concentrations as measured during burner trips or during chemical abatement operation.
g. periods of scheduled and unscheduled outages and the cause of the outages.
h. test results of circulating water iron chelate concentration measurements and circulating water pH measurements.
i. time and date of all pump and flowmeter calibrations required by this permit
j. time and date of all alarm system tests
k. leaking equipment awaiting repair; time and date of detection and final repair.

ref. Rule 240(d)

V. Reporting

1. A quarterly report shall be submitted to the District which contains the following information: **S L**

   a. CCM availability for the given quarter.
   b. time periods and date when burner/scrubber is off line.
   c. any periods of significant abatement equipment malfunction, reasons for malfunctions and corrective action taken.
   d. time and date of any monitor indicating exceeds of 1000 ppmv of H_2S or SO_2 lasting greater than 5 minutes in duration.
   e. source test results.

   The quarterly report shall be submitted to the District within 30 days of the end of each quarter. The reports are due by May 1, August 1, November 1 and February 1 for each corresponding quarter.

ref. Rule 240(d)

2. An annual report shall be submitted to the District which contains the following information: **S L**

   a. average mainsteam H_2S concentration
   b. annual ammonia emissions
   c. average total dissolved and suspended solids and average flowrate of the cooling tower water.
   d. gross megawatt hours generated.
   e. steaming rate, gross average (lb/MW).
   f. Burner/Scrubber NOx, SO_2, total hydrocarbons and CO emission estimates based on the last source test for each corresponding pollutant and actual operating hours of the plant and burner/scrubber.
   g. update to any changes in operating protocols used to determine plant chemical feed charts and targets; calibration and maintenance programs.
   h. hours of plant operation.
   i. Annual CO_2e emissions.

   The annual report shall be submitted to the District within 45 days of the end of each calendar year.

   ref. Rule 240(d)

3. The permit holder shall submit reports to the California Air Resources Board (CARB) in accordance with the provisions of CCR Title 17, Division 3, Chapter 1, Subchapter 10, Article 2, Regulation for Mandatory Reporting of Greenhouse Gas Emissions. **S L**

B. PLANT WIDE PERMIT CONDITIONS

F S L

The plant shall comply with the following District regulations. The text of the referenced regulations can be found in Appendix A of this Title V Operating Permit.

1. Regulation 1 Rule 400-General Limitations
2. Regulation 1 Rule 410-Visible Emissions
3. Regulation 1 Rule 430-Fugitive Dust Emissions
4. Regulation 1 Rule 492 (40 CFR part 61 Subpart M)-Asbestos
5. Regulation 1 Rule 540-Equipment Breakdown
6. Regulation 2- Open Burning
7. If in the event this stationary source, as defined in 40 CFR part 68.3, becomes subject to part 68, this stationary source shall submit a risk management plan (RMP) by the date specified in part 68.10. As specified in Parts 68, 70 and 71, this stationary source shall certify compliance with the requirements of part 68 as part of the annual compliance certification required by 40 CFR part 70 or 71.
8. 40 CFR Part 82- Chlorinated Fluorocarbons
9. If in the event this stationary source, as defined in 40 CFR part 63, becomes subject to part 63, this stationary source shall notify the District within 90 days of becoming subject to the regulation. The stationary source shall identify all applicable requirements of part 63 and submit a plan for complying with all applicable requirements.

C. ADMINISTRATIVE REQUIREMENTS

Payment of Fees F S L

1. This Permit shall remain valid during the 5 year term as long as the annual renewal fees are paid in accordance with Regulation 1 Rule 300 and Rule 360 of the District. Failure to pay these fees will result in forfeiture of this permit. Operation without a permit subjects the source to potential enforcement action by the District and the EPA pursuant to section 502(a) of the Clean Air Act. *ref. Reg 5.670*

Right to Entry and Inspection F S L

2. The Control Officer, the Chairman of the California Air Resources Board, The Regional Administrator of the EPA 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 areas 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. *ref. Reg 5.610(e)*

Compliance with Permit Conditions

3. This Title V Operating Permit expires on January 4, 2019 The permit holder shall submit a complete application for renewal of this Title V Operating Permit no later than 6 months prior to expiration and no earlier than one year prior to expiration. If a complete application for renewal has not been submitted in accordance with these deadlines, the facility may not operate after January 3, 2014. *ref Reg 5.660* **F S L**

4. The permit holder shall comply with all conditions of this permit. Any non-compliance with the terms and conditions of this permit will constitute a violation of the law and may be grounds for enforcement action, including monetary civil penalties, permit termination, revocation and reissuance, or modification; or denial of a permit renewal application. *ref. Reg 5.610(f)(3)* **F S L**

5. In the event any enforcement action is brought as a result of a violation of any term or condition of this permit, the fact that it would have been necessary for the permit holder to halt or reduce the permitted activity in order to maintain compliance with such term or condition shall not be a defense to such enforcement action. *ref. Reg 5.610(f)(4)* **F S L**

6. The filing of a request by the facility for a permit modification, revocation and reissuance, or termination, or of a notification of planned changes or anticipated non-compliance does not stay the applicability of any permit condition. *ref. Reg 5.610 f)(5)* **F S L**

7. This permit does not convey any property rights of any sort, nor any exclusive privilege. *ref. Reg 5.610(f)(2)* **F S L**

8. The permit holder shall supply within 30 days any information that the District requests in writing to determine whether cause exists, per Regulation 5.570, for modifying, revoking and reissuing, or terminating the permit or to determine compliance with the permit. *ref. Reg 1 Rule 200, Reg 5.430* **F S L**

Reporting

9. All deviations from permit requirements, including those attributable to upset conditions (as defined in the permit) must be reported to the District at least once every six months. For emissions of a hazardous air pollutant (HAP) or a toxic air pollutant (as identified in an applicable regulation) that continue for more than an hour in excess of the permit requirements, the report must be made within 24 hours of the occurrence. For emissions of any regulated air pollutant, excluding those HAP emission requirements listed above, that continue for more than two hours in excess of permit requirements, the report must be made within 48 hours. All reports of deviation from permit requirements shall include the probable cause of the deviation and any preventative or corrective action taken. A progress report shall be made on a compliance schedule at least semi-annually and shall include the date when compliance will be achieved, an explanation of why compliance was not, or will not be, achieved by the scheduled date, and a log of any preventative or corrective action taken. The reports shall be certified by the responsible official as true, accurate and complete. **F S L**

ref. Reg 5.625

Severability

10. In the event that any provision of this permit is held invalid all remaining portions of the permit shall remain in full force and effect. *ref. Reg 5.610(g)* **F S L**

Transfer of Ownership

11. In the event of any changes in control or ownership of facilities to be modified and/or operated, this Permit is transferable and shall be binding on all subsequent owners and operators. The permit holder 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. *ref. Rule 240(j)* **F S L**

Records

12. Notwithstanding the specific wording in any requirement, all records for federally enforceable requirements shall be maintained for at least five years from the date of entry and shall include; date place and time of sampling, operating conditions at the time of sampling, date, place and method of analysis and the results of the analysis. *ref. Reg 5.615* **F S L**

Emergency Provisions

13. The permit holder may seek relief from enforcement action in the event of a breakdown, as defined by Regulation 1 Rule 540 of the District's Rules and Regulations, by following the procedures contained in Regulation 1, Rule 540 (b). The District will thereafter determine whether breakdown relief will be granted in accordance with Regulation 1, Rule 540 (b)(3). *ref. Reg 5.640* **F S L**

14. The permit holder may seek relief from enforcement action for a violation of any of the terms and conditions of this permit caused by conditions beyond permit holders reasonable control by applying to the District's Hearing Board for a variance pursuant to Health and Safety Code Section 42350. The Hearing Board will determine after notice and hearing whether variance relief should be granted in accordance with the procedures and standards set forth in Health and Safety Code Section 42350 et seq. Any variance granted by the Hearing Board from any term or condition of this permit which lasts longer than 90 days will be subject to EPA approval. *ref. Reg 1 Rule 600* **F S L**

15. Notwithstanding the foregoing, the granting by the District of breakdown relief or the issuance by the Hearing Board of a variance will not provide relief from federal enforcement unless the Title V Operating Permit has been modified pursuant to Regulation 5 or other EPA approved process. *ref. Reg 1 Rule 600* **F S L**

Permit Posting

16. Operation under this permit must be conducted in compliance with all data specifications included in the application which attest to the operators ability to comply with District rules and regulations. This permit must be posted in such a manner as to be clearly visible and accessible at a location near the source. In the event that the permit cannot be so placed, the permit shall be maintained readily available at all times on the operating premises. *ref. Rule 240(i)* **S L**

Compliance Certification

17. Compliance Report and certifications shall be submitted annually by the responsible official of this facility to the Northern Sonoma County Air Pollution Control District and to the EPA. Each compliance certification shall be accompanied by a written statement from the responsible official which certifies the truth, accuracy, and completeness of the report. *ref. Reg 5.650* **F S L**

18. This Permit does not authorize the emission of air contaminants in excess of those allowed by the Health & 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, regulations or statutes of other governmental agencies. *ref. Rule 240(d)* **S L**

Permit Modification

19. The permit holder shall comply with all applicable requirements in NSCAPCD Regulation 1 Chapter II- Permits and New Source Review. *ref. Regulation 1 Rule 200* **F S L**

III. APPLICABLE EMISSION LIMITS & COMPLIANCE MONITORING REQUIREMENTS SUMMARY

The following table provides an informational summary of the permit terms and conditions specified in Part II, Permit Conditions.

SOURCES: POWER PLANT (S-1 THROUGH S-4)						
Pollutant	**Emission Limit**	**Emission Limit/ Citation**	**Monitoring Type**	**Monitoring Frequency**	**Monitoring Requirement Citation**	**FE Y/N**
Hydrogen Sulfide	200 g/hr/GMW	Regulation 1 Rule 455(b)	Source Test	Monthly	Permit Condition III.1	N
	11.0 kg/hr (each unit)	Permit Condition I.1	Source Test	Monthly	Permit Condition III.1	N
	11.0 kg/hr (each unit)	Permit Condition I.1	Main Steam H2S Sample	Weekly	Permit Condition III.5	N
	exit conc. from burner/ scrubber shall not exceed 1000 ppmv H2S for greater than 15 min/hr	Permit Condition I.2	CCM	Continuous when burner is in service	Permit Condition III.9	N
Particulate Matter (PM)	0.20 grains/scf This standard is much less restrictive compared to the 40 lb/hr limit from cooling tower.	Regulation 1 Rule 420(d) Permit Condition I.6	Source Test	As Requested	N/A	Y
	40 lb/hr from both cooling towers	Permit Condition I.6	TDS & TSS Sample	Monthly	Permit Condition III.4	Y
	3.1 lb/hr from burner scrubber	Permit Condition I.5	Source Test	As Requested Every 5 years	Periodic Monitoring Permit Condition III.3	N
Sulfur Dioxide	exit conc. from burner/ scrubber shall not exceed 1000 ppmv SO2 for greater than 15 min/hr	Permit Condition I.2	CCM	Continuous when burner is in service	Permit Condition III.9	N

SOURCES: POWER PLANT (S-1 THROUGH S-4) (continued...)						
Pollutant	**Emission Limit**	**Emission Limit/ Citation**	**Monitoring Type**	**Monitoring Frequency**	**Monitoring Requirement Citation**	**FE Y/N**
Sulfur Dioxide	9.1 lb/hr from burner scrubber	Permit Condition I.7	Source Test	As Requested	Periodic Monitoring Permit Condition III.3	N
Carbon Monoxide	22.0 lb/hr from burner scrubber	Permit Condition I.7	Source Test	As Requested Every 5 years	Periodic Monitoring Permit Condition III.3	N
Nitrogen Oxides	9.1 lb/hr from burner scrubber	Permit Condition I.7	Source Test	As Requested Every 5 years	Permit Condition III.3	N
Visible Emissions	Ringlemann 2	Regulation 1 Rule 410	VEE	As Requested	N/A	Y

IV. TEST METHODS

The following table indicates the test methods associated with emission limits referenced in Section V, Applicable Emission Limits and Compliance Monitoring Requirements

Applicable Requirement	Description of Requirement	Acceptable Test Methods	SIP-Approved
Regulation 1 Rule 455	Geothermal Emission Standards	NSCAPCD Approved Modified Method 102	No

V. GLOSSARY

Abatement Solution
Iron chelate or any other District approved compound used to chemically treat H2S in the steam condensate

ACP
Alternative Compliance Plan

APCO
Air Pollution Control Officer

BACT
Best Available Control Technology

CAA
The federal Clean Air Act

CAM
Compliance Assurance Monitoring

CCM
Continuous Compliance Monitor

CCM Availability
Hours CCM is in operation divided by the hours the primary abatement system is in service.

CEQA
California Environmental Quality Act

CFR
The Code of Federal Regulations. 40 CFR contains the implementing regulations for federal environmental statutes such as the Clean Air Act. Parts 50-99 of 40 CFR contain the requirements for air pollution programs.

Cold Startup
Starting the power plant from inactive status

District
The Northern Sonoma County Air Pollution Control District

EPA
The federal Environmental Protection Agency

Federally Enforceable, FE
All limitations and conditions which are enforceable by the Administrator of the EPA including those requirements developed pursuant to 40 CFR Part 51, subpart I (NSR), Part 52.21 (PSD), Part 60, (NSPS), Part 61, (NESHAPs), Part 63 (HAP), and Part 72 (Permits Regulation, Acid Rain).

GPH
Gallons per hour

HAP
Hazardous Air Pollutant. Any pollutant listed pursuant to Section 112(b) of the Act. Also refers to the program mandated by Title I, Section 112, of the Act and implemented by both 40 CFR Part 63, and District Regulation 2, Rule 5.

Irregularity
Period of time a CCM monitor reading is not consistent with other verifiable data or information.

Low Flow
The flowrate below 10% of the required flowrate of the back-up caustic scrubber pumps.

Major Facility
A facility with potential emissions of regulated air pollutants greater than or equal to 100 tons per year, greater than or equal to 10 tons per year of any single hazardous air pollutant, and/or greater than or equal to 25 tons per year of any combination of hazardous air pollutants, or such lesser quantity as determined by the EPA administrator.

MW
Megawatts

N/A
Not Applicable

NESHAPs
National Emission Standards for Hazardous Air Pollutants contained in 40 CFR Part 61

NSCAPCD
Northern Sonoma County Air Pollution Control District

NMHC
Non-methane Hydrocarbons

NSR
New Source Review. A federal program for preconstruction review and permitting of new and modified sources of air pollutants for which the District is classified "non-attainment". Mandated by Title I of the Clean Air Act and implemented by 40 CFR Parts 51 and 52 as well as District Regulation 1, Rule 220

Overcurrent/Shutdown trip
A condition where the air oxidizer stops working.

PM
Total Particulate Matter

PM10
Particulate matter with aerodynamic equivalent diameter of less than or equal to 10 microns.

Primary Pressure Gauges and Flowmeters
All pressure gauges and flow meters used for parametric compliance verification.

Prolonged Outage
The scheduled shutdown of a unit lasting longer than 1 week.

PSD
Prevention of Significant Deterioration. A federal program for permitting new and modified sources of air pollutants for which the District is classified "attainment" of the National Air Ambient Quality Standards. Mandated by Title I of the Act and implemented by both 40 CFR Part 52 and District Regulation 1, Rule 220.

SIP
State Implementation Plan. State and District programs and regulations approved by EPA and developed in order to attain the National Ambient Air Quality Standards. Mandated by Title I of the Act.

Standby Spare
A back-up piece of equipment available for use in the event the primary piece of equipment fails.

Sulfur Compounds
Any inorganic compound containing sulfur

Sulfur Oxides calculated as Sulfur Dioxide
Oxides of sulfur normalized to the molecular weight of sulfur dioxide.

Title V
Title V of the federal Clean Air Act. Requires a federally enforceable operating permit program for major and certain other facilities.

TOG
Total Organic Gasses

TDS
Total Dissolved Solids

TRS
Total Reduced Sulfur
TSS
Total Suspended Solids

Units of Measure:

ft^3	=	cubic feet
g	=	grams
gal	=	gallon
hr	=	hour
lb	=	pound
in	=	inches
psia	=	pounds per square inch, absolute
ppmv	=	parts per million, volume
scfm	=	standard cubic feet per minute
yr	=	year

VEE
Visible Emissions Evaluation

VI. APPENDIX A

The following applicable regulations are referenced in Section II; Permit Conditions.