

FACILITY PERMIT TO CONSTRUCT EASTERN MUNICIPAL WATER DIST.

PERMIT TO CONSTRUCT/OPERATE

Permit No. TBD
A/N 499897

Equipment Description:

DIGESTER GAS TREATMENT SYSTEM AND FUEL CELL POWER PLANT CONSISTING OF:

1. KNOCKOUT TANK.
2. TWO HYDROGEN SULFIDE REMOVAL VESSELS, APPLIED FILTER TECHNOLOGY, ESC CORPORATION, OR EQUIVALENT, AT LEAST 10'-0" DIA. X 10'-0" H., EACH WITH AT LEAST 25,000 POUNDS MEDIA.
3. PARTICULATE FILTER.
4. PRE-COOLER WITH DEMISTER.
5. ONE COMPRESSOR, 325 SCFM, ELECTRICALLY DRIVEN.
6. GAS PRE-COOLER AND COOLER WITH DEMISTER.
7. GAS RE-HEATER.
8. TWO SILOXANE REMOVAL VESSELS, APPLIED FILTER TECHNOLOGY, ESC CORPORATION, OR EQUIVALENT, AT LEAST 4'-0" DIA. X 8'-0" H. BED DEPTH, EACH CONTAINING AT LEAST 2,500 POUNDS MEDIA.
9. PARTICULATE FILTER.
10. TWO FUEL CELLS, FUEL-CELL ENERGY, MODEL DFC300MA, 600 KW TOTAL MAXIMUM POWER OUTPUT.
11. TWO HEAT RECOVERY UNITS, EACH WITH AN ELECTRIC HEATER.

Conditions:

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.
[RULE 204]
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITIONS AT ALL TIMES.
[RULE 204]

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3. THE OWNER OR OPERATOR OF THIS EQUIPMENT SHALL PROVIDE TO SCAQMD FOR APPROVAL, THE FINAL DIGESTER GAS TREATMENT SYSTEM AND FUEL CELL POWER PLANT DESIGN DRAWINGS, P&I DIAGRAMS, CONTROLS, EQUIPMENT SPECIFICATIONS (MAKE, MODEL, DIMENSIONS, SIZE AND MAXIMUM CAPACITY) AND MANUFACTURER'S EMISSION CERTIFICATION, PRIOR TO INSTALLATION OF THE EQUIPMENT.
[RULE 204]
4. THIS EQUIPMENT SHALL BE USED ONLY FOR THE TREATMENT/CONTROL OF DIGESTER GAS, AND THE GENERATION OF ELECTRICITY AND HOT WATER, EXCEPT WHEN NATURAL GAS IS REQUIRED AS FUEL TO MAINTAIN FUEL CELL OPERATION.
[RULE 204]
5. THE OPERATION OF THIS EQUIPMENT SHALL NOT RESULT IN THE RELEASE OF RAW DIGESTER GAS INTO THE ATMOSPHERE. ANY BREAKDOWN OR MALFUNCTION WHICH RESULTS IN EMISSION OF DIGESTER GAS SHALL BE REPORTED TO THE SCAQMD WITHIN ONE HOUR AFTER OCCURRENCE OR WITHIN ONE HOURS OF THE TIME THE OPERATING PERSONNEL KNEW OR REASONABLY SHOULD HAVE KNOWN OF THE OCCURRENCE AND IMMEDIATE REMEDIAL MEASURES SHALL BE UNDERTAKEN TO CORRECT THE PROBLEM AND PREVENT FURTHER EMISSIONS INTO THE ATMOSPHERE.
[RULE 204, RULE 402]
6. A NON-RESETTABLE TOTALIZING FLOW METER SHALL BE INSTALLED AND MAINTAINED TO MEASURE AND RECORD THE TOTAL QUANTITY OF GAS TREATED.
[RULE 204]
7. SAMPLING PORTS SHALL BE INSTALLED AT THE INLET GAS LINE TO THE DIGESTER GAS TREATMENT SYSTEM AND TO THE FUEL-CELL PRE-CONVERTER TO ALLOW THE COLLECTION OF DIGESTER GAS SAMPLES.
[RULE 217]
8. TWO SAMPLING PORTS SHALL BE PROVIDED IN THE FUEL-CELL EXHAUST DUCT, 8-10 DUCT DIAMETERS DOWNSTREAM, AND TWO DUCT DIAMETERS UPSTREAM. THE SAMPLING PORT SHALL CONSIST OF TWO 4 INCH OUTLETS WITH BLIND FLANGE CONNECTIONS, SET 90 DEGREES APART. AN ALTERNATE SAMPLING LOCATION OR EQUIVALENT METHOD FOR EMISSION SAMPLING MAY BE USED UPON WRITTEN APPROVAL OF THE SCAQMD. ADEQUATE AND SAFE ACCESS TO THE TEST PORTS SHALL BE SUPPLIED BY THE APPLICANT.
[RULE 217]
9. THE OPERATOR SHALL MEASURE THE CONCENTRATION OF TOTAL SULFUR AT THE INLET AND OUTLET OF THE DIGESTER GAS TREATMENT SYSTEM ONCE EACH QUARTER, USING METHODS APPROVED BY THE SCAQMD. ALL RESULTS SHALL BE RECORDED AND REPORTED IN PPMV AS H₂S.
[RULE 204]
10. THE CONCENTRATION OF SULFUR COMPOUNDS MEASURED AS HYDROGEN SULFIDE (H₂S) AT THE INLET TO THE FUEL CELL PRE-CONVERTER SHALL NOT EXCEED 6.1 PPMV.
[RULE 204]

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11. THE SPENT MEDIA WHICH IS REMOVED FROM THE SYSTEM SHALL BE MAINTAINED OR STORED IN CLOSED CONTAINERS PRIOR TO REMOVAL FROM THE FACILITY.
[RULE 402]
12. THE SULFUR AND SILOXANE TREATMENT MEDIA SHALL BE REPLACED AT A FREQUENCY NECESSARY TO MAINTAIN COMPLIANCE WITH THE EMISSION LIMITS IN THIS PERMIT AND TO OPERATE THE FUEL CELL IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS.
[RULE 204]
13. THE TOTAL VOLATILE ORGANIC COMPOUNDS (VOC) EMISSIONS FROM THE FUEL CELLS SHALL NOT EXCEED 0.08 LBS/HR (1.95 LBS/DAY).
[RULE 1303-OFFSET]
14. WITHIN 180 DAYS FROM INITIAL STARTUP, AND ONCE EVERY FIVE YEARS THEREAFTER, THE OPERATOR SHALL CONDUCT PERFORMANCE TESTS IN ACCORDANCE WITH SCAQMD APPROVED TEST PROCEDURES AND FURNISH THE SCAQMD WRITTEN RESULTS OF SUCH PERFORMANCE TESTS WITHIN SIXTY (60) DAYS AFTER TESTING. WRITTEN NOTICE OF THE SOURCE TEST SHALL BE PROVIDED TO THE SCAQMD AT LEAST 7 DAYS PRIOR TO TESTING SO THAT AN OBSERVER MAY BE PRESENT. A PROPOSAL OF SOURCE TEST PROCEDURES AND ANALYTICAL METHODS TO BE USED SHALL BE SUBMITTED TO THE SCAQMD FOR APPROVAL AT LEAST 60 DAYS PRIOR TO THE START OF THE TEST. THE TESTS SHALL INCLUDE, BUT MAY NOT BE LIMITED TO, A TEST OF THE OUTLET EXHAUST OF AT LEAST ONE FUEL CELL, THE RAW DIGESTER GAS, AND THE TREATED DIGESTER GAS, UNLESS OTHERWISE INDICATED BELOW. THE TEST SHALL INCLUDE THE FOLLOWING RESULTS AND PROCESS DATA:
 - A. METHANE CONTENT OF THE RAW AND TREATED DIGESTER GAS.
 - B. TOTAL NON-METHANE ORGANIC COMPOUNDS OF THE RAW DIGESTER GAS, TREATED DIGESTER GAS, AND AT LEAST ONE FUEL CELL EXHAUST OUTLET.
 - C. OXIDES OF NITROGEN AND OXIDES OF SULFUR (AT LEAST ONE FUEL CELL OUTLET) IN PPM AND LBS/HR.
 - D. CARBON MONOXIDE, (AT LEAST ONE FUEL CELL OUTLET), IN PPM, AND LBS/HR.
 - E. OXYGEN CONTENT.
 - F. MOISTURE CONTENT.
 - G. TEMPERATURE OF THE FUEL CELL.
 - H. TEMPERATURE AT INLET AND OUTLET OF THE PRE-CONVERTER.
 - I. FLOW RATE OF THE FUEL CELL EXHAUST OUTLET.
 - J. TOTAL REDUCED SULFUR COMPOUNDS (RAW DIGESTER GAS AND TREATED DIGESTER GAS).
 - K. POWER OUTPUT OF THE FUEL CELL.

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- L. BTU CONTENT OF THE TREATED DIGESTER GAS.
 - M. FUEL UTILIZATION OF THE FUEL CELL.
 - N. TREATED DIGESTER GAS FEED RATE TO THE PRE-CONVERTER.
[RULE 204, RULE 1303-OFFSET, RULE 3004(a)(4)]
15. IF THE OPERATION OF THIS EQUIPMENT RESULTS IN ODOR COMPLAINTS, THE WORK SHALL CEASE AND MITIGATION MEASURES SHALL BE IMPLEMENTED IMMEDIATELY. WORK SHALL NOT RESUME UNTIL THE EMISSIONS CAUSING THE COMPLAINTS ARE MITIGATED AND THE APPROVAL TO RESUME WORK IS RECEIVED FROM THE SCAQMD.
[RULE 402]
16. THE OWNER OR OPERATOR OF THIS EQUIPMENT SHALL KEEP RECORDS OF OPERATING AND MONITORING DATA, AND TREATMENT MEDIA REPLACEMENT DATES. THESE RECORDS SHALL BE MAINTAINED FOR A MINIMUM OF FIVE YEARS AND MADE AVAILABLE TO SCAQMD PERSONNEL UPON REQUESTS.
[RULE 3004(a)(4)]

FACILITY PERMIT TO CONSTRUCT EASTERN MUNICIPAL WATER DIST.

PERMIT TO OPERATE

Permit No. TBD
A/N 503372

Equipment Description:

INTERNAL COMBUSTION ENGINE, WAUKESHA, MODEL 9390 GSI, SERIAL NO. C10379/2, NATURAL GAS FIRED WITH LPG AS STANDBY FUEL, 16-CYLINDER, FOUR CYCLE, RICH BURN, TURBOCHARGED, AFTERCOOLED, 1970 BHP, WITH AUTOMATIC AIR-TO-FUEL RATIO CONTROLLER, DRIVING A EMERGENCY ELECTRIC GENERATOR, VENTED TO A THREE WAY CATALYST, MIRATECH, MODEL NO. EQSY48361X2-18-C4.

Conditions:

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.
[RULE 204]
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITIONS AT ALL TIMES.
[RULE 204]
3. THIS EQUIPMENT SHALL BE FIRED ON NATURAL GAS ONLY. LPG MAY BE USED IN THE EVENT OF NATURAL GAS CURTAILMENT AND TESTING.
[RULE 1303(a)(1)-BACT]
4. A FUEL METER SHALL BE INSTALLED AND MAINTAINED IN THE FUEL SUPPLY LINE TO THE ENGINE TO INDICATE THE FUEL USAGE IN CUBIC FEET, FOR EACH TYPE OF FUEL USED, AND FUEL USAGE SHALL BE RECORDED.
[RULE 204, RULE 1303]
5. THIS ENGINE SHALL NOT BE OPERATED WITHOUT THE USE OF AN AUTOMATIC AIR TO FUEL RATIO CONTROLLER WHICH SHALL BE MAINTAINED AND KEPT IN PROPER OPERATING CONDITIONS AT ALL TIMES AS SPECIFIED BY THE MANUFACTURER.
[RULE 1303(a)(1)-BACT]
6. THE CATALYTIC CONVERTER TEMPERATURE AND OXYGEN CONCENTRATION AT THE OUTLET OF THIS ENGINE SHALL BE MAINTAINED WITHIN THE EFFECTIVE OPERATING RANGE OF THE CATALYTIC CONVERTER AS SPECIFIED BY THE MANUFACTURER.
[RULE 1303(a)(1)-BACT]
7. THIS ENGINE SHALL BE EQUIPPED WITH AN OPERATIONAL NON-RESETTABLE TOTALIZING TIME METER TO DETERMINE THE ENGINE ELAPSED OPERATING TIME.

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[RULE 1110.2, RULE 1303(a)(1)-BACT]

8. THIS ENGINE SHALL NOT BE OPERATED MORE THAN 200 HOURS IN ANY ONE YEAR WHICH INCLUDES NO MORE THAN 50 HOURS IN ANY ONE YEAR FOR MAINTENANCE AND TESTING PURPOSES.
[RULE 1110.2, RULE 1303]
9. OPERATION BEYOND 50 HOURS PER YEAR FOR MAINTENANCE AND TESTING IS ALLOWED ONLY DURING EMERGENCIES RESULTING IN AN INTERRUPTION OF SERVICE OF THE PRIMARY POWER SUPPLY OR DURING STAGE II OR III ELECTRICAL EMERGENCIES DECLARED BY THE ELECTRICAL GRID OPERATOR. OPERATORS ARE ALLOWED TO USE EMERGENCY SPARK-IGNITION ENGINES AS PART OF AN INTERRUPTIBLE ELECTRIC SERVICE PROGRAM.
[RULE 1303(a)(1)-BACT]
10. AN ENGINE OPERATING LOG SHALL BE MAINTAINED WHICH ON A MONTHLY BASIS SHALL LIST ALL ENGINE OPERATIONS IN EACH OF THE FOLLOWING AREAS:
 - A. EMERGENCY USE HOURS OF OPERATION.
 - B. MAINTENANCE AND TESTING HOURS.
 - C. OTHER OPERATING HOURS (DESCRIBE THE REASON FOR OPERATION).
 - D. FUEL CONSUMPTION OF EACH FUEL TYPE.[RULE 204, RULE 1303]

Emissions and Requirements:

11. THIS EQUIPMENT IS SUBJECT TO THE APPLICABLE REQUIREMENTS OF THE FOLLOWING RULES AND REGULATIONS:
 - PM: RULE 404, SEE APPENDIX B FOR EMISSION LIMITS
 - NOX: 0.15 GM/BHP-HR, RULE 1303
 - VOC: 0.15 GM/BHP-HR, RULE 1303
 - CO: 0.60 GM/BHP-HR, RULE 1303

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PERMIT TO CONSTRUCT

**GRANTED AS OF: TBD
A/N 505538**

Equipment Description:

BOILER, HURST, MODEL S5-X-125-125W, DIGESTER GAS AND NATURAL GAS FIRED, 5,400,000 BTU/HR MAXIMUM HEAT INPUT RATE, WITH ULTRA LOW NOX BURNER, POWER FLAME, MODEL LNINVC5-GG-30.

Conditions:

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.
[RULE 204]
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITIONS AT ALL TIMES.
[RULE 204]
3. THIS EQUIPMENT SHALL BE FIRED ON DIGESTER GAS OR NATURAL GAS ONLY.
[RULE 204, RULE 1146, RULE 1303]
4. THIS EQUIPMENT SHALL BE OPERATED IN COMPLIANCE WITH ALL PROVISIONS OF RULE 1146.
[RULE 1146]
5. A NON-RESETTABLE, TOTALIZING FUEL METER SHALL BE INSTALLED AND MAINTAINED IN THE FUEL SUPPLY LINE TO MEASURE AND RECORD THE FUEL USAGE IN CUBIC FEET, FOR EACH TYPE OF FUEL USED.
[RULE 204, RULE 1303]
6. WHEN IN OPERATION, TOTAL HEAT INPUT FOR THIS EQUIPMENT SHALL NOT EXCEED 5.4 MMBTU/HR. A LOG SHALL BE KEPT INDICATING THE TOTAL HEATING VALUE (BTU/SCF) OF FUEL GAS BURNED IN THIS EQUIPMENT BASED ON THE RECORDED FLOW RATE (SCFM) AND THE LATEST MONTHLY BTU CONTENT READING.
[RULE 1146, RULE 1303]
7. THIS EQUIPMENT SHALL BE EQUIPPED WITH A CONTROL SYSTEM TO REGULATE AUTOMATICALLY THE COMBUSTION AIR AND FUEL RATE AS THE BOILER LOAD VARIES. THIS AUTOMATIC CONTROL SYSTEM SHALL BE ADJUSTED AND TUNED PERIODICALLY, ACCORDING TO ATTACHMENT I OF RULE 1146.
[RULE 1146]

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8. THE OWNER OR OPERATOR OF THIS EQUIPMENT SHALL CONDUCT AN INITIAL SOURCE TEST AND SUBSEQUENT SOURCE TESTS ONCE EVERY FIVE YEARS THEREAFTER, UNDER THE FOLLOWING CONDITIONS AND PER RULE 1146:
- A. TESTING SHALL BE CONDUCTED BY AN APPROVED CONTRACTOR UNDER THE SCAQMD LABORATORY APPROVAL PROGRAM AND IN COMPLIANCE WITH SCAQMD RULE 304 (NO CONFLICT OF INTEREST).
 - B. A SOURCE TEST PROTOCOL SHALL BE SUBMITTED TO SCAQMD WITHIN 30 DAYS OF INITIAL START UP AND SHALL BE APPROVED BY SCAQMD BEFORE THE TEST COMMENCES. THE PROTOCOL SHALL INCLUDE PROPOSED OPERATING CONDITIONS OF THE EQUIPMENT DURING THE TEST AND DESCRIPTIONS OF ALL SAMPLING AND ANALYTICAL PROCEDURES TO BE USED.
 - C. SOURCE TESTS SHALL BE CONDUCTED WITHIN 60 CALENDAR DAYS AFTER NORMAL OPERATION OF THE EQUIPMENT HAS BEEN ESTABLISHED, BUT NO LATER THAN 180 DAYS AFTER INITIAL START UP.
 - D. SOURCE TESTS SHALL BE PERFORMED WHEN THE BOILER IS OPERATING AT MAXIMUM, MINIMUM AND AVERAGE LOADS FOR EACH FUEL (DIGESTER GAS AND NATURAL GAS). THE SAMPLING TIME AT EACH LOAD SHALL BE FOR A MINIMUM OF 15 CONSECUTIVE MINUTES.
 - E. TWO COPIES OF THE SOURCE TEST RESULTS SHALL BE SUBMITTED TO SCAQMD WITHIN 60 DAYS OF TESTING. THE REPORT SHALL INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING:
 - I. FUEL FLOW RATE FOR EACH FUEL
 - II. FLUE GAS FLOW RATE FOR EACH FUEL
 - III. METHANE CONTENT FOR DIGESTER GAS
 - IV. TOTAL NON-METHANE ORGANICS FOR DIGESTER GAS AND EXHAUST GAS
 - V. SPECIATED TRACE ORGANICS FOR DIGESTER GAS AND EXHAUST GAS
 - VI. TOTAL PARTICULATES FOR EXHAUST GAS
 - VII. OXIDES OF NITROGEN FOR EXHAUST GAS
 - VIII. CARBON MONOXIDE FOR EXHAUST GAS
 - IX. CARBON DIOXIDE FOR EXHAUST GAS
 - X. OXYGEN FOR EXHAUST GAS
 - XI. HIGHER HEATING VALUE FOR DIGESTER GAS
 - XII. TOTAL SULFUR CONTENT, AS H₂S, PPMV FOR DIGESTER GAS
- [RULE 217, RULE 404, RULE 1146, RULE 1303, RULE 1401]
9. THE OWNER OR OPERATOR SHALL CHECK NOX EMISSIONS WITH A PORTABLE NOX, CO AND O₂ ANALYZER ACCORDING TO THE SCAQMD APPROVED PROTOCOL FOR RULES 1146 AND 1146.1 AT LEAST MONTHLY OR EVERY 750 UNIT OPERATING HOURS, WHICHEVER OCCURS LATER. IF A UNIT IS IN COMPLIANCE FOR THREE CONSECUTIVE EMISSION CHECKS, WITHOUT ANY ADJUSTMENTS TO THE OXYGEN SENSOR SET POINT, THEN THE UNIT SHALL BE CHECKED QUARTERLY OR EVERY 2,000 UNIT OPERATING HOURS, WHICHEVER OCCURS LATER, UNTIL THERE IS AN EMISSION CHECK INDICATING NONCOMPLIANCE.
- [RULE 1146]

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Periodic Monitoring:

10. ALL RECORDS REQUIRED BY THIS PERMIT SHALL BE KEPT AND MAINTAINED FOR A MINIMUM OF FIVE YEARS AND SHALL BE MADE AVAILABLE TO SCAQMD PERSONNEL UPON REQUEST.
[RULE 1146, RULE 3004(A)]
11. THE OPERATOR SHALL DETERMINE COMPLIANCE WITH THE EMISSION LIMITS OF CO AND NOX, AT LEAST ONCE EVERY FIVE YEARS USING SCAQMD-APPROVED TEST METHODS. THE TEST SHALL BE CONDUCTED WHEN THE EQUIPMENT IS OPERATING UNDER NORMAL CONDITIONS. THE OPERATOR SHALL COMPLY WITH ALL GENERAL TESTING, REPORTING AND RECORDKEEPING REQUIREMENTS IN SECTION E AND K OF THIS PERMIT.
[RULE 1146, RULE 3004(A)]

Emissions and Requirements:

12. THIS EQUIPMENT IS SUBJECT TO THE APPLICABLE REQUIREMENTS OF THE FOLLOWING RULES AND REGULATIONS:
 - PM: RULE 404, SEE APPENDIX B FOR EMISSION LIMITS
 - PM: 0.1 GRAIN/SCF @ 12% CO₂, RULE 409
 - PM10: 0.06 LBS/HR, RULE 1303-OFFESTS
 - CO: 400 PPM @ 3% O₂, DRY BASIS, RULE 1146
 - CO: 100 PPMV @ 3% O₂, DRY BASIS FOR DIGESTER GAS FIRING, RULE 1303-BACT
 - CO: 50 PPMV @ 3% O₂, DRY BASIS FOR NATURAL GAS FIRING, RULE 1303-BACT
 - NOx: 30 PPM @ 3% O₂, DRY BASIS, RULE 1146
 - NOx: 30 PPMV @ 3% O₂, DRY BASIS FOR DIGESTER GAS FIRING, RULE 1303-BACT
 - NOx: 12 PPMV @ 3% O₂, DRY BASIS FOR NATURAL GAS FIRING, RULE 1303-BACT
 - NOx: 0.37 LBS/HR, RULE 1303-OFFESTS
 - VOC: 0.05 LBS/HR, RULE 1303-OFFESTS
 - SOx: 0.29 LBS/HR, RULE 1303-OFFESTS