PUBLIC HEALTH

Table O-1
Toxic Air Contaminant Emissions from Each Turbine

Maximum Fuel Flow **909.7** **MMBtu/hr**
Maximum annual hours of operation **5,000** **hr/yr**
includes startups, warmups, shutdowns and maintenance
Operations Fuel Flow based on the full load, average ambient temperature operation scenario (63°F, 100% load)

Pollutant	CAS	Emission Factor (lb/MMBtu)	Emission Factor (lb/MMcf)	Emission Factor Source	Hourly Emission Rate (lb/hr)	Annual Emission Rate (lb/yr)
Ammonia	7664417			max TBACT level	11.9	5.95E+04
Acetaldehyde	75070	3.61E-05	0.037	VCAPCD 1995	3.29E-02	1.64E+02
Acrolein	107028	8.79E-06	0.009	VCAPCD 1995	8.00E-03	4.00E+01
Benzene	71432	1.10E-05	0.0113	VCAPCD 1995	1.00E-02	5.02E+01
Ethylbenzene	100414	1.29E-05	0.0132	VCAPCD 1995	1.17E-02	5.86E+01
Formaldehyde	50000	9.18E-05	0.094	VCAPCD 1995	8.35E-02	4.18E+02
Hexane	110543	1.71E-03	1.75	VCAPCD 1995	1.55E+00	7.77E+03
Propylene	115071	1.03E-03	1.0522	VCAPCD 1995	9.35E-01	4.67E+03
Toluene	108883	7.09E-05	0.0726	VCAPCD 1995	6.45E-02	3.22E+02
Xylenes	1330207	2.82E-05	0.0289	VCAPCD 1995	2.57E-02	1.28E+02
PAHs	1151	1.95E-07	0.0002	VCAPCD 1995	1.78E-04	8.88E-01
Naphthalene	91203	7.81E-07	0.0008	VCAPCD 1995	7.11E-04	3.55E+00

Notes:

1. Emission factors obtained from the Ventura County Air Pollution Control District AB2588 Emission Factors for Internal Combustion Turbines 1995. Per the recommendation of Ester Davila, San Joaquin Valley Unified Air Pollution Control District (SJVAPCD).
2. Ammonia (NH_3) emission rate based on an exhaust NH_3 limit of 10 parts per million by volume (ppmv) @ 15% oxygen (O_2) provided by the turbine vendor.
3. Used a high heating value (HHV) of 1024 British thermal units per standard cubic foot (Btu/scf).
4. CAS = California Academy of Sciences

ºF = degrees Fahrenheit
% = percent
hr = hour(s)
lb = pound(s)
MMBtu = pounds per million British thermal units
MMcf = million cubic feet
PAH = polycyclic aromatic hydrocarbon
TBACT = Toxic Best Available Control Technology
VCAPCD = Ventura County Air Pollution Control District
yr = year

Table O-2
Toxic Air Contaminant Emissions from Emergency Diesel Firewater Pump

Rated Horsepower	**160**	**BHP**
Expected non-emergency usage	**52**	**hr/yr**

Pollutant	CAS	Emission Factor (Power Output) (g/hp-hr)	Emission Factor Source	Hourly Emission Rate (lb/hr)	Annual Emission Rate (lb/yr)
Diesel particulate (PM_{10})	9901	0.15	Supplied by Design Engineers	5.29E-02	2.75E+00

Notes:
BHP = break horsepower
CAS = California Academy of Sciences
g = grams
hp = horsepower
hr = hour
lb = pound(s)
PM_{10} = particulate matter less than 10 micrometers in diameter
yr = year

Table O-3
Toxic Air Contaminant Emissions from Cooling Tower

Design circulating water rate	13,800	gallons/min
Cycles of concentration	3	
Drift eliminator control	0.000005	= 0.0005 %
Operating hours per year	5,000	
Number of cells in the cooling tower	3	

Toxic Air Contaminant	CAS	TAC Concentration in Water[1]		Total Tower Emissions		Emissions Per Cell	
		µg/liter	lb/(1000 gallon)	lb/hr	lb/yr	lb/hr	lb/yr
Arsenic	7440382	5	0.000042	5.18E-07	2.59E-03	1.73E-07	8.64E-04
Chlorine	7782505	11000	0.091789	1.14E-03	5.70E+00	3.80E-04	1.90E+00
Chromium	18540299	6	0.000050	6.22E-07	3.11E-03	2.07E-07	1.04E-03
Fluoride	1101	200	0.001669	2.07E-05	1.04E-01	6.91E-06	3.45E-02
Manganese	7439965	10	0.000083	1.04E-06	5.18E-03	3.45E-07	1.73E-03
Nickel	7440020	20	0.000167	2.07E-06	1.04E-02	6.91E-07	3.45E-03
Sulfate	9960	11000	0.091789	1.14E-03	5.70E+00	3.80E-04	1.90E+00
Zinc	7440666	10	0.000083	1.04E-06	5.18E-03	3.45E-07	1.73E-03

Note:
[1]The maximum concentration for each TAC as determined from water tests from 1980-2005 for three wells for the City of Fresno.
% = percent
µg = microgram(s)
CAS = California Academy of Sciences
hr = hour
lb = pound(s)
min = minute
TAC = toxic air contaminant
yr = year