

DOCKETED

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Appendix 5.1A

Operational Emissions Inventory



Black Rock Geothermal Project
BRGP Operational Emissions
Table 1. Modeled Emissions Summary
April 2023

Pollutant ^a	Emissions (lbs/hr)																Emissions (lbs/hr)					
	Production Flow Back	Production Well Testing	Injection Flow Back	Injection Well Testing	Commissioning				Cold Start				Warm Start			Shutdown	Continuous Operation ^b		Sparger Bypass	Cooling Tower Oxidation Box Bypass	Emergency Engines and Fire Pump (All Sources)	O&M Equipment
					PTU	RM	Sparger	CT	PTU	RM	Sparger	CT	RM	Sparger	CT		RM	Sparger				
Location	PTU or MTU	MTU	PTU	MTU	PTU	RM	Sparger	CT	PTU	RM	Sparger	CT	RM	Sparger	CT	RM	Sparger	CT	Sparger	CT	Multiple Stacks	Mobile
Duration (hrs/event)	24	240	24	240	120	336	168	168	120	74	42	42	15	5	5	20	1	1	1	1	1	1
Events Per Year	1	1	1	1	1	1	1	1	1	1	1	1	20	20	20	10	3,816	3,816	200	200	--	8,760
Hours Per Year	120	1,200	168	1,680	120	336	168	168	120	74	42	42	300	100	100	200	3,816	3,816	200	200	--	8,760
CO ₂	1.441E+03	5.848E+03	1.44E+03	5.85E+03	3.596E+03	1.048E+04	1.048E+04	0.000E+00	3.596E+03	1.048E+04	4.490E+03	0.000E+00	1.048E+04	4.490E+03	0.000E+00	1.152E+04	1.048E+04	0.000E+00	1.048E+04	1.048E+04	1.89E+04	1.32E+03
NOx	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.12E+01	3.74E+00
ROG	7.89E-02	3.20E-01	7.89E-02	3.20E-01	1.97E-01	5.74E-01	5.74E-01	1.53E-03	1.97E-01	5.74E-01	2.46E-01	1.53E-03	5.74E-01	2.46E-01	1.53E-03	6.31E-01	5.74E-01	1.53E-03	5.75E-01	5.75E-01	5.56E+00	4.57E-01
CO	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.02E+02	4.17E+00
SO ₂	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.26E-04	1.26E-02
PM ₁₀	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.28E-01	1.43E-01
PM _{2.5}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.28E-01	1.24E-01
HAPs	8.02E-02	3.26E-01	8.02E-02	3.26E-01	2.00E-01	5.84E-01	5.74E-01	1.90E-03	2.00E-01	5.84E-01	2.46E-01	1.90E-03	5.84E-01	2.46E-01	1.90E-03	6.42E-01	5.74E-01	1.90E-03	5.76E-01	5.76E-01	3.92E-02	0.00E+00
Lead	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.20E-07	0.00E+00	0.00E+00	0.00E+00	7.20E-07	0.00E+00	0.00E+00	7.20E-07	0.00E+00	0.00E+00	7.20E-07	7.20E-07	0.00E+00	0.00E+00
H ₂ S	7.72E+00	3.13E+01	7.72E+00	3.13E+01	1.93E+01	5.61E+01	1.18E+00	1.12E+00	1.93E+01	5.61E+01	5.05E-01	1.12E+00	5.61E+01	5.05E-01	1.12E+00	6.17E+01	1.18E+00	1.12E+00	3.48E+01	2.36E+01	0.00E+00	0.00E+00
NH ₃	3.39E-01	1.37E+00	3.39E-01	1.37E+00	8.45E-01	2.46E+00	2.46E+00	1.36E+02	8.45E-01	2.46E+00	1.06E+00	1.36E+02	2.46E+00	1.06E+00	1.36E+02	2.71E+00	2.46E+00	1.36E+02	1.38E+02	1.38E+02	1.29E+00	0.00E+00
CH ₄	5.56E+00	2.26E+01	5.56E+00	2.26E+01	1.39E+01	4.04E+01	4.04E+01	0.00E+00	1.39E+01	4.04E+01	1.73E+01	0.00E+00	4.04E+01	1.73E+01	0.00E+00	4.45E+01	4.04E+01	0.00E+00	4.04E+01	4.045E+01	7.65E-01	4.70E-02
As	2.62E-05	1.06E-04	2.62E-05	1.06E-04	6.54E-05	1.90E-04	0.00E+00	4.13E-05	6.54E-05	1.90E-04	0.00E+00	4.13E-05	1.90E-04	0.00E+00	4.13E-05	2.09E-04	0.00E+00	4.13E-05	4.13E-05	4.13E-05	0.00E+00	0.00E+00
Hg	1.29E-03	5.25E-03	1.29E-03	5.25E-03	3.23E-03	9.41E-03	0.00E+00	2.16E-04	3.23E-03	9.41E-03	0.00E+00	2.16E-04	9.41E-03	0.00E+00	2.16E-04	1.03E-02	0.00E+00	2.16E-04	2.16E-04	2.16E-04	0.00E+00	0.00E+00
Benzene	7.34E-02	2.98E-01	7.34E-02	2.98E-01	1.83E-01	5.34E-01	5.34E-01	3.07E-04	1.83E-01	5.34E-01	2.29E-01	3.07E-04	5.34E-01	2.29E-01	3.07E-04	5.87E-01	5.34E-01	3.07E-04	5.34E-01	5.34E-01	1.86E-02	0.00E+00
Toluene	4.14E-03	1.68E-02	4.14E-03	1.68E-02	1.03E-02	3.01E-02	3.01E-02	3.07E-04	1.03E-02	3.01E-02	1.29E-02	3.07E-04	3.01E-02	1.29E-02	3.07E-04	3.31E-02	3.01E-02	3.07E-04	3.04E-02	3.04E-02	6.78E-03	0.00E+00
Ethylbenzene	7.30E-04	2.96E-03	7.30E-04	2.96E-03	1.82E-03	5.31E-03	5.31E-03	3.07E-04	1.82E-03	5.31E-03	2.27E-03	3.07E-04	5.31E-03	2.27E-03	3.07E-04	5.83E-03	5.31E-03	3.07E-04	5.61E-03	5.61E-03	0.00E+00	0.00E+00
Xylenes	6.83E-04	2.77E-03	6.83E-04	2.77E-03	1.70E-03	4.96E-03	4.96E-03	6.13E-04	1.70E-03	4.96E-03	2.13E-03	6.13E-04	4.96E-03	2.13E-03	6.13E-04	5.46E-03	4.96E-03	6.13E-04	5.58E-03	5.58E-03	4.66E-03	0.00E+00
Argon	2.72E-02	1.10E-01	2.72E-02	1.10E-01	6.78E-02	1.98E-01	1.98E-01	0.00E+00	6.78E-02	1.98E-01	8.47E-02	0.00E+00	1.98E-01	8.47E-02	0.00E+00	2.17E-01	1.98E-01	0.00E+00	1.98E-01	1.98E-01	0.00E+00	0.00E+00
N ₂	5.35E+00	2.17E+01	5.35E+00	2.17E+01	1.34E+01	3.89E+01	3.89E+01	0.00E+00	1.34E+01	3.89E+01	1.67E+01	0.00E+00	3.89E+01	1.67E+01	0.00E+00	4.28E+01	3.89E+01	0.00E+00	3.89E+01	3.89E+01	0.00E+00	0.00E+00
H ₂	2.46E-02	9.98E-02	2.46E-02	9.98E-02	6.14E-02	1.79E-01	1.79E-01	0.00E+00	6.14E-02	1.79E-01	7.66E-02	0.00E+00	1.79E-01	7.66E-02	0.00E+00	1.97E-01	1.79E-01	0.00E+00	1.79E-01	1.79E-01	0.00E+00	0.00E+00
Aluminum	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.44E-05	0.00E+00	0.00E+00	0.00E+00	1.44E-05	0.00E+00	0.00E+00	1.44E-05	0.00E+00	0.00E+00	1.44E-05	1.44E-05	1.44E-05	0.00E+00	0.00E+00
Antimony	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.15E-06	0.00E+00	0.00E+00	0.00E+00	1.15E-06	0.00E+00	0.00E+00	1.15E-06	0.00E+00	0.00E+00	1.15E-06	1.15E-06	1.15E-06	0.00E+00	0.00E+00
Barium	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.15E-05	0.00E+00	0.00E+00	0.00E+00	2.15E-05	0.00E+00	0.00E+00	2.15E-05	0.00E+00	0.00E+00	2.15E-05	2.15E-05	2.15E-05	0.00E+00	0.00E+00
Beryllium	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.44E-07	0.00E+00	0.00E+00</												

First Year Annual Emissions (With Commissioning)

Pollutant ^a	Emissions (tpy)																Emissions (tpy)							Total Emissions (tpy)
	Production Flow Back	Production Well Testing	Injection Flow Back	Injection Well Testing	Commissioning				Cold Start				Warm Start			Shutdown	Continuous Operation ^b			Sparger Bypass	Cooling Tower Oxidation Box Bypass	Emergency Engines and Fire Pump (All Sources)	O&M Equipment	
Location	MTU	MTU	PTU	MTU	PTU	RM	Sparger	CT	PTU	RM	Sparger	CT	RM	Sparger	CT	RM	Sparger	CT	Sparger	CT	Mutiple Stacks	Mobile		
CO ₂	8.64E+01	3.51E+03	1.21E+02	4.91E+03	2.16E+02	1.76E+03	8.80E+02	0.00E+00	2.16E+02	3.88E+02	9.43E+01	0.00E+00	1.57E+03	2.25E+02	0.00E+00	1.15E+03	2.00E+04	0.00E+00	1.05E+03	1.05E+03	4.71E+02	2.57E+02	3.79E+04	
NOx	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.31E-01	6.57E-01	1.19E+00	
ROG	4.74E-03	1.92E-01	6.63E-03	2.69E-01	1.18E-02	9.64E-02	4.82E-02	1.29E-04	1.18E-02	2.12E-02	5.17E-03	3.22E-05	8.61E-02	1.23E-02	7.67E-05	6.31E-02	1.10E+00	2.93E-03	5.75E-02	5.75E-02	1.39E-01	8.55E-02	2.27E+00	
CO	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.55E+00	1.14E+00	3.69E+00	
SO ₂	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.16E-06	2.53E-03	2.53E-03	
PM ₁₀	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.46E+00	1.81E-01	1.81E-01	2.32E-02	3.87E+00	
PM _{2.5}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.08E+00	1.09E-01	1.09E-01	2.32E-02	2.19E-02	2.34E+00	
HAPs	4.81E-03	1.95E-01	6.74E-03	2.74E-01	1.20E-02	9.80E-02	4.82E-02	1.59E-04	1.20E-02	2.16E-02	5.17E-03	3.98E-05	8.75E-02	1.23E-02	9.48E-05	6.42E-02	1.10E+00	3.62E-03	5.76E-02	5.76E-02	9.81E-04	0.00E+00	2.06E+00	
Lead	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.05E-08	0.00E+00	0.00E+00	0.00E+00	1.51E-08	0.00E+00	0.00E+00	3.60E-08	0.00E+00	0.00E+00	1.37E-06	7.20E-08	7.20E-08	0.00E+00	0.00E+00	1.63E-06	
H ₂ S	4.63E-01	1.88E+01	6.48E-01	2.63E+01	1.16E+00	9.43E+00	9.90E-02	9.43E-02	1.16E+00	2.08E+00	1.06E-02	2.36E-02	8.42E+00	2.53E-02	5.61E-02	6.17E+00	2.25E+00	2.14E+00	3.48E+00	2.36E+00	0.00E+00	0.00E+00	8.52E+01	
NH ₃	2.03E-02	8.25E-01	2.84E-02	1.15E+00	5.07E-02	4.14E-01	2.07E-01	1.14E+01	5.07E-02	9.11E-02	2.22E-02	2.85E+00	3.69E-01	5.28E-02	6.78E+00	2.71E-01	4.70E+00	2.59E+02	1.38E+01	1.38E+01	3.22E-02	0.00E+00	3.16E+02	
CH ₄	3.34E-01	1.35E+01	4.67E-01	1.90E+01	8.33E-01	6.80E+00	3.40E+00	0.00E+00	8.33E-01	1.50E+00	3.64E-01	0.00E+00	6.07E+00	8.67E-01	0.00E+00	4.45E+00	7.72E+01	0.00E+00	4.04E+00	4.04E+00	1.91E-02	8.94E-03	1.44E+02	
As	1.57E-06	6.38E-05	2.20E-06	8.93E-05	3.92E-06	3.20E-05	0.00E+00	3.47E-06	3.92E-06	7.04E-06	0.00E+00	8.68E-07	2.86E-05	0.00E+00	2.07E-06	2.09E-05	0.00E+00	7.89E-05	4.13E-06	4.13E-06	0.00E+00	0.00E+00	3.47E-04	
Hg	7.76E-05	3.15E-03	1.09E-04	4.41E-03	1.94E-04	1.58E-03	0.00E+00	1.81E-05	1.94E-04	3.48E-04	0.00E+00	4.53E-06	1.41E-03	0.00E+00	1.08E-05	1.03E-03	0.00E+00	4.12E-04	2.16E-05	2.16E-05	0.00E+00	0.00E+00	1.30E-02	
Benzene	4.40E-03	1.79E-01	6.16E-03	2.50E-01	1.10E-02	8.96E-02	4.48E-02	2.58E-05	1.10E-02	1.97E-02	4.80E-03	6.44E-06	8.00E-02	1.14E-02	1.53E-05	5.87E-02	1.02E+00	5.85E-04	5.34E-02	5.34E-02	4.64E-04	0.00E+00	1.90E+00	
Toluene	2.48E-04	1.01E-02	3.48E-04	1.41E-02	6.20E-04	5.05E-03	2.53E-03	2.58E-05	6.20E-04	1.11E-03	2.71E-04	6.44E-06	4.51E-03	6.45E-04	1.53E-05	3.31E-03	5.74E-02	5.85E-04	3.04E-03	3.04E-03	1.70E-04	0.00E+00	1.08E-01	
Ethylbenzene	4.38E-05	1.78E-03	6.13E-05	2.49E-03	1.09E-04	8.91E-04	4.46E-04	2.58E-05	1.09E-04	1.96E-04	4.78E-05	6.44E-06	7.96E-04	1.14E-04	1.53E-05	5.83E-04	1.01E-02	5.85E-04	5.61E-04	5.61E-04	0.00E+00	0.00E+00	1.95E-02	
Xylenes	4.10E-05	1.66E-03	5.73E-05	2.33E-03	1.02E-04	8.34E-04	4.17E-04	5.15E-05	1.02E-04	1.84E-04	4.47E-05	1.29E-05	7.45E-04	1.06E-04	3.07E-05	5.46E-04	9.47E-03	1.17E-03	5.58E-04	5.58E-04	1.17E-04	0.00E+00	1.91E-02	
Argon	1.63E-03	6.61E-02	2.28E-03	9.26E-02	4.07E-03	3.32E-02	1.66E-02	0.00E+00	4.07E-03	7.31E-03	1.78E-03	0.00E+00	2.96E-02	4.23E-03	0.00E+00	2.17E-02	3.77E-01	0.00E+00	1.98E-02	1.98E-02	0.00E+00	0.00E+00	7.02E-01	
N ₂	3.21E-01	1.30E+01	4.50E-01	1.82E+01	8.02E-01	6.54E+00	3.27E+00	0.00E+00	8.02E-01	1.44E+00	3.50E-01	0.00E+00	5.84E+00	8.34E-01	0.00E+00	4.28E+00	7.43E+01	0.00E+00	3.89E+00	3.89E+00	0.00E+00	0.00E+00	1.38E+02	
H ₂	1.47E-03	5.99E-02	2.06E-03	8.38E-02	3.68E-03	3.00E-02	1.50E-02	0.00E+00	3.68E-03	6.61E-03	1.61E-03	0.00E+00	2.68E-02	3.83E-03	0.00E+00	1.97E-02	3.41E-01	0.00E+00	1.79E-02	1.79E-02	0.00E+00	0.00E+00	6.35E-01	
Aluminum	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.21E-06	0.00E+00	0.00E+00	0.00E+00	3.02E-07	0.00E+00	0.00E+00	7.20E-07	0.00E+00	0.00E+00	2.75E-05	1.44E-06	1.44E-06	0.00E+00	0.00E+00	3.26E-05	
Antimony	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.67E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.42E-08	0.00E+00	0.00E+00	5.76E-08	0.00E+00	0.00E+00	2.20E-06	1.15E-07	1.15E-07	0.00E+00	2.61E-06	
Barium	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.80E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.51E-07	0.00E+00	0.00E+00	1.07E-06	0.00E+00	0.00E+00	4.10E-05	2.15E-06	2.15E-06	0.00E+00	4.86E-05	
Beryllium	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.21E-08	0.00E+00	0.00E+00	0.00E+00	3.02E-09	0.00E+00	0.00E+00	7.20E-09	0.00E+00	0.00E+00	2.75E-07	1.44E-08	1.44E-08	0.00E+00	0.00E+00	3.26E-07	
Cobalt	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.21E-08	0.00E+00	0.00E+00	0.00E+00	3.02E-09	0.00E+00	0.00E+00										

Subsequent Year Annual Emissions (Without Commissioning

Pollutant ^a	Emissions (tpy)												Emissions (tpy)										Total Emissions (tpy)	
	Production Flow Back	Production Well Testing	Injection Flow Back	Injection Well Testing	Commissioning				Cold Start				Warm Start			Shutdown	Continuous Operation ^b		Sparger Bypass	Cooling Tower Oxidation Box Bypass	Emergency Engines and Fire Pump (All Sources)	O&M Equipment		
					PTU	RM	Sparger	CT	PTU	RM	Sparger	CT	RM	Sparger	CT		RM	Sparger						CT
Location	PTU	MTU	PTU	MTU	PTU	RM	Sparger	CT	PTU	RM	Sparger	CT	RM	Sparger	CT	RM	Sparger	CT	Sparger	CT	Multiple Stacks	Mobile		
Duration (hrs/event)	24	0	24	0	0	0	0	0	120	74	42	42	15	5	5	20	1	1	1	1	1	1		
Events Per Year	1	0	1	0	0	0	0	0	1	1	1	1	20	20	20	10	7,272	7,272	200	200	--	8,760		
Hours Per Year	120	0	168	0	0	0	0	0	120	74	42	42	300	100	100	200	7,272	7,272	200	200	--	8,760		
CO ₂	8.64E+01	0.00E+00	1.21E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.16E+02	3.88E+02	9.43E+01	0.00E+00	1.57E+03	2.25E+02	0.00E+00	1.15E+03	3.81E+04	0.00E+00	1.05E+03	1.05E+03	4.71E+02	2.57E+02	4.48E+04	
NOx	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.31E-01	6.57E-01	1.19E+00	
ROG	4.74E-03	0.00E+00	6.63E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.18E-02	2.12E-02	5.17E-03	3.22E-05	8.61E-02	1.23E-02	7.67E-05	6.31E-02	2.09E+00	5.57E-03	5.75E-02	5.75E-02	1.39E-01	8.55E-02	2.64E+00	
CO	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.55E+00	1.14E+00	3.69E+00	
SO ₂	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.16E-06	2.53E-03	2.53E-03	
PM ₁₀	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.60E+00	1.81E-01	1.81E-01	2.32E-02	2.65E-02	7.01E+00	
PM _{2.5}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.96E+00	1.09E-01	1.09E-01	2.32E-02	2.19E-02	4.22E+00	
HAPs	4.81E-03	0.00E+00	6.74E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.20E-02	2.16E-02	5.17E-03	3.98E-05	8.75E-02	1.23E-02	9.48E-05	6.42E-02	2.09E+00	6.89E-03	5.76E-02	5.76E-02	9.81E-04	0.00E+00	2.42E+00	
Lead	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.51E-08	0.00E+00	0.00E+00	3.60E-08	0.00E+00	2.62E-06	7.20E-08	7.20E-08	0.00E+00	0.00E+00	2.81E-06	
H ₂ S	4.63E-01	0.00E+00	6.48E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.16E+00	2.08E+00	1.06E-02	2.36E-02	8.42E+00	2.53E-02	5.61E-02	6.17E+00	4.29E+00	4.08E+00	3.48E+00	2.36E+00	0.00E+00	0.00E+00	3.33E+01	
NH ₃	2.03E-02	0.00E+00	2.84E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.07E-02	9.11E-02	2.22E-02	2.85E+00	3.69E-01	5.28E-02	6.78E+00	2.71E-01	8.96E+00	4.93E+02	1.38E+01	1.38E+01	3.22E-02	0.00E+00	5.40E+02	
CH ₄	3.34E-01	0.00E+00	4.67E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.33E-01	1.50E+00	3.64E-01	0.00E+00	6.07E+00	8.67E-01	0.00E+00	4.45E+00	1.47E+02	0.00E+00	4.04E+00	4.04E+00	1.91E-02	8.94E-03	1.70E+02	
As	1.57E-06	0.00E+00	2.20E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.92E-06	7.04E-06	0.00E+00	8.86E-07	2.08E-05	0.00E+00	2.07E-06	2.09E-05	0.00E+00	1.50E-04	4.13E-06	4.13E-06	0.00E+00	0.00E+00	2.26E-04	
Hg	7.76E-05	0.00E+00	1.09E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.94E-04	3.48E-04	0.00E+00	4.53E-06	1.41E-03	0.00E+00	1.08E-05	1.03E-03	0.00E+00	7.85E-04	2.16E-05	2.16E-05	0.00E+00	0.00E+00	4.02E-03	
Benzene	4.40E-03	0.00E+00	6.16E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.10E-02	1.97E-02	4.80E-03	6.44E-06	8.00E-02	1.14E-02	1.53E-05	5.87E-02	1.94E+00	1.11E-03	5.34E-02	5.34E-02	4.64E-04	0.00E+00	2.24E+00	
Toluene	2.48E-04	0.00E+00	3.48E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.20E-04	1.11E-03	2.71E-04	6.44E-06	4.51E-03	6.45E-04	1.53E-05	3.31E-03	1.09E-01	1.11E-03	3.04E-03	3.04E-03	1.70E-04	0.00E+00	1.28E-01	
Ethylbenzene	4.38E-05	0.00E+00	6.13E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.09E-04	1.96E-04	4.78E-05	6.44E-06	7.96E-04	1.14E-04	1.53E-05	5.83E-04	1.93E-02	1.11E-03	5.61E-04	5.61E-04	0.00E+00	0.00E+00	2.35E-02	
Xylenes	4.10E-05	0.00E+00	5.73E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.02E-04	1.84E-04	4.47E-05	1.29E-05	7.45E-04	1.06E-04	3.07E-05	5.46E-04	1.81E-02	2.23E-03	5.58E-04	5.58E-04	1.17E-04	0.00E+00	2.34E-02	
Argon	1.63E-03	0.00E+00	2.28E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.07E-03	7.31E-03	1.78E-03	0.00E+00	2.96E-02	4.23E-03	0.00E+00	2.17E-02	7.18E-01	0.00E+00	1.98E-02	1.98E-02	0.00E+00	0.00E+00	8.30E-01	
N ₂	3.21E-01	0.00E+00	4.50E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.02E-01	1.44E+00	3.50E-01	0.00E+00	5.84E+00	8.34E-01	0.00E+00	4.28E+00	1.42E+02	0.00E+00	3.89E+00	3.89E+00	0.00E+00	0.00E+00	1.64E+02	
H ₂	1.47E-03	0.00E+00	2.06E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.68E-03	6.61E-03	1.61E-03	0.00E+00	2.68E-02	3.83E-03	0.00E+00	1.97E-02	6.50E-01	0.00E+00	1.79E-02	1.79E-02	0.00E+00	0.00E+00	7.51E-01	
Aluminum	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.02E-07	0.00E+00	0.00E+00	7.20E-07	0.00E+00	5.23E-05	1.44E-06	1.44E-06	0.00E+00	0.00E+00	5.62E-05	
Antimony	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.42E-08	0.00E+00	0.00E+00	5.76E-08	0.00E+00	4.19E-06	1.15E-07	1.15E-07	0.00E+00	0.00E+00	4.50E-06	
Barium	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.51E-07	0.00E+00	0.00E+00	1.07E-06	0.00E+00	0.00E+00	7.81E-05	2.15E-06	2.15E-06	0.00E+00	8.39E-05	
Beryllium	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.02E-09	0.00E+00	0.00E+00	7.20E-09	0.00E+00	5.23E-07	1.44E-08	1.44E-08	0.00E+00	0.00E+00	5.62E-07	
Cobalt	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.02E-09	0.00E+00	0.00E+00	7.20E-09	0.00E+00	5.23E-07	1.44E-08	1.44E-08	0.00E+00	0.00E+00	5.62E-07	
Cadmium	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.05E-09	0.00E+00	0.00E+00	1.44E-08	0.00E+00	1.05E-06	2.88E-08	2.88E-08	0.00E+00	0.00E+00	1.12E-06	
Total Chromium	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.51E-08	0.00E+00	0.00E+00	3.60E-08	0.00E+00	2.62E-06	7.20E-08	7.20E-08	0.00E+00	0.00E+00	2.81E-06	
Copper	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.07E-09	0.00E+00	0.00E+00	2.16E-08	0.00E+00	1.57E-06	4.32E-08	4.32E-08	0.00E+00	0.00E+00	1.69E-06	
Vanadium	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.51E-08	0.00E+00	0.00E+00	3.60E-08	0.00E+00	2.62E-06	7.20E-08	7.20E-08	0.00E+00	0.00E+00	2.81E-06	
Lithium	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.02E-07	0.00E+00	0.00E+00	7.20E-07	0.00E+00	5.23E-05	1.44E-06	1.44E-06	0.00E+00	0.00E+00	5.62E-05	
Manganese	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.79E-06	0.00E+00	0.00E+00	4.26E-06	0.00E+00	0.00E+00	3.10E-04	8.52E-06	8.52E-06	0.00E+00	3.33E-04	
Nickel	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.45E-08	0.00E+00	0.00E+00	8.20E-08	0.00E+00	5.97E-06	1.64E-07	1.64E-07	0.00E+00	0.00E+00	6.41E-06	
Selenium	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.46E-07	0.00E+00	0.00E+00	8.24E-07	0.00E+00	5.99E-05	1.65E-06	1.65E-06	0.00E+00	0.00E+00	6.44E-05	
Total Silica	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.51E-05	0.00E+00	0.00E+00	3.60E-05	0.00E+00	0.00E+00	2.62E-03	7.20E-05	7.20E-05	0.00E+00	0.00E+00	2.81E-03
Silver	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.51E-08	0.00E+00	0.00E+00	3.60E-08	0.00E+00	2.62E-06	7.20E-08	7.20E-08	0.00E+00	0.00E+00	2.81E-06	
Strontium	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.02E-07											

Classified as HAPs by the U.S. Environmental Protection Agency

^a Radon units are in unit of Curie(s) (Ci) per respective column time unit

^b Continuous operation of the turbine system and cooling towers is assumed to occur during hours when the PTU/ MTU/Rock Muffler are not in operation.

Subsequent Year Annual Emissions (8,760 Hours of Routine Power Generation)

Pollutant ^a	Emissions (tpy)																Emissions (tpy)						Total Emissions (tpy)		
	Production Flow Back	Production Well Testing	Injection Flow Back	Injection Well Testing	Commissioning				Cold Start				Warm Start			Shutdown	Continuous Operation ^b			Sparger Bypass	Cooling Tower Oxidation Box Bypass	Emergency Engines and Fire Pump (All Sources)		O&M Equipment	
Location	PTU	MTU	PTU	MTU	PTU	RM	Sparger	CT	PTU	RM	Sparger	CT	RM	Sparger	CT	RM	Sparger	CT	Sparger	CT	Sparger	CT		Mutliple Stacks	Mobile
Duration (hrs/event)	24	0	0	0	0	0	0	0	120	74	42	42	15	5	5	20	1	1	1	1	1	1		1	1
Events Per Year	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8,760	8,760	0	0	0	0		--	8,760
Hours Per Year	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8,760	8,760	0	0	0	0		--	8,760
CO ₂	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.59E+04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.71E+02	2.57E+02	4.66E+04
NOx	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.31E-01	6.57E-01	1.19E+00
ROG	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.51E+00	6.72E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.39E-01	8.55E-02	2.75E+00
CO	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.55E+00	1.14E+00	3.69E+00
SO ₂	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.16E-06	2.53E-03	2.53E-03
PM ₁₀	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.94E+00	0.00E+00	0.00E+00	0.00E+00	2.32E-02	2.65E-02	7.99E+00	
PM _{2.5}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.77E+00	0.00E+00	0.00E+00	0.00E+00	2.32E-02	2.19E-02	4.81E+00	
HAPs	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.51E+00	8.31E-03	0.00E+00	0.00E+00	0.00E+00	9.81E-04	0.00E+00	2.52E+00	
Lead	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.15E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.15E-06	
H ₂ S	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.16E+00	4.92E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.01E+01	
NH ₃	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.08E+01	5.94E+02	0.00E+00	0.00E+00	0.00E+00	3.22E-02	0.00E+00	6.05E+02	
CH ₄	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.77E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.91E-02	8.94E-03	1.77E+02	
As	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.81E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.81E-04	
Hg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.46E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.46E-04	
Benzene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.34E+00	1.34E-03	0.00E+00	0.00E+00	0.00E+00	4.64E-04	0.00E+00	2.34E+00	
Toluene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.32E-01	1.34E-03	0.00E+00	0.00E+00	0.00E+00	1.70E-04	0.00E+00	1.33E-01	
Ethylbenzene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.32E-02	1.34E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.46E-02	
Xylenes	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.17E-02	2.69E-03	0.00E+00	0.00E+00	0.00E+00	1.17E-04	0.00E+00	2.45E-02	
Argon	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.65E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.65E-01	
N ₂	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.70E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.70E+02	
H ₂	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.83E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.83E-01	
Aluminum	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.30E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.30E-05	
Antimony	0.00E+00																								

Black Rock Geothermal Project

BRGP Operational Emissions

Table 2. Emissions Summary

April 2023

BRGP Operational Emissions

Operation	Operation	Criteria Pollutant Emissions						GHG Pollutant Emissions				H ₂ S Emissions
		CO	VOC	NO _x	SO ₂	PM ₁₀ ^d	PM _{2.5} ^d	CO ₂	N ₂ O	CH ₄	CO ₂ e ^e	H ₂ S
Daily	PTU Max Daily Emissions (lbs/day) ^a	0.00	4.7	0.00	0.00	0.00	0.00	86,314	0.00	333	94,645	462
	MTU Max Daily Emissions (lbs/day) ^a	0.00	7.7	0.00	0.00	0.00	0.00	140,347	0.00	542	153,893	752
	Rock Muffler Max Daily Emissions (lbs/day) ^a	0.00	15.1	0.00	0.00	0.00	0.00	276,500	0.00	1,067	303,187	1,481
	Cooling Tower and Sparger Max Daily Emissions (lbs/day) ^a	0.00	13.8	0.00	0.00	43.5	26.12	251,455	0.00	971	275,725	1,402
	Fire Pump Max Daily Emissions (lbs/day) ^b	0.42	0.05	1.78	0.00	0.06	0.06	130	0.00	0.01	131	0.00
	Emergency Generator Max Daily Emissions (lbs/day) ^c	203	11.0	38.9	0.00	1.74	1.74	37,451	0.30	1.52	37,580	0.00
	O&M Equipment and Vehicles Max Daily Emissions (lbs/day)	33.4	3.66	29.9	0.10	1.14	1.00	10,546	0.08	0.38	10,578	0.00
	Insulating Gas Daily Emissions (lbs/day)	--	--	--	--	--	--	--	--	--	375	--
	Non-Routine Max Daily Emissions (lbs/day) ^f	237	29.9	70.6	0.10	2.94	2.79	324,627	0.38	1,069	351,850	1,481
	Routine Max Daily Emissions (lbs/day) ^f	237	28.5	70.6	0.10	46.5	28.9	299,582	0.38	973	324,388	1,402
	ICAPCD Thresholds of Significance (lbs/day) ^g	550	137	137	150	150	550	N/A	N/A	N/A	N/A	N/A
	Exceeds Threshold (Y/N)?	N	N	N	N	N	N	N/A	N/A	N/A	N/A	N/A
Commissioning Year	PTU Annual Emission (tpy)	0.00	0.03	0.00	0.00	0.00	0.00	553	0.00	2.13	606	2.96
	MTU Annual Emissions (tpy)	0.00	0.47	0.00	0.00	0.00	0.00	8,507	0.00	32.8	9,328	45.6
	Rock Muffler Annual Emissions (tpy)	0.00	0.27	0.00	0.00	0.00	0.00	4,872	0.00	18.8	5,342	26.1
	Cooling Tower and Sparger Annual Emissions (tpy)	0.00	1.28	0.00	0.00	3.82	2.29	23,285	0.00	89.9	25,532	10.5
	Fire Pump Annual Emissions (tpy)	0.01	0.00	0.04	0.00	0.00	0.00	3.26	0.00	0.00	3.27	0.00
	Emergency Generator Annual Emissions (tpy)	2.5	0.14	0.49	0.00	0.02	0.02	468	0.00	0.02	470	0.00
	O&M Equipment and Vehicles Annual Emissions (tpy)	1.14	0.09	0.66	0.00	0.03	0.02	257	0.00	0.01	258	0.00
	Insulating Gas Annual Emissions (tpy)	--	--	--	--	--	--	--	--	--	68.4	--
	Annual Emissions (tpy) ^h	3.69	2.27	1.19	0.00	3.87	2.34	37,945	0.01	144	41,608	85.2
Non- Commissioning Year With Startups, Shutdowns and Emission Control Downtime	PTU Annual Emission (tpy)	0.00	0.02	0.00	0.00	0.00	0.00	423	0.00	1.63	464	2.27
	MTU Annual Emissions (tpy)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Rock Muffler Annual Emissions (tpy)	0.00	0.17	0.00	0.00	0.00	0.00	3,111	0.00	12.0	3,412	16.7
	Cooling Tower and Sparger Annual Emissions (tpy)	0.00	2.23	0.00	0.00	6.96	4.17	40,510	0.00	156	44,420	14.3
	Fire Pump Annual Emissions (tpy)	0.01	0.00	0.04	0.00	0.00	0.00	3.26	0.00	0.00	3.27	0.00
	Emergency Generator Annual Emissions (tpy)	2.5	0.14	0.49	0.00	0.02	0.02	468	0.00	0.02	470	0.00
	O&M Equipment and Vehicles Annual Emissions (tpy)	1.14	0.09	0.66	0.00	0.03	0.02	257	0.00	0.01	258	0.00
	Insulating Gas Annual Emissions (tpy)	--	--	--	--	--	--	--	--	--	68.4	--
	Annual Emissions (tpy) ^h	3.69	2.64	1.19	0.00	7.01	4.22	44,773	0.01	170	49,095	33.3
Non- Commissioning Year With no Start-ups, Shutdowns, or Emission Control Downtime	PTU Annual Emission (tpy)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	MTU Annual Emissions (tpy)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Rock Muffler Annual Emissions (tpy)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Cooling Tower and Sparger Annual Emissions (tpy)	0.00	2.52	0.00	0.00	7.94	4.77	45,891	0.00	177	50,320	10.1
	Fire Pump Annual Emissions (tpy)	0.01	0.00	0.04	0.00	0.00	0.00	3.26	0.00	0.00	3.27	0.00
	Emergency Generator Annual Emissions (tpy)	2.5	0.14	0.49	0.00	0.02	0.02	468	0.00	0.02	470	0.00
	O&M Equipment and Vehicles Annual Emissions (tpy)	1.14	0.09	0.66	0.00	0.03	0.02	257	0.00	0.01	258	0.00
	Insulating Gas Annual Emissions (tpy)	--	--	--	--	--	--	--	--	--	68.4	--
	Annual Emissions (tpy) ^h	3.69	2.75	1.19	0.00	7.99	4.81	46,619	0.01	177	51,119	10.1

N/A = Not applicable (i.e., no operational emission significance threshold exists for this pollutant)

lbs/day = pound(s) per day

^a Daily emissions assume the following hours of operation at the maximum hourly emission rate: 24

^b Daily emissions assume the following hours of operation at the maximum hourly emission rate: 1

^c Daily emissions assume the following hours of operation at the maximum hourly emission rate: 2

^d These estimates include both fugitive dust emissions and exhaust emissions.

^e The following global warming potentials were used to estimate CO₂ equivalent emissions, per 40 CFR Part 98, Table A-1:

CH₄ = 25

N₂O = 298

^f Non-routine and routine daily emission scenarios are summarized below:

Non-Routine: PTU/MTU/Rock Muffler/Fire Pump/Emergency Generators/Insulating Gas/O&M Equipment and Vehicles

Routine: Spargers/Cooling Towers/Emergency Generators/Fire Pump/Insulating Gas/O&M Equipment and Vehicles

^g ICAPCD Thresholds of Significance taken from Table 1 of the 2017 CEQA Air Quality Handbook (ICAPCD 2017).

ⁿ ICAPCD does not have established annual emission significance thresholds.

Black Rock Geothermal Project

BRGP Operational Emissions

Table 3. Brine Composition

April 2023

Region 1 Wells

Wellname	NCG/Steam Ratio (ppmw)	Steam Flow (kph)	CO ₂ /Steam Ratio (ppmw)	H ₂ S/Steam Ratio (ppmw)	NH ₃ /Steam Ratio (ppmw)	Argon/Steam Ratio (ppmw)	N ₂ /Steam Ratio (ppmw)	CH ₄ /Steam Ratio (ppmw)	H ₂ /Steam Ratio (ppmw)
IID-16	16,354	120	15,772	67	372	0.438	95.15	47	0.180
SINC-10	13,083	171	12,477	70	439	0.220	40.57	57	0.148
SINC-11	19,667	110	19,128	70	317	0.490	68.06	83	0.162
VON-1	15,433	286	14,840	60	383	0.338	90.92	60	0.107
VON-2	11,930	193	11,372	70	415	0.168	30.81	41	0.183
VON-3	14,445	124	13,915	73	350	0.300	73.12	32	0.170
VON-4	24,296	160	23,802	66	250	0.416	59.20	118	0.227
VON-5	15,673	206	15,108	60	408	0.288	47.15	50	0.157
VON-6	11,431	168	10,859	68	428	0.144	29.35	46	0.190
Total		1,539							

ppmw = part(s) per million by weight

NCG = Non-condensable gas

kph = thousand pounds per hour

Region 2 Wells

Wellname	NCG/Steam Ratio (ppmw)	Steam Flow (kph)	CO ₂ /Steam Ratio (ppmw)	H ₂ S/Steam Ratio (ppmw)	NH ₃ /Steam Ratio (ppmw)	Argon/Steam Ratio (ppmw)	N ₂ /Steam Ratio (ppmw)	CH ₄ /Steam Ratio (ppmw)	H ₂ /Steam Ratio (ppmw)
DR-10	23,853	92	23,357	55	287	0.222	41	111	0.479
DR-11	9,616	146	9,040	108	414	0.146	29	25	0.522
DR-12	8,731	227	8,233	83	381	0.099	15	17	0.199
DR-14	18,442	118	17,863	63	371	0.261	59	85	0.335
DR-15	10,602	177	9,949	179	427	0.079	27	19	0.765
M6-B	18,663	215	18,160	61	263	0.523	94	84	0.113
Total		975							

ppmw = part(s) per million by weight

NCG = Non-condensable gas

kph = thousand pounds per hour

All Wells

Wellname	NCG Mass Flow Rate (lbs/hr)	Total Mass Flow CO ₂ (lbs/hr)	Total Mass Flow H ₂ S (lbs/hr)	Total Mass Flow NH ₃ (lbs/hr)	Total Mass Flow Argon (lbs/hr)	Total Mass Flow N ₂ (lbs/hr)	Total Mass Flow CH ₄ (lbs/hr)	Total Mass Flow H ₂ (lbs/hr)
IID-16	1,961	1,891	8.07	44.61	0.053	11.41	5.58	0.022
SINC-10	2,240	2,137	11.94	75.13	0.038	6.95	9.70	0.025
SINC-11	2,169	2,109	7.68	34.98	0.054	7.51	9.10	0.018
VON-1	4,418	4,248	17.03	109.50	0.097	26.02	17.14	0.031
VON-2	2,303	2,195	13.52	80.14	0.032	5.95	7.87	0.035
VON-3	1,789	1,724	9.01	43.41	0.037	9.06	4.02	0.021
VON-4	3,886	3,807	10.57	40.06	0.066	9.47	18.80	0.036
VON-5	3,233	3,116	12.35	84.10	0.059	9.73	10.41	0.032
VON-6	1,923	1,827	11.49	72.01	0.024	4.94	7.68	0.032
DR-10	2,201	2,155	5.12	26.48	0.020	3.79	10.29	0.044
DR-11	1,402	1,318	15.70	60.36	0.021	4.19	3.62	0.076
DR-12	1,981	1,868	18.87	86.55	0.022	3.44	3.84	0.045
DR-14	2,172	2,104	7.46	43.65	0.031	6.96	10.07	0.040
DR-15	1,880	1,764	31.77	75.66	0.014	4.83	3.42	0.136
M6-B	4,007	3,899	13.13	56.41	0.112	20.09	18.10	0.024
Totals	37,564	36,162	193.72	933.05	0.682	134.33	139.61	0.617

NCG = Non-condensable gas

lbs/hr = pound(s) per hour

Weighted Average Concentration of Constituents in Steam

Avg. NCG/Steam Ratio (ppmw)	Avg. CO ₂ /Steam Ratio (ppmw)	Avg. H ₂ S/Steam Ratio (ppmw)	Avg. NH ₃ /Steam Ratio (ppmw)	Avg. Argon/Steam Ratio (ppmw)	Avg. N ₂ /Steam Ratio (ppmw)	Avg. CH ₄ /Steam Ratio (ppmw)	Avg. H ₂ /Steam Ratio (ppmw)
14,943	14,386	77.06	371.17	0.27	53.44	55.54	0.25

ppmw = part(s) per million by weight

NCG = Non-condensable gas

Black Rock Geothermal Project

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Table 4. Arsenic, Mercury, Ammonia and Radon Analytical Data

April 2023

Arsenic, Mercury and Ammonia Analytical Data

Location	Measured As Flux in NCG (lbs/hr) *	Measured Hg Flux in NCG (lbs/hr) *	Measured NH ₃ Flux in NCG (lbs/hr) ****
Units 1&2 NCG **	0.0006	0.0066	1.0735
Units 3&4 NCG **	0.0002	0.0023	2.2542
Unit 5 NCG ***	0.00013	0.00000529	0.000951
Vulcan NCG Bioreactor ***	0.000017	0.000479	0.002
Hoch Vacuum Line ***	0.00000501	0.0000255	0.206
Totals	1.90E-04	0.0094	2.4632
NCG Flowrate	10,883	lbs/hr	

* Totals represent the average or sum of analytical data, based on what the Applicant felt to be most representative.

** Measured values from 2018 Source Tests as data was not available from 2022 source tests.

*** Measured values from 2022 Source Tests.

**** Ammonia emission rates calculated as the maximum between the average outlet concentration of ammonia at Units 1&2 and Units 3&4 (assuming a 90% destruction efficiency from the RTO outlet concentration) and summed with the Unit 5, Vulcan Bioreactor, and Hoch Vacuum Line emissions.

NCG = Non-condensable gas

lbs/hr = pound(s) per hour

Radon Analytical Data

Location	Measured NCG Rn-222 Activity-Concentrations (pCi/l) *	Corrected Mass Flux Rn- 222 (lbs/hr) *	Rn-222 Specific Activity (Ci/g) *	Corrected Calculated Rn-222 Activity Flux (Ci/hr) *
Units 1&2 NCG **	274	5.81E-06	1.54E+05	1.97E-03
Units 3&4 NCG **	242	5.34E-06	1.54E+05	1.81E-03
Unit 5 NCG ***	0.04	5.36E-11	1.54E+05	1.82E-08
Vulcan NCG Bioreactor ***	512	2.36E-06	1.54E+05	8.02E-04
Hoch Vacuum Line ***	122	4.82E-08	1.54E+05	1.64E-05
Totals	230	2.71E-06	1.54E+05	9.21E-04

* Totals represent the average of analytical data, based on what the Applicant felt to be most representative.

** Measured values from 2018 Source Tests as data was not available from 2022 source tests.

*** Measured values from 2022 Source Tests.

NCG = Non-condensable gas

pCi/l = pico Curie(s) per liter

lbs/hr = pound(s) per hour

Ci/g = Curie(s) per gram

Ci/hr = Curie(s) per hour

Black Rock Geothermal Project
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Table 5. BTEX Analytical Data
April 2023

BTEX Analytical Sampling Results

Location	Measured Benzene Flux (lbs/hr) *	Measured Toluene Flux (lbs/hr) **	Measured Ethylbenzene Flux (lbs/hr) **	Measured Xylenes Flux (lbs/hr) **
Units 1&2 NCG	0.742	0.0537	0.0102	0.0100
Units 3&4 NCG	1.750	0.0927	0.0149	0.0135
Unit 5 NCG	0.00000975	0.0000429	0.0000018	0.00000179
Vulcan NCG Bioreactor	0.170	0.004	0.00137	0.00126
Hoch Vacuum Line	0.006	0.000	0.00006	0.00006
Totals	0.53	0.030	0.005	0.005

* Measured values from 2022 Source Tests; totals represent the average of analytical data, based on what the Applicant felt to be most representative.

NCG = Non-condensable gas

lbs/hr = pound(s) per hour

Black Rock Geothermal Project

BRGP Operational Emissions

Table 6. Production Flow Back and Well Testing Emission Calculations

April 2023

Production Flow Back

Brine Flow Rate through Production or Mobile Testing Unit (PTU/MTU) *	96,000	gallons/hr
Density of Brine at 260°C and TDS>20% **	1	g/cm ³
Brine Flow Rate through PTU/MTU	801,145	lbs/hr
Flash %	25%	
Steam Flow Rate through PTU/MTU	200,286	lbs/hr
Duration of Well Flowback	24	hr/well
Number of Wells Flowed Back	5	wells/event
Number of Events per Year	1	event/year

Production Well Testing

Brine Flow Rate through MTU ***	1,626,000	lbs/hr
Flash %	25%	
Steam Flow Rate through MTU	406,500	lbs/hr
Duration of Well Testing	240	hr/well
Number of Wells Tested	5	wells/event
Number of Events per Year	1	event/year
Average NCG:Steam Ratio	14,943	ppmw
NCG Mass Flow Rate to PTU/MTU during Flow Back	1,496	lbs/hr
NCG Mass Flow Rate to MTU during Testing	6,074	lbs/hr
NCG Correction to Account for Flow Restrictions, etc.	50%	As provided by Applicant; only applicable to flow back

* Brine flows through the MTU during commissioning flow back and through the PTU during maintenance flow back.

** Reference: Alan E Williams and Michael A McKibben, Aug 1989, A brine interface in the Salton Sea Geothermal System, California: Fluid geochemical and isotopic characteristics, Geochimica et Cosmochimica Acta Volume 53, Issue 8, Pages 1905-1920.

*** Well testing is considered a commissioning activity with brine flowing through the MTU.

Production Flow Back and Well Testing Emissions Data

NCG Component	Average Component/Steam Ratio	Average Component/NCG Mass Fraction	Component Mass Flowrate through PTU/MTU during Production Flow Back	Total Production Flow Back Emissions	Component Mass Flowrate through MTU during Production Well Testing	Total Production Well Testing Emissions
GHG & Volatile/Non-Volatile Compound Calculations						
Pollutant	(ppmw)	(lb/lb NCG)	(lbs/hr)	(lbs/event)	(lbs/hr)	(lbs/event)
CO ₂	1.44E+04	9.63E-01	1.44E+03	1.73E+05	5.85E+03	7.02E+06
H ₂ S	7.71E+01	5.16E-03	7.72E+00	9.26E+02	3.13E+01	3.76E+04
NH ₃	3.38E+00	2.26E-04	3.39E-01	4.06E+01	1.37E+00	1.65E+03
N ₂	5.34E+01	3.58E-03	5.35E+00	6.42E+02	2.17E+01	2.61E+04
CH ₄	5.55E+01	3.72E-03	5.56E+00	6.67E+02	2.26E+01	2.71E+04
H ₂	2.45E-01	1.64E-05	2.46E-02	2.95E+00	9.98E-02	1.20E+02
As	2.61E-04	1.75E-08	2.62E-05	3.14E-03	1.06E-04	1.28E-01
Hg	1.29E-02	8.65E-07	1.29E-03	1.55E-01	5.25E-03	6.30E+00
Benzene	7.33E-01	4.90E-05	7.34E-02	8.80E+00	2.98E-01	3.57E+02
Toluene	4.13E-02	2.76E-06	4.14E-03	4.96E-01	1.68E-02	2.02E+01
Ethylbenzene	7.29E-03	4.88E-07	7.30E-04	8.76E-02	2.96E-03	3.55E+00
Xylenes	6.82E-03	4.56E-07	6.83E-04	8.19E-02	2.77E-03	3.32E+00
Argon	2.71E-01	1.81E-05	2.72E-02	3.26E+00	1.10E-01	1.32E+02
Radon Calculations						
Pollutant	(Ci/10 ⁶ lb Steam)	(Ci/lb NCG)	(Ci/hr)	(Ci/event)	(Ci/hr)	(Ci/event)
Radon	1.26E-03	8.46E-08	1.27E-04	1.52E-02	5.14E-04	6.17E-01

ppmw = part(s) per million by weight

NCG = Non-condensable gas

lb = pound(s)

lbs/hr = pound(s) per hour

Ci = Curie(s)

Ci/hr = Curie(s) per hour

Black Rock Geothermal Project

BRGP Operational Emissions

Table 7. Injection Flow Back and Well Testing Emission Calculations

April 2023

Injection Flow Back

Brine Flow Rate through PTU	96,000	gallons/hr
Density of Brine at 260°C and TDS>20% *	1	g/cm ³
Brine Flow Rate through PTU	801,145	lbs/hr
Flash %	25%	
Steam Flow Rate through PTU	200,286	lbs/hr
Duration of Well Flowback	24	hr/well
Number of Wells Flowed Back	7	wells/event
Number of Events per Year	1	event/year

Injection Well Testing

Brine Flow Rate through MTU **	1,626,000	lbs/hr
Flash %	25%	
Steam Flow Rate through MTU	406,500	lbs/hr
Duration of Well Testing	240	hr/well
Number of Wells Tested	7	wells/event
Number of Events per Year	1	event/year
Average NCG:Steam Ratio	14,943	ppmw
NCG Mass Flow Rate to PTU during Injection Flow Back	1,496	lbs/hr
NCG Mass Flow Rate to PTU during Testing	6,074	lbs/hr
NCG Correction to Account for Flow Restrictions, etc.	50%	As provided by Applicant; only applicable to flow back

* Reference: Alan E Williams and Michael A McKibben, Aug 1989, A brine interface in the Salton Sea Geothermal System, California: Fluid geochemical and isotopic characteristics, Geochimica et Cosmochimica Acta Volume 53, Issue 8, Pages 1905-1920.

** Well testing is considered a commissioning activity with brine flowing through the MTU.

Injection Flow Back and Well Testing Emissions Data

NCG Component	Average Component/Steam Ratio	Average Component/NCG Mass Fraction	Component Mass Flowrate through PTU during Injection Flow Back	Total Injection Flow Back Emissions	Component Mass Flowrate through PTU during Injection Well Testing	Total Injection Well Testing Emissions
GHG & Volatile/Non-Volatile Compound Calculations						
Pollutant	(ppmw)	(lb/lb NCG)	(lbs/hr)	(lbs/event)	(lbs/hr)	(lbs/event)
CO ₂	1.44E+04	9.63E-01	1.44E+03	2.42E+05	5.85E+03	9.82E+06
H ₂ S	7.71E+01	5.16E-03	7.72E+00	1.30E+03	3.13E+01	5.26E+04
NH ₃	3.38E+00	2.26E-04	3.39E-01	5.69E+01	1.37E+00	2.31E+03
N ₂	5.34E+01	3.58E-03	5.35E+00	8.99E+02	2.17E+01	3.65E+04
CH ₄	5.55E+01	3.72E-03	5.56E+00	9.34E+02	2.26E+01	3.79E+04
H ₂	2.45E-01	1.64E-05	2.46E-02	4.13E+00	9.98E-02	1.68E+02
As	2.61E-04	1.75E-08	2.62E-05	4.40E-03	1.06E-04	1.79E-01
Hg	1.29E-02	8.65E-07	1.29E-03	2.17E-01	5.25E-03	8.82E+00
Benzene	7.33E-01	4.90E-05	7.34E-02	1.23E+01	2.98E-01	5.00E+02
Toluene	4.13E-02	2.76E-06	4.14E-03	6.95E-01	1.68E-02	2.82E+01
Ethylbenzene	7.29E-03	4.88E-07	7.30E-04	1.23E-01	2.96E-03	4.98E+00
Xylenes	6.82E-03	4.56E-07	6.83E-04	1.15E-01	2.77E-03	4.65E+00
Argon	2.71E-01	1.81E-05	2.72E-02	4.56E+00	1.10E-01	1.85E+02
Radon Calculations						
Pollutant	(Ci/10 ⁶ lb Steam)	(Ci/lb NCG)	(Ci/hr)	(Ci/event)	(Ci/hr)	(Ci/event)
Radon	1.26E-03	8.46E-08	1.27E-04	2.13E-02	5.14E-04	8.64E-01

ppmw = part(s) per million by weight

NCG = Non-condensable gas

lb = pound(s)

lbs/hr = pound(s) per hour

Ci = Curie(s)

Ci/hr = Curie(s) per hour

Black Rock Geothermal Project

BRGP Operational Emissions

Table 8. Commissioning Emission Calculations

April 2023

Average NCG:Steam Ratio	14,943	ppmw
Well Warm-up at PTU		
Steam Flow Rate	250,000	lbs/hr
Duration of Well Warm-up	24	hr for first well/event
Duration of Well Warm-up	96	hr for 4 wells/event
Number of Events per Year	1	One time event during first year of operation
NCG @ Steam Flow = 250,000 lbs/hr	3,736	lbs/hr
NCG @ Steam Flow = 300,000 lbs/hr	4,483	lbs/hr
NCG @ Steam Flow = 479,042 lbs/hr	7,159	lbs/hr
Production Line and Equipment Warm-up @ Rock Muffler (RM)		
Steam Flow Rate	479,042	lbs/hr
Duration	48	hr/event
Number of Events per Year	1	One time event during first year of operation
NCG Flow Rate to RM	7,159	lbs/hr
Steam Blow @ RM		
Steam Flow Rate	1,334,754	lbs/hr
Duration	240	hr/event
Number of Events per Year	1	One time event during first year of operation
NCG Flow Rate to RM ^a	10,883	lbs/hr
Turbine Preheat and Auxiliary Loops		
Total Steam Flow Rate	479,042	lbs/hr
Steam Flow to RM	300,000	lbs/hr
Steam Flow to Turbine	179,042	lbs/hr
Duration	48	hr/event
Number of Events per Year	1	One time event during first year of operation
NCG Flow Rate to RM	4,483	lbs/hr
NCG Flow Rate to Sparger	2675	lbs/hr
Turbine Load Test		
Total Steam Flow Rate	1,334,754	lbs/hr
Duration	72	hr/event
Number of Events per Year	1	One time event during first year of operation
NCG Flow Rate to Sparger ^a	10,883	lbs/hr
Turbine Performance Test		
Total Steam Flow Rate	1,334,754	lbs/hr
Duration	48	hr/event
Number of Events per Year	1	One time event during first year of operation
NCG Flow Rate to Sparger ^a	10,883	lbs/hr

Commissioning Emissions Data

NCG Component	Average Component/Steam Ratio	Average Component/NCG Mass Fraction	Component Flowrate @ Steam Flow = 250,000	Component Flowrate @ Steam Flow = 300,000	Component Flowrate @ Steam Flow = 479,042	Component Flowrate @ Steam Flow = 1,334,754 a	Well Warm-up Emissions	Emissions during Production Line and Equipment Warm-up @ RM	Emissions through RM during Steam Blow	Emissions through RM during Turbine Preheat
GHG & Volatile/Non-Volatile Compound Calculations										
Pollutant	(ppmw)	(lb/lb NCG)	(lbs/hr)	(lbs/hr)	(lbs/hr)	(lbs/hr)	(lbs/event)	(lbs/event)	(lbs/event)	(lbs/event)
CO ₂	1.44E+04	9.63E-01	3.60E+03	4.32E+03	6.89E+03	1.05E+04	4.32E+05	3.31E+05	2.51E+06	2.07E+05
H ₂ S	7.71E+01	5.16E-03	1.93E+01	2.31E+01	3.69E+01	5.61E+01	2.31E+03	1.77E+03	1.35E+04	1.11E+03
NH ₃	3.38E+00	2.26E-04	8.45E-01	1.01E+00	1.62E+00	2.46E+00	1.01E+02	7.78E+01	5.91E+02	4.87E+01
N ₂	5.34E+01	3.58E-03	1.34E+01	1.60E+01	2.56E+01	3.89E+01	1.60E+03	1.23E+03	9.34E+03	7.69E+02
CH ₄	5.55E+01	3.72E-03	1.39E+01	1.67E+01	2.66E+01	4.04E+01	1.67E+03	1.28E+03	9.71E+03	8.00E+02
H ₂	2.45E-01	1.64E-05	6.14E-02	7.36E-02	1.18E-01	1.79E-01	7.36E+00	5.64E+00	4.29E+01	3.53E+00
As	2.61E-04	1.75E-08	6.54E-05	7.84E-05	1.25E-04	1.90E-04	7.84E-03	6.01E-03	4.57E-02	3.76E-03
Hg	1.29E-02	8.65E-07	3.23E-03	3.88E-03	6.19E-03	9.41E-03	3.88E-01	2.97E-01	2.26E+00	1.86E-01
Benzene	7.33E-01	4.90E-05	1.83E-01	2.20E-01	3.51E-01	5.34E-01	2.20E+01	1.68E+01	1.28E+02	1.06E+01
Toluene	4.13E-02	2.76E-06	1.03E-02	1.24E-02	1.98E-02	3.01E-02	1.24E+00	9.50E-01	7.22E+00	5.95E-01
Ethylbenzene	7.29E-03	4.88E-07	1.82E-03	2.19E-03	3.49E-03	5.31E-03	2.19E-01	1.68E-01	1.27E+00	1.05E-01
Xylenes	6.82E-03	4.56E-07	1.70E-03	2.04E-03	3.27E-03	4.96E-03	2.04E-01	1.57E-01	1.19E+00	9.82E-02
Argon	2.71E-01	1.81E-05	6.78E-02	8.14E-02	1.30E-01	1.98E-01	8.14E+00	6.24E+00	4.74E+01	3.91E+00
Radon Calculations										
Pollutant	(Ci/10 ⁶ lb Steam)	(Ci/lb NCG)	(Ci/hr)	(Ci/hr)	(Ci/hr)	(Ci/hr)	(Ci/event)	(Ci/event)	(Ci/event)	(Ci/event)
Radon	1.26E-03	8.46E-08	3.16E-04	3.79E-04	6.06E-04	9.21E-04	3.79E-02	2.91E-02	2.21E-01	1.82E-02

ppmw = part(s) per million by weight

NCG = Non-condensable gas

lb = pound(s)

lbs/hr = pound(s) per hour

Ci = Curie(s)

Ci/hr = Curie(s) per hour

^a Steam flows greater than the sum of the high pressure and standard pressure steam flows assume the following NCG correction factor, based on the low pressure steam flow being comprised of only a fraction of the NCG concentration as the high and standard pressure steam flows:

55%

NCG Component	Sparger Burner	Emissions through Sparger during Turbine Preheat ^a	Emissions through Sparger during Turbine Load Test	Emissions through Sparger during Turbine Performance Test	Stack Emissions through Sparger during Turbine Preheat	Stack Emissions through Sparger during Turbine Load Test	Stack Emissions through Sparger during Turbine Performance Test
Criteria Pollutant, GHG & Volatile/Non-Volatile Compound Calculations							
Pollutant	(lbs/hr)	(lbs/hr)	(lbs/hr)	(lbs/hr)	(lbs/event)	(lbs/event)	(lbs/event)
NOx	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ROG	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CO	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SO ₂	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PM ₁₀	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Lead	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PM _{2.5}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
H ₂ S	0.00E+00	3.39E-01	1.18E+00	1.18E+00	1.63E+01	8.49E+01	5.66E+01
NH ₃	0.00E+00	7.08E-01	2.46E+00	2.46E+00	3.40E+01	1.77E+02	1.18E+02
N ₂	0.00E+00	1.12E+01	3.89E+01	3.89E+01	5.37E+02	2.80E+03	1.87E+03
CH ₄	0.00E+00	1.16E+01	4.04E+01	4.04E+01	5.58E+02	2.91E+03	1.94E+03
H ₂	0.00E+00	5.14E-02	1.79E-01	1.79E-01	2.47E+00	1.29E+01	8.58E+00
As	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Hg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Benzene	0.00E+00	1.53E-01	5.34E-01	5.34E-01	7.36E+00	3.84E+01	2.56E+01
Toluene	0.00E+00	8.65E-03	3.01E-02	3.01E-02	4.15E-01	2.17E+00	1.44E+00
Ethylbenzene	0.00E+00	1.53E-03	5.31E-03	5.31E-03	7.32E-02	3.82E-01	2.55E-01
Xylenes	0.00E+00	1.43E-03	4.96E-03	4.96E-03	6.85E-02	3.57E-01	2.38E-01
Argon	0.00E+00	5.68E-02	1.98E-01	1.98E-01	2.73E+00	1.42E+01	9.48E+00
CO ₂	0.00E+00	3.01E+03	1.05E+04	1.05E+04	1.45E+05	7.54E+05	5.03E+05
Formaldehyde	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PAH's (excluding naphthalene)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Naphthalene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Acetaldehyde	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Acrolein	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Propylene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Hexane	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Radon Calculations							
Pollutant	(Ci/hr)	(Ci/hr)	(Ci/hr)	(Ci/hr)	(Ci/event)	(Ci/event)	(Ci/event)
Radon	0.00E+00	2.65E-04	9.21E-04	9.21E-04	1.27E-02	6.63E-02	4.42E-02

NCG = Non-condensable gas

lb = pound(s)

lbs/hr = pound(s) per hour

Ci = Curie(s)

Ci/hr = Curie(s) per hour

^a Assumes all steam supplied to turbine is high-pressure steam.

Black Rock Geothermal Project

BRGP Operational Emissions

Table 9. Cold Startup Emission Calculations

April 2023

Average NCG:Steam Ratio	14,943	ppmw
Well Warm-up @ PTU		
Steam Flow Rate	250,000	lbs/hr
Duration of Well Warm-up	24	hr for first well/event
Duration of Well Warm-up	96	hr for 4 wells/event
Number of Events per Year	1	event/year
NCG @ Steam Flow = 250,000 lbs/hr	3,736	lbs/hr
NCG @ Steam Flow = 300,000 lbs/hr	4,483	lbs/hr
NCG @ Steam Flow = 479,042 lbs/hr	7,159	lbs/hr
Production Line and Equipment Warm-up @ RM		
Steam Flow Rate	479,042	lbs/hr
Duration	32	hr/event
Number of Events per Year	1	event/year
NCG Flow Rate to RM	7,159	lbs/hr
Turbine Preheat and Auxiliary Loops		
Total Steam Flow Rate	479,042	lbs/hr
Steam Flow to RM	300,000	lbs/hr
Steam Flow to Turbine	179,042	lbs/hr
Duration	24	hr/event
Number of Events per Year	1	event/year
NCG Flow Rate to RM	4,483	lbs/hr
NCG Flow Rate to Sparger	2675	lbs/hr
Auxiliary Equipment Start-up		
Total Steam Flow Rate	479,042	lbs/hr
Steam Flow to RM	270,000	lbs/hr
Steam Flow to Turbine	209,042	lbs/hr
Duration	12	hr/event
Number of Events per Year	1	event/year
NCG Flow Rate to RM	4,035	lbs/hr
NCG Flow Rate to Sparger	3,124	lbs/hr
Functional Trip Test		
Total Steam Flow Rate	479,042	lbs/hr
Duration	6	hr/event
Number of Events per Year	1	event/year
NCG Flow Rate to RM	7,159	lbs/hr
Gradual Steam Delivery to Turbine		
Initital Steam Flow Rate	0	lbs/hr
Final Steam Flow Rate	1,334,754	lbs/hr
Duration	6	hr/event
Number of Events per Year	1	event/year
Average Steam Flow Rate to Sparger	266,951	lbs/hr

Cold Startup Emissions Data

NCG Component	Average Component/Steam Ratio	Average Component/NC G Mass Fraction	Component Flowrate @ Steam Flow = 250,000	Component Flowrate @ Steam Flow = 300,000	Component Flowrate @ Steam Flow = 479,042	Component Flowrate @ Steam Flow = 1,334,754 a	Well Warm-up Emisisions	Emissions during Equipment Warm- up @ RM	Emissions through RM during Turbine Preheat	Emissions through RM during Auxiliary Equipment Start- up	Emissions through RM during Trip Test
GHG & Volatile/Non-Volatile Compound Calculations											
Pollutant	(ppmw)	(lb/lb NCG)	(lbs/hr)	(lbs/hr)	(lbs/hr)	(lbs/hr)	(lbs/event)	(lbs/event)	(lbs/event)	(lbs/event)	(lbs/event)
CO ₂	1.44E+04	9.63E-01	3.60E+03	4.32E+03	6.89E+03	1.05E+04	4.32E+05	2.21E+05	1.04E+05	4.66E+04	4.13E+04
H ₂ S	7.71E+01	5.16E-03	1.93E+01	2.31E+01	3.69E+01	5.61E+01	2.31E+03	1.18E+03	5.55E+02	2.50E+02	2.21E+02
NH ₃	3.38E+00	2.26E-04	8.45E-01	1.01E+00	1.62E+00	2.46E+00	1.01E+02	5.18E+01	2.44E+01	1.10E+01	9.72E+00
N ₂	5.34E+01	3.58E-03	1.34E+01	1.60E+01	2.56E+01	3.89E+01	1.60E+03	8.19E+02	3.85E+02	1.73E+02	1.54E+02
CH ₄	5.55E+01	3.72E-03	1.39E+01	1.67E+01	2.66E+01	4.04E+01	1.67E+03	8.51E+02	4.00E+02	1.80E+02	1.60E+02
H ₂	2.45E-01	1.64E-05	6.14E-02	7.36E-02	1.18E-01	1.79E-01	7.36E+00	3.76E+00	1.77E+00	7.95E-01	7.05E-01
As	2.61E-04	1.75E-08	6.54E-05	7.84E-05	1.25E-04	1.90E-04	7.84E-03	4.01E-03	1.88E-03	8.47E-04	7.51E-04
Hg	1.29E-02	8.65E-07	3.23E-03	3.88E-03	6.19E-03	9.41E-03	3.88E-01	1.98E-01	9.30E-02	4.19E-02	3.71E-02
Benzene	7.33E-01	4.90E-05	1.83E-01	2.20E-01	3.51E-01	5.34E-01	2.20E+01	1.12E+01	5.28E+00	2.37E+00	2.11E+00
Toluene	4.13E-02	2.76E-06	1.03E-02	1.24E-02	1.98E-02	3.01E-02	1.24E+00	6.33E-01	2.97E-01	1.34E-01	1.19E-01
Ethylbenzene	7.29E-03	4.88E-07	1.82E-03	2.19E-03	3.49E-03	5.31E-03	2.19E-01	1.12E-01	5.25E-02	2.36E-02	2.09E-02
Xylenes	6.82E-03	4.56E-07	1.70E-03	2.04E-03	3.27E-03	4.96E-03	2.04E-01	1.04E-01	4.91E-02	2.21E-02	1.96E-02
Argon	2.71E-01	1.81E-05	6.78E-02	8.14E-02	1.30E-01	1.98E-01	8.14E+00	4.16E+00	1.95E+00	8.79E-01	7.79E-01
Radon Calculations											
Pollutant	(Ci/10 ⁶ lb Steam)	(Ci/lb NCG)	(Ci/hr)	(Ci/hr)	(Ci/hr)	(Ci/hr)	(Ci/event)	(Ci/event)	(Ci/event)	(Ci/event)	(Ci/event)
Radon	1.26E-03	8.46E-08	3.16E-04	3.79E-04	6.06E-04	9.21E-04	3.79E-02	1.94E-02	9.11E-03	4.10E-03	3.64E-03

ppmw = part(s) per million by weight

NCG = Non-condensable gas

lb = pound(s)

lbs/hr = pound(s) per hour

Ci = Curie(s)

Ci/hr = Curie(s) per hour

^a Steam flows greater than the sum of the high pressure and standard pressure steam flows assume the following NCG correction factor, based on the low pressure steam flow being comprised of only a fraction of the NCG concentration as the high and standard pressure steam flows:

55%

Cold Startup Sparger Emissions Data

NCG Component	Sparger Burner	Emissions through Sparger during Turbine Preheat ^a	Emissions through Sparger during Auxiliary Equipment Start-up ^a	Emissions through Sparger during Gradual Steam Delivery to Turbine ^a	Stack Emissions through Sparger during Turbine Preheat	Stack Emissions through Sparger during Auxiliary Equipment Start-up	Stack Emissions through Sparger during Gradual Steam Delivery to Turbine
Criteria Pollutant, GHG & Volatile/Non-Volatile Compound Calculations							
Pollutant	(lbs/hr)	(lbs/hr)	(lbs/hr)	(lbs/hr)	(lbs/event)	(lbs/event)	(lbs/event)
NOx	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
ROG	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
CO	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
SO ₂	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
PM ₁₀	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Lead	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
PM _{2.5}	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
H ₂ S	0.0E+00	3.4E-01	4.0E-01	5.1E-01	8.1E+00	4.7E+00	3.0E+00
NH ₃	0.0E+00	7.1E-01	8.3E-01	1.1E+00	1.7E+01	9.9E+00	6.3E+00
N ₂	0.0E+00	1.1E+01	1.3E+01	1.7E+01	2.7E+02	1.6E+02	1.0E+02
CH ₄	0.0E+00	1.2E+01	1.4E+01	1.7E+01	2.8E+02	1.6E+02	1.0E+02
H ₂	0.0E+00	5.1E-02	6.0E-02	7.7E-02	1.2E+00	7.2E-01	4.6E-01
As	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Hg	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Benzene	0.0E+00	1.5E-01	1.8E-01	2.3E-01	3.7E+00	2.1E+00	1.4E+00
Toluene	0.0E+00	8.6E-03	1.0E-02	1.3E-02	2.1E-01	1.2E-01	7.7E-02
Ethylbenzene	0.0E+00	1.5E-03	1.8E-03	2.3E-03	3.7E-02	2.1E-02	1.4E-02
Xylenes	0.0E+00	1.4E-03	1.7E-03	2.1E-03	3.4E-02	2.0E-02	1.3E-02
Argon	0.0E+00	5.7E-02	6.6E-02	8.5E-02	1.4E+00	8.0E-01	5.1E-01
CO ₂	0.0E+00	3.0E+03	3.5E+03	4.5E+03	7.2E+04	4.2E+04	2.7E+04
Formaldehyde	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
PAH's (excluding naphthalene)	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Naphthalene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Acetaldehyde	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Acrolein	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Propylene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Hexane	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Radon Calculations							
Pollutant	(Ci/hr)	(Ci/hr)	(Ci/hr)	(Ci/hr)	(Ci/event)	(Ci/event)	(Ci/event)
Radon	0.0E+00	2.6E-04	3.1E-04	3.9E-04	6.4E-03	3.7E-03	2.4E-03

NCG = Non-condensable gas

lb = pound(s)

lbs/hr = pound(s) per hour

Ci = Curie(s)

Ci/hr = Curie(s) per hour

^a Assumes all steam supplied to turbine is high-pressure steam.

Black Rock Geothermal Project
BRGP Operational Emissions
Table 10. Warm Startup Emission Calculations
April 2023

Assumptions

1. During trips, steam is diverted from turbine to RM for 10 hours.
2. Steam is gradually diverted back from RM to Turbine in 10 hours.

Average NCG:Steam Ratio		14,943	ppmw
Step 1 @ Rock Mufler			
Steam Flow Rate	1,334,754	lbs/hr	
Duration	10	hr/event	
Number of Events per Year	20	event/year	
NCG Fow Rate to RM ^a	10,883	lbs/hr	
Step 2			
Total Steam Flow Rate	1,334,754	lbs/hr	
Initial Steam Flow to RM	1,334,754	lbs/hr	
Final Steam Flow to RM	0	lbs/hr	
Initial Steam Flow to Turbine	0	lbs/hr	
Final Steam Flow to Turbine	1,334,754	lbs/hr	
Duration	5	hr/event/source	
Number of Events per Year	20	event/year/source	
Average Steam Flow Rate to RM	266,951	lbs/hr	
Average Steam Flow Rate to Turbine	266,951	lbs/hr	

Warm Startup Emissions Data

NCG Component	Average Component/Steam Ratio	Average Component/NCG Mass Fraction	Component Flowrate @ Steam Flow = 1,334,754 a	Emissions through RM during Step 1	Emissions through RM during Step 2
GHG & Volatile/Non-Volatile Compound Calculations					
Pollutant	(ppmw)	(lb/lb NCG)	(lbs/hr)	(lbs/event)	(lbs/event)
CO ₂	1.44E+04	9.63E-01	1.05E+04	1.05E+05	1.05E+04
H ₂ S	7.71E+01	5.16E-03	5.61E+01	5.61E+02	5.61E+01
NH ₃	3.38E+00	2.26E-04	2.46E+00	2.46E+01	2.46E+00
N ₂	5.34E+01	3.58E-03	3.89E+01	3.89E+02	3.89E+01
CH ₄	5.55E+01	3.72E-03	4.04E+01	4.04E+02	4.04E+01
H ₂	2.45E-01	1.64E-05	1.79E-01	1.79E+00	1.79E-01
As	2.61E-04	1.75E-08	1.90E-04	1.90E-03	1.90E-04
Hg	1.29E-02	8.65E-07	9.41E-03	9.41E-02	9.41E-03
Benzene	7.33E-01	4.90E-05	5.34E-01	5.34E+00	5.34E-01
Toluene	4.13E-02	2.76E-06	3.01E-02	3.01E-01	3.01E-02
Ethylbenzene	7.29E-03	4.88E-07	5.31E-03	5.31E-02	5.31E-03
Xylenes	6.82E-03	4.56E-07	4.96E-03	4.96E-02	4.96E-03
Argon	2.71E-01	1.81E-05	1.98E-01	1.98E+00	1.98E-01
Radon Calculations					
Pollutant	(Ci/10 ⁶ lb Steam)	(Ci/lb NCG)	(Ci/hr)	(Ci/event)	(Ci/event)
Radon	1.26E-03	8.46E-08	9.21E-04	9.21E-03	9.21E-04

ppmw = part(s) per million by weight

NCG = Non-condensable gas

lb = pound(s)

lbs/hr = pound(s) per hour

Ci = Curie(s)

Ci/hr = Curie(s) per hour

^a Steam flows greater than the sum of the high pressure and standard pressure steam flows assume the following NCG correction factor, based on the low pressure steam flow being comprised of only a fraction of the NCG concentration as the high and standard pressure steam flows:

55%

Warm Startup Sparger Emissions Data

NCG Component	Sparger Burner	Emissions through Sparger during Gradual Steam Delivery to Turbine ^a	Stack Emissions through Sparger during Gradual Steam Delivery to Turbine
Criteria Pollutant, GHG & Volatile/Non-Volatile Compound Calculations			
Pollutant	(lbs/hr)	(lbs/hr)	(lbs/event)
NOx	0.00E+00	0.00E+00	0.00E+00
ROG	0.00E+00	0.00E+00	0.00E+00
CO	0.00E+00	0.00E+00	0.00E+00
SO ₂	0.00E+00	0.00E+00	0.00E+00
PM ₁₀	0.00E+00	0.00E+00	0.00E+00
Lead	0.00E+00	0.00E+00	0.00E+00
PM _{2.5}	0.00E+00	0.00E+00	0.00E+00
H ₂ S	0.00E+00	5.05E-01	2.53E+00
NH ₃	0.00E+00	1.06E+00	5.28E+00
N ₂	0.00E+00	1.67E+01	8.34E+01
CH ₄	0.00E+00	1.73E+01	8.67E+01
H ₂	0.00E+00	7.66E-02	3.83E-01
As	0.00E+00	0.00E+00	0.00E+00
Hg	0.00E+00	0.00E+00	0.00E+00
Benzene	0.00E+00	2.29E-01	1.14E+00
Toluene	0.00E+00	1.29E-02	6.45E-02
Ethylbenzene	0.00E+00	2.27E-03	1.14E-02
Xylenes	0.00E+00	2.13E-03	1.06E-02
Argon	0.00E+00	8.47E-02	4.23E-01
CO ₂	0.00E+00	4.49E+03	2.25E+04
Formaldehyde	0.00E+00	0.00E+00	0.00E+00
PAH's (excluding naphthalene)	0.00E+00	0.00E+00	0.00E+00
Naphthalene	0.00E+00	0.00E+00	0.00E+00
Acetaldehyde	0.00E+00	0.00E+00	0.00E+00
Acrolein	0.00E+00	0.00E+00	0.00E+00
Propylene	0.00E+00	0.00E+00	0.00E+00
Hexane	0.00E+00	0.00E+00	0.00E+00
Radon Calculations			
Pollutant	(Ci/hr)	(Ci/hr)	(Ci/event)
Radon	0.00E+00	3.95E-04	1.97E-03

NCG = Non-condensable gas

lb = pound(s)

lbs/hr = pound(s) per hour

Ci = Curie(s)

Ci/hr = Curie(s) per hour

^a Assumes all steam supplied to turbine is high-pressure steam.

Black Rock Geothermal Project
BRGP Operational Emissions
Table 11. Shutdown Emission Calculations
April 2023

Average NCG:Steam Ratio 14,943 ppmw

Steam Vented through RM

Total Duration	20	hr/event
Duration for One Well	4	hr/event
Initial Steam Flow Rate	1,334,754	lbs/hr
Steam Flow Rate after 4 hours	1,067,803	lbs/hr
Steam Flow Rate after 8 hours	800,852	lbs/hr
Steam Flow Rate after 12 hours	533,902	lbs/hr
Steam Flow Rate after 16 hours	266,951	lbs/hr
Final Steam Flow Rate after 20 hours	0	lbs/hr
Number of Events per Year	10	event/year

Shutdown Emissions Data

NCG Component	Average Component/Steam Ratio	Average Component/NCG Mass Fraction	Component Flowrate @ Steam Flow = 266,951	Component Flowrate @ Steam Flow = 533,902	Component Flowrate @ Steam Flow = 800,852	Component Flowrate @ Steam Flow = 1,067,803 a	Component Flowrate @ Steam Flow = 1,334,754 a	Emissions when One Well is Taken Offline	Emissions when Two Wells are Taken Offline	Emissions when Three Wells are Taken Offline	Emissions when Four Wells are Taken Offline	Total Emissions through RM during Shutdown
GHG & Volatile/Non-Volatile Compound Calculations												
Pollutant	(ppmw)	(lb/lb NCG)	(lbs/hr)	(lbs/hr)	(lbs/hr)	(lbs/hr)	(lbs/hr)	(lbs/event)	(lbs/event)	(lbs/event)	(lbs/event)	(lbs/event)
CO ₂	1.44E+04	9.63E-01	3.8403E+03	7.68E+03	1.15E+04	8.38E+03	1.05E+04	3.35E+04	4.61E+04	3.07E+04	1.54E+04	1.26E+05
H ₂ S	7.71E+01	5.16E-03	2.0572E+01	4.11E+01	6.17E+01	4.49E+01	5.61E+01	1.80E+02	2.47E+02	1.65E+02	8.23E+01	6.73E+02
NH ₃	3.38E+00	2.26E-04	9.0283E-01	1.81E+00	2.71E+00	1.97E+00	2.46E+00	7.88E+00	1.08E+01	7.22E+00	3.61E+00	2.95E+01
N ₂	5.34E+01	3.58E-03	1.4265E+01	2.85E+01	4.28E+01	3.11E+01	3.89E+01	1.25E+02	1.71E+02	1.14E+02	5.71E+01	4.67E+02
CH ₄	5.55E+01	3.72E-03	1.4826E+01	2.97E+01	4.45E+01	3.24E+01	4.04E+01	1.29E+02	1.78E+02	1.19E+02	5.93E+01	4.85E+02
H ₂	2.45E-01	1.64E-05	6.5519E-02	1.31E-01	1.97E-01	1.43E-01	1.79E-01	5.72E-01	7.86E-01	5.24E-01	2.62E-01	2.14E+00
As	2.61E-04	1.75E-08	6.9789E-05	1.40E-04	2.09E-04	1.52E-04	1.90E-04	6.09E-04	8.37E-04	5.58E-04	2.79E-04	2.28E-03
Hg	1.29E-02	8.65E-07	3.4490E-03	6.90E-03	1.03E-02	7.53E-03	9.41E-03	3.01E-02	4.14E-02	2.76E-02	1.38E-02	1.13E-01
Benzene	7.33E-01	4.90E-05	1.9558E-01	3.91E-01	5.87E-01	4.27E-01	5.34E-01	1.71E+00	2.35E+00	1.56E+00	7.82E-01	6.40E+00
Toluene	4.13E-02	2.76E-06	1.1028E-02	2.21E-02	3.31E-02	2.41E-02	3.01E-02	9.63E-02	1.32E-01	8.82E-02	4.41E-02	3.61E-01
Ethylbenzene	7.29E-03	4.88E-07	1.9450E-03	3.89E-03	5.83E-03	4.25E-03	5.31E-03	1.70E-02	2.33E-02	1.56E-02	7.78E-03	6.37E-02
Xylenes	6.82E-03	4.56E-07	1.8196E-03	3.64E-03	5.46E-03	3.97E-03	4.96E-03	1.59E-02	2.18E-02	1.46E-02	7.28E-03	5.96E-02
Argon	2.71E-01	1.81E-05	7.2395E-02	1.45E-01	2.17E-01	1.58E-01	1.98E-01	6.32E-01	8.69E-01	5.79E-01	2.90E-01	2.37E+00
Radon Calculations												
Pollutant	(Ci/10 ⁶ lb Steam)	(Ci/lb NCG)	(Ci/hr)	(Ci/hr)	(Ci/hr)	(Ci/hr)	(Ci/hr)	(Ci/event)	(Ci/event)	(Ci/event)	(Ci/event)	(Ci/event)
Radon	1.26E-03	8.46E-08	3.38E-04	6.75E-04	1.01E-03	7.37E-04	9.21E-04	2.95E-03	4.05E-03	2.70E-03	1.35E-03	1.11E-02

ppmw = part(s) per million by weight

NCG = Non-condensable gas

lb = pound(s)

lbs/hr = pound(s) per hour

Ci = Curie(s)

Ci/hr = Curie(s) per hour

^a Steam flows greater than the sum of the high pressure and standard pressure steam flows assume the following NCG correction factor, based on the low pressure steam flow being comprised of only a fraction of the NCG concentration as the high and standard pressure steam flows:

55%

Black Rock Geothermal Project
BRGP Operational Emissions
Table 12. Sparger Emission Calculations
April 2023

Normal Continuous Operation at Sparger

Nominal Brine Flow Rate to High Pressure (HP) Separator	6,601,437	lbs/hr		
Steam Flow Rate to Turbine - HP	622,864	lbs/hr	100%	NCG
Steam Flow Rate to Turbine - Standard Pressure (SP)	232,848	lbs/hr	35%	NCG
Steam Flow Rate to Turbine - Low Pressure (LP)	479,042	lbs/hr	5%	NCG
Average NCG:Steam Ratio	14,943	ppmw		
NCG Flow Rate to Turbine	10,883	lbs/hr		

Sparger Emission Data

NCG Component	Average Component/Steam Ratio	Average Component/NCG Mass Fraction	Mass Flow Rate into Turbine	Partitioned into NCG ^{a, b}	Mass Flow Rate to Sparger	Sparger DRE	Hourly Emissions	Annual Emissions
GHG & Volatile/Non-Volatile Compound Calculations								
Pollutant	(ppmw)	(lb/lb NCG)	(lbs/hr)	(%)	(lbs/hr)	(%)	(lbs/hr)	(tpy)
CO ₂	1.44E+04	9.63E-01	1.05E+04	100%	1.05E+04	0%	1.05E+04	4.48E+04
H ₂ S	7.71E+01	5.16E-03	5.61E+01	60%	3.37E+01	96.5%	1.18E+00	5.04E+00
NH ₃	3.38E+00	2.26E-04	2.46E+00	100%	2.46E+00	0%	2.46E+00	1.05E+01
N ₂	5.34E+01	3.58E-03	3.89E+01	100%	3.89E+01	0%	3.89E+01	1.67E+02
CH ₄	5.55E+01	3.72E-03	4.04E+01	100%	4.04E+01	0%	4.04E+01	1.73E+02
H ₂	2.45E-01	1.64E-05	1.79E-01	100%	1.79E-01	0%	1.79E-01	7.65E-01
As	2.61E-04	1.75E-08	1.90E-04	0%	0.00E+00	0%	0.00E+00	0.00E+00
Hg	1.29E-02	8.65E-07	9.41E-03	0%	0.00E+00	0%	0.00E+00	0.00E+00
Benzene	7.33E-01	4.90E-05	5.34E-01	100%	5.34E-01	0%	5.34E-01	2.28E+00
Toluene	4.13E-02	2.76E-06	3.01E-02	100%	3.01E-02	0%	3.01E-02	1.29E-01
Ethylbenzene	7.29E-03	4.88E-07	5.31E-03	100%	5.31E-03	0%	5.31E-03	2.27E-02
Xylenes	6.82E-03	4.56E-07	4.96E-03	100%	4.96E-03	0%	4.96E-03	2.12E-02
Argon	2.71E-01	1.81E-05	1.98E-01	100%	1.98E-01	0%	1.98E-01	8.45E-01
Radon Calculations								
Pollutant	(Ci/10 ⁶ lb Steam)	(Ci/lb NCG)	(Ci/hr)	(%)	(Ci/hr)	(%)	(Ci/hr)	(Ci/year)
Radon	1.26E-03	8.46E-08	9.21E-04	100%	9.21E-04	0%	9.21E-04	7.88E+00

ppmw = part(s) per million by weight

DRE = Destruction and Removal Efficiency

NCG = Non-condensable gas

lb = pound(s)

lbs/hr = pound(s) per hour

Ci = Curie(s)

Ci/hr = Curie(s) per hour

tpy = ton(s) per year

^a NH₃ is conservatively assumed to be partitioned 100% into NCG flows.

^b As and Hg are assumed to be partitioned 0% into NCG flows based on their boiling points being at temperatures higher than the typical operating temperature of the cooling tower basin (i.e., they remain in liquid form).

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Table 13. Sparger Bypass Emission Calculations
April 2023

Maintenance at Sparger

Nominal Brine Flow Rate to HP Separator	6,601,437	lbs/hr		
Steam Flow Rate to Turbine - HP	622,864	lbs/hr	100%	NCG
Steam Flow Rate to Turbine - SP	232,848	lbs/hr	35%	NCG
Steam Flow Rate to Turbine - LP	479,042	lbs/hr	5%	NCG
Average NCG: Steam Ratio	14,943	ppmw		
NCG Flow Rate to Turbine	10,883	lbs/hr		
Hours Bypassing Sparger	200	hr/year		

Sparger Bypass Emission Data

NCG Component	Average Component/Steam Ratio	Average Component/NCG Mass Fraction	Mass Flow Rate into Turbine	Partitioned into NCG ^{a, b}	Mass Flow Rate to Sparger	Sparger DRE ^c	Hourly Emissions	Annual Emissions
GHG & Volatile/Non-Volatile Compound Calculations								
Pollutant	(ppmw)	(lb/lb NCG)	(lbs/hr)	(%)	(lbs/hr)	(%)	(lbs/hr)	(tpy)
CO ₂	1.44E+04	9.63E-01	1.05E+04	100%	1.05E+04	0%	1.05E+04	1.05E+03
H ₂ S	7.71E+01	5.16E-03	5.61E+01	60%	3.37E+01	0%	3.37E+01	3.37E+00
NH ₃	3.38E+00	2.26E-04	2.46E+00	100%	2.46E+00	0%	2.46E+00	2.46E-01
N ₂	5.34E+01	3.58E-03	3.89E+01	100%	3.89E+01	0%	3.89E+01	3.89E+00
CH ₄	5.55E+01	3.72E-03	4.04E+01	100%	4.04E+01	0%	4.04E+01	4.04E+00
H ₂	2.45E-01	1.64E-05	1.79E-01	100%	1.79E-01	0%	1.79E-01	1.79E-02
As	2.61E-04	1.75E-08	1.90E-04	0%	0.00E+00	0%	0.00E+00	0.00E+00
Hg	1.29E-02	8.65E-07	9.41E-03	0%	0.00E+00	0%	0.00E+00	0.00E+00
Benzene	7.33E-01	4.90E-05	5.34E-01	100%	5.34E-01	0%	5.34E-01	5.34E-02
Toluene	4.13E-02	2.76E-06	3.01E-02	100%	3.01E-02	0%	3.01E-02	3.01E-03
Ethylbenzene	7.29E-03	4.88E-07	5.31E-03	100%	5.31E-03	0%	5.31E-03	5.31E-04
Xylenes	6.82E-03	4.56E-07	4.96E-03	100%	4.96E-03	0%	4.96E-03	4.96E-04
Argon	2.71E-01	1.81E-05	1.98E-01	100%	1.98E-01	0%	1.98E-01	1.98E-02
Radon Calculations								
Pollutant	(Ci/10 ⁶ lb Steam)	(Ci/lb NCG)	(Ci/hr)	(%)	(Ci/hr)	(%)	(Ci/hr)	(Ci/year)
Radon	1.26E-03	8.46E-08	9.21E-04	100%	9.21E-04	0%	9.21E-04	1.84E-01

ppmw = part(s) per million by weight

DRE = Destruction and Removal Efficiency

NCG = Non-condensable gas

lb = pound(s)

lbs/hr = pound(s) per hour

Ci = Curie(s)

Ci/hr = Curie(s) per hour

tpy = ton(s) per year

^a As and Hg are assumed to be partitioned 0% into NCG flows based on their boiling points being at temperatures higher than the typical operating temperature of the cooling tower basin (i.e., they remain in liquid form).

^b NH₃ is conservatively assumed to be partitioned 100% into NCG flows.

^c During sparger bypass operations, no emission controls are operational; therefore, the DRE for all pollutants is 0%.

Black Rock Geothermal Project
BRGP Operational Emissions
Table 14. Sparger Emission Summary
April 2023

Sparger Emission Summary

NCG Component	Sparger Bypass Emissions	Sparger Normal Operation Emissions	Total Stack Hourly Emissions	Total Stack Annual Emissions
Criteria Pollutant, GHG & Volatile/Non-Volatile Compound Calculations				
Pollutant	(lbs/hr)	(lbs/hr)	(lbs/hr)	(tpy)
NOx	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ROG	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CO	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SO ₂	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PM ₁₀	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Lead	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PM _{2.5}	0.00E+00	0.00E+00	0.00E+00	0.00E+00
H ₂ S	3.37E+01	1.18E+00	3.37E+01	8.41E+00
NH ₃	2.46E+00	2.46E+00	2.46E+00	1.08E+01
N ₂	3.89E+01	3.89E+01	3.89E+01	1.70E+02
CH ₄	4.04E+01	4.04E+01	4.04E+01	1.77E+02
H ₂	1.79E-01	1.79E-01	1.79E-01	7.83E-01
As	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Hg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Benzene	5.34E-01	5.34E-01	5.34E-01	2.34E+00
Toluene	3.01E-02	3.01E-02	3.01E-02	1.32E-01
Ethylbenzene	5.31E-03	5.31E-03	5.31E-03	2.32E-02
Xylenes	4.96E-03	4.96E-03	4.96E-03	2.17E-02
Argon	1.98E-01	1.98E-01	1.98E-01	8.65E-01
CO ₂	1.05E+04	1.05E+04	1.05E+04	4.59E+04
Formaldehyde	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PAH's (excluding naphthalene)	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Naphthalene	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Acetaldehyde	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Acrolein	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Propylene	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Hexane	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Radon Calculations				
Pollutant	(Ci/hr)	(Ci/hr)	(Ci/hr)	(Ci/year)
Radon	9.2E-04	9.2E-04	9.2E-04	8.1E+00

NCG = Non-condensable gas

lbs/hr = pound(s) per hour

Ci = Curie(s)

Ci/hr = Curie(s) per hour

tpy = ton(s) per year

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Table 15. Cooling Tower Particulate Emission Data

April 2023

Cooling Tower Particulate Emission Calculations

Parameter	Units	Value	Data Source
Water Circulation Rate	gpm	115,000	1 bank of 7 cells X 115,000 gpm/bank
Total Liquid Drift	%	0.00050	BACT/Vendor
Maximum TDS of Circulated Water	ppmw	9,000	Highest Concentration Expected Based on Actuals from Other Applicant-owned Facilities
TDS in Make-up Water ^a	ppmw	690	IID 2021 lab sampling - Vail 4
Cycles of Concentration	Dimensionless	13	--
Fraction of TDS as PM ₁₀	Mass Fraction	70%	South Coast Air Quality Management District. 2006. <i>Final-Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds</i> . Appendix A. October.
Fraction of TDS as PM _{2.5}	Mass Fraction	42%	South Coast Air Quality Management District. 2006. <i>Final-Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds</i> . Appendix A. October.
Emissions Summary			
TSP ^b	lbs/hr	2.59	--
PM ₁₀ ^c	lbs/hr	1.81	--
PM _{2.5} ^c	lbs/hr	1.09	--

ppmw = part(s) per million by weight

gpm = gallon(s) per minute

lbs/hr = pound(s) per hour

TDS = Total Dissolved Solids

^a TDS of make-up water assumed equal to the TDS in condensate.

^b TSP emission rate calculated based on EPA's AP-42, Section 13.4, Table 13.4-1 (EPA 1995), modified to the Black Rock design.

^c PM₁₀ and PM_{2.5} emission rates calculated consistent with the TSP emission rate, assuming only a fraction of TDS is PM₁₀ or PM_{2.5}, respectively.

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Table 16. Cooling Tower TAC Emission Data

April 2023

Cooling Tower Recirculation Rate	115,000	gpm
Drift Eliminator Efficiency	0.00050%	
Cooling Tower Cycles of Concentration	8	
Cooling Tower Makeup Rate	2,450	gpm
Water Evaporated from Cooling Tower	2,143	gpm

Cooling Tower TAC Emission Calculations

Constituents	Concentration Analyzed in Condensate ^a	Hourly Emissions ^{b, c, d}
Non-Volatile Compound Calculations		
Pollutant	(µg/L)	(lbs/hr)
Aluminum	50	1.44E-05
Antimony	4	1.15E-06
As	143.6	4.13E-05
Barium	74.6	2.15E-05
Beryllium	0.5	1.44E-07
Cobalt	1	1.44E-07
Cadmium	1	2.88E-07
Total Chromium	2.5	7.20E-07
Copper	1.5	4.32E-07
Vanadium	2.5	7.20E-07
Lead	2.5	7.20E-07
Lithium	50	1.44E-05
Manganese	296.0	8.52E-05
Hg	750	2.16E-04
Nickel	5.7	1.64E-06
Selenium	57.3	1.65E-05
Total Silica	2,500	7.20E-04
Silver	2.5	7.20E-07
Strontium	50	1.44E-05
Zinc	370	1.07E-04
Volatile Compound Calculations		
Pollutant	(µg/L)	(lbs/hr)
Ammonia (mg/L)	110.5	1.36E+02
H ₂ S	N/A	1.12E+00
Benzene	0.25	3.1E-04
Ethylbenzene	0.25	3.1E-04
Toluene	0.25	3.1E-04
Xylenes (m+p+o)	0.5	6.1E-04
Radon Calculations		
Pollutant	(Ci/L)	(Ci/hr)
Radon	7.59E-13	4.22E-07

µg/L = microgram(s) per liter

mg/L = milligram(s) per liter

gpm = gallon(s) per minute

lbs/hr = pound(s) per hour

Ci/L = Curie(s) per Liter

Ci/hr = Curie(s) per hour

^a Data represent the average of 2022 source testing data from Region 1 and Region 2. Analytes that were registered as non-detect were analyzed at 1/2 the detection limit. Based on the likelihood of compounds being volatilized during the first pass through the Cooling Tower, data for volatile compounds were best represented by Cooling Tower Hotwell measurements, whereas non-volatile compounds (i.e., metals) were best represented by Cooling Tower Blowdown measurements.

^b Emissions were estimated as follows:

Emission Rate for Non-Volatile Compounds:	$\text{ER (lbs/hr)} = \text{Recirculation Rate (gpm)} * 60 \text{ min/hr} * 3.785 \text{ liters/gal} * \text{HAP Concentration (}\mu\text{g/L)} * 1 \text{ lb} / 453.6 \text{ g} * 1 \text{ g} / 10^6 \mu\text{g} * \text{Drift Fraction}$
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Emission Rate for Volatile Compounds:	$\text{ER (lbs/hr)} = \text{Makeup Rate (gpm)} * 60 \text{ min/hr} * 3.785 \text{ liters/gal} * \text{HAP Concentration (}\mu\text{g/L)} * 1 \text{ lb} / 453.6 \text{ g} * 1 \text{ g} / 10^6 \mu\text{g} * \text{Volatilization Fraction (assumed to be one)}$
---------------------------------------	--

^c H₂S abatement efficiency of Oxidation Box is: 95%

^d Ammonia emissions calculated based on an effective concentration, which was derived from a mass balance of ammonia detected in both the Hot Well and Blowdown streams (164.1 mg/L and 2,567 gpm and 491.4 mg/L at 306 gpm, respectively).

Black Rock Geothermal Project

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**Table 17. Cooling Tower Oxidation Box Bypass TAC Emission Data
April 2023**

Cooling Tower Recirculation Rate	115,000	gpm
Drift Eliminator Efficiency	0.00050%	
Cooling Tower Cycles of Concentration	8	
Cooling Tower Makeup Rate	2,450	gpm
Water Evaporated from Cooling Tower	2,143	gpm

Cooling Tower Oxidation Box Bypass TAC Emission Calculations

Constituents	Concentration Analyzed in Condensate ^a	Hourly Emissions ^{b, c, d}
Non-Volatile Compound Calculations		
Pollutant	(µg/L)	(lbs/hr)
Aluminum	50	1.44E-05
Antimony	4	1.15E-06
Arsenic	143.6	4.13E-05
Barium	74.6	2.15E-05
Beryllium	0.5	1.44E-07
Cobalt	1	1.44E-07
Cadmium	1	2.88E-07
Total Chromium	2.5	7.20E-07
Copper	1.5	4.32E-07
Vanadium	2.5	7.20E-07
Lead	2.5	7.20E-07
Lithium	50	1.44E-05
Manganese	296.0	8.52E-05
Mercury	750	2.16E-04
Nickel	5.7	1.64E-06
Selenium	57.3	1.65E-05
Total Silica	2,500	7.20E-04
Silver	2.5	7.20E-07
Strontium	50	1.44E-05
Zinc	370	1.07E-04
Volatile Compound Calculations		
Pollutant	(µg/L)	(lbs/hr)
Ammonia (mg/L)	110.5	1.36E+02
H ₂ S	N/A	2.25E+01
Benzene	0.25	3.1E-04
Ethylbenzene	0.25	3.1E-04
Toluene	0.25	3.1E-04
Xylenes (m+p+o)	0.5	6.1E-04
Radon Calculations		
Pollutant	(Ci/L)	(Ci/hr)
Radon	7.59E-13	4.22E-07

µg/L = microgram(s) per liter

mg/L = milligram(s) per liter

gpm = gallon(s) per minute

lb/hr = pound(s) per hour

Ci/L = Curie(s) per liter

Ci/hr = Curie(s) per hour

^a Data represent the average of 2022 source testing data from Region 1 and Region 2. Analytes that were registered as non-detect were analyzed at 1/2 the detection limit. Based on the likelihood of compounds being volatilized during the first pass through the Cooling Tower, data for volatile compounds were best represented by Cooling Tower Hotwell measurements, whereas non-volatile compounds (i.e., metals) were best represented by Cooling Tower Blowdown measurements.

^b Emissions were estimated as follows:

Emission Rate for Non-Volatile Compounds:	$\text{ER (lbs/hr)} = \text{Recirculation Rate (gpm)} * 60 \text{ min/hr} * 3.785 \text{ liters/gal} * \text{HAP Concentration (}\mu\text{g/L)} * 1 \text{ lb} / 453.6 \text{ g} * 1 \text{ g} / 10^6 \mu\text{g} * \text{Drift Fraction}$
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Emission Rate for Volatile Compounds:	$\text{ER (lbs/hr)} = \text{Makeup Rate (gpm)} * 60 \text{ min/hr} * 3.785 \text{ liters/gal} * \text{HAP Concentration (}\mu\text{g/L)} * 1 \text{ lb} / 453.6 \text{ g} * 1 \text{ g} / 10^6 \mu\text{g} * \text{Volatilization Fraction (assumed to be one)}$
---------------------------------------	--

^c Oxbox bypass assumes 0% control of H₂S.

^d Ammonia emissions calculated based on an effective concentration, which was derived from a mass balance of ammonia detected in both the Hot Well and Blowdown streams (164.1 mg/L and 2,567 gpm and 491.4 mg/L at 306 gpm, respectively).

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BRGP Operational Emissions
Table 18. O&M Emission Calculations
April 2023

O&M Equipment and Vehicle Emission Rates

O&M Equipment and Vehicle	Fuel	Equipment Type	Usage ^a (hr/hr or mile/hr)	Emission Factors (lbs/hr or lb/mile)									Emission Rates (lbs/hr)								
				NO _x	CO	VOC	SO ₂	PM ₁₀	PM _{2.5}	CO ₂	CH ₄	N ₂ O	NO _x	CO	VOC	SO ₂	PM ₁₀	PM _{2.5}	CO ₂	CH ₄	N ₂ O
Water Truck	Diesel	Construction Equipment	1	3.89E-01	3.76E-01	5.78E-02	1.54E-03	1.40E-02	1.28E-02	1.66E+02	6.74E-03	1.35E-03	3.89E-01	3.76E-01	5.78E-02	1.54E-03	1.40E-02	1.28E-02	1.66E+02	6.74E-03	1.35E-03
Dump Truck	Diesel	Construction Equipment	1	3.89E-01	3.76E-01	5.78E-02	1.54E-03	1.40E-02	1.28E-02	1.66E+02	6.74E-03	1.35E-03	3.89E-01	3.76E-01	5.78E-02	1.54E-03	1.40E-02	1.28E-02	1.66E+02	6.74E-03	1.35E-03
On-Site Pickup Truck	Gasoline	Vehicle	20	4.70E-04	7.30E-03	1.20E-04	8.37E-06	4.02E-05	1.74E-05	8.27E-01	3.01E-05	2.03E-06	9.39E-03	1.46E-01	2.41E-03	1.67E-04	8.05E-04	3.49E-04	1.65E+01	6.02E-04	4.05E-05
Off-Site Pickup Trucks	Gasoline	Vehicle	50	4.70E-04	7.30E-03	1.20E-04	8.37E-06	4.02E-05	1.74E-05	8.27E-01	3.01E-05	2.03E-06	2.35E-02	3.65E-01	6.02E-03	4.19E-04	2.01E-03	8.72E-04	4.13E+01	1.50E-03	1.01E-04
Off-Site Haul Truck	Diesel	Vehicle	50	2.67E-03	2.03E-04	2.18E-05	2.95E-05	2.25E-04	9.23E-05	3.10E+00	1.01E-06	6.78E-06	1.34E-01	1.02E-02	1.09E-03	1.48E-03	1.12E-02	4.61E-03	1.55E+02	5.07E-05	3.39E-04
Forklift	Diesel	Construction Equipment	1	1.52E-01	2.73E-01	1.06E-02	4.13E-04	3.65E-03	3.36E-03	4.47E+01	1.81E-03	3.63E-04	1.52E-01	2.73E-01	1.06E-02	4.13E-04	3.65E-03	3.36E-03	4.47E+01	1.81E-03	3.63E-04
Boom Truck	Diesel	Construction Equipment	1	3.89E-01	3.76E-01	5.78E-02	1.54E-03	1.40E-02	1.28E-02	1.66E+02	6.74E-03	1.35E-03	3.89E-01	3.76E-01	5.78E-02	1.54E-03	1.40E-02	1.28E-02	1.66E+02	6.74E-03	1.35E-03
Crane-50T	Diesel	Construction Equipment	1	5.00E-01	3.94E-01	4.93E-02	1.14E-03	2.01E-02	1.85E-02	1.24E+02	5.02E-03	1.00E-03	5.00E-01	3.94E-01	4.93E-02	1.14E-03	2.01E-02	1.85E-02	1.24E+02	5.02E-03	1.00E-03
Excavator	Diesel	Construction Equipment	1	1.06E-01	1.27E-01	1.25E-02	1.63E-04	3.59E-03	3.31E-03	1.77E+01	7.19E-04	1.44E-04	1.06E-01	1.27E-01	1.25E-02	1.63E-04	3.59E-03	3.31E-03	1.77E+01	7.19E-04	1.44E-04
Backhoe	Diesel	Construction Equipment	1	1.50E-01	2.39E-01	1.47E-02	3.35E-04	6.66E-03	6.12E-03	3.63E+01	1.47E-03	2.95E-04	1.50E-01	2.39E-01	1.47E-02	3.35E-04	6.66E-03	6.12E-03	3.63E+01	1.47E-03	2.95E-04
Yardogs	Diesel	Construction Equipment	1	3.89E-01	3.76E-01	5.78E-02	1.54E-03	1.40E-02	1.28E-02	1.66E+02	6.74E-03	1.35E-03	3.89E-01	3.76E-01	5.78E-02	1.54E-03	1.40E-02	1.28E-02	1.66E+02	6.74E-03	1.35E-03
Pressure Washers	Diesel	Construction Equipment	1	4.09E-02	3.03E-02	4.94E-03	7.94E-05	1.71E-03	1.57E-03	5.36E+00	2.17E-04	4.35E-05	4.09E-02	3.03E-02	4.94E-03	7.94E-05	1.71E-03	1.57E-03	5.36E+00	2.17E-04	4.35E-05
Welders	Diesel	Construction Equipment	1	1.73E-01	2.08E-01	2.44E-02	3.35E-04	5.97E-03	5.49E-03	2.59E+01	1.05E-03	2.10E-04	1.73E-01	2.08E-01	2.44E-02	3.35E-04	5.97E-03	5.49E-03	2.59E+01	1.05E-03	2.10E-04
Manlift	Diesel	Construction Equipment	1	9.07E-02	9.78E-02	4.98E-03	1.70E-04	6.81E-04	6.26E-04	1.85E+01	7.48E-04	1.50E-04	9.07E-02	9.78E-02	4.98E-03	1.70E-04	6.81E-04	6.26E-04	1.85E+01	7.48E-04	1.50E-04
Air Compressors	Diesel	Construction Equipment	2	1.51E-01	1.91E-01	2.27E-02	2.88E-04	5.31E-03	4.89E-03	2.23E+01	9.03E-04	1.81E-04	3.03E-01	3.82E-01	4.55E-02	5.75E-04	1.06E-02	9.77E-03	4.45E+01	1.81E-03	3.61E-04
Carry Deck	Diesel	Construction Equipment	1	5.00E-01	3.94E-01	4.93E-02	1.14E-03	2.01E-02	1.85E-02	1.24E+02	5.02E-03	1.00E-03	5.00E-01	3.94E-01	4.93E-02	1.14E-03	2.01E-02	1.85E-02	1.24E+02	5.02E-03	1.00E-03

lbs/hr = pound(s) per hour

lb/mile = pound(s) per mile

mile/hr = mile(s) per hour

^a Assumes two air compressors.

O&M Equipment and Vehicle Emissions

O&M Equipment and Vehicle	Fuel	Equipment Type	Usage ^b	Emission Rates (lbs/day) ^a									Emission Rates (tpy)								
			(hr/year)	NO _x	CO	VOC	SO ₂	PM ₁₀	PM _{2.5}	CO ₂	CH ₄	N ₂ O	NO _x	CO	VOC	SO ₂	PM ₁₀	PM _{2.5}	CO ₂	CH ₄	N ₂ O
Water Truck	Diesel	Construction Equipment	200	3.11E+00	3.01E+00	4.62E-01	1.23E-02	1.12E-01	1.03E-01	1.33E+03	5.39E-02	1.08E-02	3.89E-02	3.76E-02	5.78E-03	1.54E-04	1.40E-03	1.28E-03	1.66E+01	6.74E-04	1.35E-04
Dump Truck	Diesel	Construction Equipment	200	3.11E+00	3.01E+00	4.62E-01	1.23E-02	1.12E-01	1.03E-01	1.33E+03	5.39E-02	1.08E-02	3.89E-02	3.76E-02	5.78E-03	1.54E-04	1.40E-03	1.28E-03	1.66E+01	6.74E-04	1.35E-04
On-Site Pickup Truck	Gasoline	Vehicle	2,000	7.51E-02	1.17E+00	1.93E-02	1.34E-03	6.44E-03	2.79E-03	1.32E+02	4.82E-03	3.24E-04	9.39E-03	1.46E-01	2.41E-03	1.67E-04	8.05E-04	3.49E-04	1.65E+01	6.02E-04	4.05E-05
Off-Site Pickup Trucks	Gasoline	Vehicle	2,000	1.88E-01	2.92E+00	4.81E-02	3.35E-03	1.61E-02	6.98E-03	3.31E+02	1.20E-02	8.11E-04	2.35E-02	3.65E-01	6.02E-03	4.19E-04	2.01E-03	8.72E-04	4.13E+01	1.50E-03	1.01E-04
Off-Site Haul Truck	Diesel	Vehicle	400	1.07E+00	8.13E-02	8.74E-03	1.18E-02	9.00E-02	3.69E-02	1.24E+03	4.06E-04	2.71E-03	2.67E-02	2.03E-03	2.18E-04	2.95E-04	2.25E-03	9.23E-04	3.10E+01	1.01E-05	6.78E-05
Forklift	Diesel	Construction Equipment	200	1.21E+00	2.18E+00	8.47E-02	3.31E-03	2.92E-02	2.69E-02	3.58E+02	1.45E-02	2.90E-03	1.52E-02	2.73E-02	1.06E-03	4.13E-05	3.65E-04	3.36E-04	4.47E+00	1.81E-04	3.63E-05
Boom Truck	Diesel	Construction Equipment	450	3.11E+00	3.01E+00	4.62E-01	1.23E-02	1.12E-01	1.03E-01	1.33E+03	5.39E-02	1.08E-02	8.76E-02	8.47E-02	1.30E-02	3.45E-04	3.14E-03	2.89E-03	3.74E+01	1.52E-03	3.03E-04
Crane-50T	Diesel	Construction Equipment	384	4.00E+00	3.15E+00	3.95E-01	9.15E-03	1.61E-01	1.48E-01	9.90E+02	4.02E-02	8.03E-03	9.60E-02	7.57E-02	9.47E-03	2.19E-04	3.86E-03	3.55E-03	2.38E+01	9.64E-04	1.93E-04
Excavator	Diesel	Construction Equipment	260	8.45E-01	1.01E+00	1.00E-01	1.31E-03	2.87E-02	2.64E-02	1.42E+02	5.75E-03	1.15E-03	1.37E-02	1.65E-02	1.63E-03	2.12E-05	4.67E-04	4.30E-04	2.30E+00	9.34E-05	1.87E-05
Backhoe	Diesel	Construction Equipment	260	1.20E+00	1.92E+00	1.18E-01	2.68E-03	5.33E-02	4.90E-02	2.90E+02	1.18E-02	2.36E-03	1.95E-02	3.11E-02	1.92E-03	4.36E-05	8.65E-04	7.96E-04	4.72E+00	1.91E-04	3.83E-05
Yardogs	Diesel	Construction Equipment	260	3.11E+00	3.01E+00	4.62E-01	1.23E-02	1.12E-01	1.03E-01	1.33E+03	5.39E-02	1.08E-02	5.06E-02	4.89E-02	7.51E-03	2.00E-04	1.81E-03	1.67E-03	2.16E+01	8.77E-04	1.75E-04
Pressure Washers	Diesel	Construction Equipment	450	3.27E-01	2.43E-01	3.95E-02	6.36E-04	1.36E-02	1.26E-02	4.28E+01	1.74E-03	3.48E-04	9.20E-03	6.82E-03	1.11E-03	1.79E-05	3.84E-04	3.53E-04	1.21E+00	4.89E-05	9.78E-06
Welders	Diesel	Construction Equipment	450	1.38E+00	1.66E+00	1.95E-01	2.68E-03	4.77E-02	4.39E-02	2.07E+02	8.42E-03	1.68E-03	3.88E-02	4.68E-02	5.48E-03	7.54E-05	1.34E-03	1.24E-03	5.84E+00	2.37E-04	4.73E-05
Manlift	Diesel	Construction Equipment	384	7.26E-01	7.82E-01	3.99E-02	1.36E-03	5.44E-03	5.01E-03	1.48E+02	5.99E-03	1.20E-03	1.74E-02	1.88E-02	9.57E-04	3.27E-05	1.31E-04	1.20E-04	3.54E+00	1.44E-04	2.87E-05
Air Compressors	Diesel	Construction Equipment	800	2.42E+00	3.06E+00	3.64E-01	4.60E-03	8.50E-02	7.82E-02	3.56E+02	1.44E-02	2.89E-03	1.21E-01	1.53E-01	1.82E-02	2.30E-04	4.25E-03	3.91E-03	1.78E+01	7.22E-04	1.44E-04
Carry Deck	Diesel	Construction Equipment	200	4.00E+00	3.15E+00	3.95E-01	9.15E-03	1.61E-01	1.48E-01	9.90E+02	4.02E-02	8.03E-03	5.00E-02	3.94E-02	4.93E-03	1.14E-04	2.01E-03	1.85E-03	1.24E+01	5.02E-04	1.00E-04

hr/year = hour(s) per year

lbs/day = pound(s) per day

tpy = ton(s) per year

^a Equipment and vehicle operations assume 8 hours per day

^b Each of the site's two (2) air compressors are assumed to operate 800 hours per year.

Black Rock Geothermal Project
BRGP Operational Emissions
Table 19. Fire Pump Emission Data
April 2023

Engine Information	Value
Engine Rating (kW)	236
Annual Hours of Operations (hrs/yr)	50
Fuel Use (gal/hr)	6
Heat Input (MMBtu/hr) ^a	0.8

kW = kilowatt

hrs/yr = hour(s) per year

gal/hr = gallon(s) per hour

MMBtu/hr = million British thermal unit(s) per hour

^a Heat input for Fire Pump calculated based upon 1 horsepower = 2,544 Btu/hr.

Criteria Pollutant Emissions

Pollutant	Emission Factor (g/kW-hr)	Basis	1-Hour Emission Rate (lbs/hr)	Annual Emissions (tpy)	Annual Average Hourly Emissions (lbs/hr)
NO _x Emissions	3.4	Vendor Data	1.78E+00	4.46E-02	1.02E-02
CO Emissions	0.8	Vendor Data	4.16E-01	1.04E-02	2.38E-03
PM ₁₀ Emissions	0.11	Vendor Data	5.72E-02	1.43E-03	3.27E-04
PM _{2.5} Emissions	0.11	Vendor Data	5.72E-02	1.43E-03	3.27E-04
SO _x Emissions	0.00001	Calculated based upon 15 ppm USLD	2.70E-06	6.76E-08	1.54E-08
VOC Emissions	0.09	Vendor Data	4.68E-02	1.17E-03	2.67E-04

g/kW-hr = gram(s) per kilowatt-hour

lbs/hr = pound(s) per hour

ppm = part(s) per million

tpy = ton(s) per year

USLD = Ultra low sulfur diesel

Toxic Emissions

Pollutant	Emission Factor (lb/MMBTU) ^a	Fire Pump Emissions (lbs/yr)	Fire Pump Emissions (tpy)
Benzene	9.33E-04	3.73E-02	1.87E-05
Toluene	4.09E-04	1.64E-02	8.18E-06
Xylenes	2.85E-04	1.14E-02	5.70E-06
Formaldehyde	1.18E-03	4.72E-02	2.36E-05
1,3-Butadiene	3.91E-05	1.56E-03	7.82E-07
Acetaldehyde	7.67E-04	3.07E-02	1.53E-05
Acrolein	9.25E-05	3.70E-03	1.85E-06
Naphthalene	8.48E-05	3.39E-03	1.70E-06
Propylene	2.58E-03	1.03E-01	5.16E-05
Acenaphthylene	5.06E-06	2.02E-04	1.01E-07
Acenaphthene	1.42E-06	5.68E-05	2.84E-08
Fluorene	2.92E-05	1.17E-03	5.84E-07
Phenanthrene	2.94E-05	1.18E-03	5.88E-07
Anthracene	1.87E-06	7.48E-05	3.74E-08
Fluoranthene	7.61E-06	3.04E-04	1.52E-07
Pyrene	4.78E-06	1.91E-04	9.56E-08
Benz(a)anthracene	1.68E-06	6.72E-05	3.36E-08
Chrysene	3.53E-07	1.41E-05	7.06E-09
Benzo(b)fluoranthene	9.91E-08	3.96E-06	1.98E-09
Benzo(k)fluoranthene	1.55E-07	6.20E-06	3.10E-09
Benzo(a)pyrene	1.88E-07	7.52E-06	3.76E-09
Indeno(1,2,3-cd)pyrene	3.75E-07	1.50E-05	7.50E-09
Dibenz(a,h)anthracene	5.83E-07	2.33E-05	1.17E-08
Benzo(g,h,i)perylene	4.89E-07	1.96E-05	9.78E-09

lb/MMBtu = pound(s) per million British thermal unit

lbs/yr = pound(s) per year

tpy = ton(s) per year

^a Toxic Emission Factors from EPA's AP-42, Section 3.3, Table 3.3-2 (EPA 1996).

Stack Parameters	Value	Units
Stack Diameter	0.50	feet
Stack Diameter	0.15	meters
Stack Height	10.92	feet
Stack Height	3.33	meters
Stack Flow	1400	cubic feet per minute
Stack Flow	39.66	cubic meters per minute
Exit Velocity	36.23	meters per second
Stack Temperature	961	degrees Fahrenheit (°F)
Stack Temperature	789.26	degrees Kelvin (K)

GHG Emissions

Source Name	CO ₂ Emissions (tpy)	CH ₄ Emissions (tpy)	N ₂ O Emissions (tpy)	CO ₂ e Emissions (tpy)
Fire Pump	3.26	0.000	0.000	3.27

tpy = ton(s) per year

Diesel Fuel GHG Emission Factors and Conversions			Source
CO ₂	73.96	kg/MMBtu	40 CFR 98.33, Table C-1
CH ₄	3.00E-03	kg/MMBtu	40 CFR 98.33, Table C-2
N ₂ O	6.00E-04	kg/MMBtu	40 CFR 98.33, Table C-2
Default HHV	0.1380	MMBtu/gal	40 CFR 98.33, Table C-1
Density of Distillate #2	7.05	lbs/gallon	AP-42, Appendix A
Conversion	1.1023	ton/tonne	--
Conversion	0.0010	tonne/kg	--

HHV = Higher Heating Value

kg/MMBtu = kilogram(s) per million British thermal unit

MMBtu/gal = million British thermal unit(s) per gallon

lbs = pound(s)

kg = kilogram(s)

Global Warming Potentials (GWP)		Source
GWP CO ₂ =	1	40 CFR 98 Subpart A, Table A-1
GWP CH ₄ =	25	40 CFR 98 Subpart A, Table A-1
GWP N ₂ O =	298	40 CFR 98 Subpart A, Table A-1

Black Rock Geothermal Project

BRGP Operational Emissions

Table 20. Generator 1 Emission Data

April 2023

Engine Information	Value
Engine Rating (kW)	2,700
Engine Rating (HP)	3,621
Annual Hours of Operations (hrs/yr)	50
Fuel Use (gal/hr)	175
Heat Input (MMBtu/hr)	24.1

kW = kilowatt(s)

HP = horsepower

hrs/yr = hour(s) per year

gal/hr = gallon(s) per hour

MMBtu/hr = million British thermal unit(s) per hour

Criteria Pollutant Emissions

Pollutant	Emission Factor (g/kW-hr)	Basis	1-Hour Emission Rate (lbs/hr)	Annual Emissions (tpy)	Annual Average Hourly Emissions (lbs/hr)
NO _x Emissions	0.7	Applicant Provided Data	4.0	0.10	0.023
CO Emissions	3.5	Applicant Provided Data	20.8	0.52	0.12
PM ₁₀ Emissions	0.03	Applicant Provided Data	0.18	0.00	0.001
PM _{2.5} Emissions	0.03	Applicant Provided Data	0.18	0.00	0.001
SO _x Emissions	0.00001	Calculated based upon 15 ppm ULSD	0.000	0.000	0.0000
VOC Emissions	0.19	Applicant Provided Data	1.13	0.03	0.006

g/kW-hr = gram(s) per kilowatt-hour

lbs/hr = pound(s) per hour

ppm = part(s) per million

tpy = ton(s) per year

ULSD = Ultra low sulfur diesel

Toxic Emissions

Pollutant	Emission Factor (lb/MMBTU) ^a	Controlled Generator Emissions (lbs/yr) ^b	Controlled Generator Emissions (tpy)
Benzene	7.76E-04	1.87E-01	9.35E-05
Toluene	2.81E-04	6.77E-02	3.39E-05
Xylenes	1.93E-04	4.65E-02	2.33E-05
Formaldehyde	7.89E-05	1.90E-02	9.51E-06
Acetaldehyde	2.52E-05	6.07E-03	3.04E-06
Acrolein	7.88E-06	1.90E-03	9.49E-07
Naphthalene	1.30E-04	3.13E-02	1.57E-05
Propylene	2.79E-03	6.72E-01	3.36E-04
Ammonia	5 ppm slip ^c	1.39E+01	6.93E-03
Acenaphthylene	9.23E-06	2.22E-03	1.11E-06
Acenaphthene	4.68E-06	1.13E-03	5.64E-07
Fluorene	1.28E-05	3.08E-03	1.54E-06
Phenanthrene	4.08E-05	9.83E-03	4.92E-06
Anthracene	1.23E-06	2.96E-04	1.48E-07
Fluoranthene	4.03E-06	9.71E-04	4.86E-07
Pyrene	3.71E-06	8.94E-04	4.47E-07
Benz(a)anthracene	6.22E-07	1.50E-04	7.49E-08
Chrysene	1.53E-06	3.69E-04	1.84E-07
Benzo(b)fluoranthene	1.11E-06	2.67E-04	1.34E-07
Benzo(k)fluoranthene	2.18E-07	5.25E-05	2.63E-08
Benzo(a)pyrene	2.57E-07	6.19E-05	3.10E-08
Indeno(1,2,3-cd)pyrene	4.14E-07	9.98E-05	4.99E-08
Dibenz(a,h)anthracene	3.46E-07	8.34E-05	4.17E-08
Benzo(g,h,i)perylene	5.56E-07	1.34E-04	6.70E-08

lb/MMBtu = pound(s) per million British thermal unit

lbs/yr = pound(s) per year

tpy = ton(s) per year

^a Toxic Emission Factors from EPA's AP-42, Section 3.4, Tables 3.4-3 and 3.4-4 (EPA 1996).

^b Control efficiencies use industry standard of 80% control of VOCs for Tier 4 engines.

^c 5 ppm ammonia slip typical estimate for Selective Catalytic Reduction (SCR) systems.

Stack Parameters	Value	Units
Stack Diameter	1.17	feet
Stack Diameter	0.36	meters
Stack Height	23.39	feet
Stack Height	7.13	meters
Stack Flow	19459	cubic feet per minute
Stack Flow	551.21	cubic meters per minute
Exit Velocity	92.50	meters per second
Stack Temperature	914	°F
Stack Temperature	763.15	K

GHG Emissions

Source Name	CO ₂ Emissions (tpy)	CH ₄ Emissions (tpy)	N ₂ O Emissions (tpy)	CO ₂ e Emissions (tpy)
Generator 1	98.22	0.004	0.001	98.55

tpy = ton(s) per year

Diesel Fuel GHG Emission Factors and Conversions			Source
CO ₂	73.96	kg/MMBtu	40 CFR 98.33, Table C-1
CH ₄	3.00E-03	kg/MMBtu	40 CFR 98.33, Table C-2
N ₂ O	6.00E-04	kg/MMBtu	40 CFR 98.33, Table C-2
Default HHV	0.1380	MMBtu/gal	40 CFR 98.33, Table C-1
Density of Distillate #2	7.05	lbs/gallon	AP-42, Appendix A
Conversion	1.1023	ton/tonne	--
	0.0010	tonne/kg	--
	28.3168	L/ft ³	--
Molar Volume of Air at STP	22.4	L/mol	--

HHV = Higher Heating Value

kg/MMBtu = kilogram(s) per million British thermal unit

MMBtu/gal = million British thermal unit(s) per gallon

lbs = pound(s)

kg = kilogram(s)

L/ft³ = liter(s) per cubic foot

L = liter(s)

Global Warming Potentials		Source
GWP CO ₂ =	1	40 CFR 98 Subpart A, Table A-1
GWP CH ₄ =	25	40 CFR 98 Subpart A, Table A-1
GWP N ₂ O =	298	40 CFR 98 Subpart A, Table A-1

Black Rock Geothermal Project
BRGP Operational Emissions
Table 21. Generator 2-4 Emission Data
April 2023

Engine Information	Value
Engine Rating (kW)	3,490
Engine Rating (HP)	4,680
Annual Hours of Operations (hrs/yr)	50
Fuel Use (gal/hr)	219
Heat Input (MMBtu/hr)	30.2
Generator Count	3

kW = kilowatt

HP = horsepower

hrs/yr = hour(s) per year

gal/hr = gallon(s) per hour

MMBtu/hr = million British thermal unit(s) per hour

Criteria Pollutant Emissions Per Generator

Pollutant	Emission Factor (g/kW-hr)	Basis	1-Hour Emission Rate (lbs/hr)	Annual Emissions (tpy)	Annual Average Hourly Emissions (lbs/hr)
NO _x Emissions	0.67	Applicant Provided Data	5.2	0.13	0.029
CO Emissions	3.5	Applicant Provided Data	26.9	0.67	0.15
PM ₁₀ Emissions	0.03	Applicant Provided Data	0.23	0.01	0.001
PM _{2.5} Emissions	0.03	Applicant Provided Data	0.23	0.01	0.001
SO _x Emissions	0.000002	Calculated based upon 15 ppm ULSD	0.000	0.000	0.0000
VOC Emissions	0.19	Applicant Provided Data	1.46	0.04	0.008

g/kW-hr = gram(s) per kilowatt-hour

lbs/hr = pound(s) per hour

ppm = part(s) per million

tpy = ton(s) per year

ULSD = Ultra low sulfur diesel

Toxic Emissions Per Generator

Pollutant	Emission Factor (lb/MMBTU) ^a	Controlled Generator Emissions (lbs/yr) ^b	Controlled Generator Emissions (tpy)
Benzene	7.76E-04	2.35E-01	1.17E-04
Toluene	2.81E-04	8.50E-02	4.25E-05
Xylenes	1.93E-04	5.84E-02	2.92E-05
Formaldehyde	7.89E-05	2.39E-02	1.19E-05
Acetaldehyde	2.52E-05	7.62E-03	3.81E-06
Acrolein	7.88E-06	2.38E-03	1.19E-06
Naphthalene	1.30E-04	3.93E-02	1.97E-05
Propylene	2.79E-03	8.44E-01	4.22E-04
Ammonia	5 ppm slip ^c	1.69E+01	8.44E-03
Acenaphthylene	9.23E-06	2.79E-03	1.40E-06
Acenaphthene	4.68E-06	1.42E-03	7.08E-07
Fluorene	1.28E-05	3.87E-03	1.94E-06
Phenanthrene	4.08E-05	1.23E-02	6.17E-06
Anthracene	1.23E-06	3.72E-04	1.86E-07
Fluoranthene	4.03E-06	1.22E-03	6.10E-07
Pyrene	3.71E-06	1.12E-03	5.61E-07
Benz(a)anthracene	6.22E-07	1.88E-04	9.41E-08
Chrysene	1.53E-06	4.63E-04	2.31E-07
Benzo(b)fluoranthene	1.11E-06	3.36E-04	1.68E-07
Benzo(k)fluoranthene	2.18E-07	6.59E-05	3.30E-08
Benzo(a)pyrene	2.57E-07	7.77E-05	3.89E-08
Indeno(1,2,3-cd)pyrene	4.14E-07	1.25E-04	6.26E-08
Dibenz(a,h)anthracene	3.46E-07	1.05E-04	5.23E-08
Benzo(g,h,i)perylene	5.56E-07	1.68E-04	8.41E-08

lb/MMBtu = pound(s) per million British thermal unit

lbs/yr = pound(s) per year

tpy = ton(s) per year

^a Toxic Emission Factors from EPA's AP-42, Section 3.4, Tables 3.4-3 and 3.4-4 (EPA 1996)

^b Control efficiencies use industry standard of 80% control of VOCs for Tier 4 engines.

^c 5 ppm ammonia slip typical estimate for SCR systems.

Stack Parameters	Value	Units
Stack Diameter	1.17	feet
Stack Diameter	0.36	meters
Stack Height	23.54	feet
Stack Height	7.17	meters
Stack Flow	23,696	cubic feet per minute
Stack Flow	671.23	cubic meters per minute
Exit Velocity	112.64	meters per second
Stack Temperature	887	°F
Stack Temperature	748.15	K

GHG Emissions Per Generator

Source Name	CO ₂ Emissions (tpy)	CH ₄ Emissions (tpy)	N ₂ O Emissions (tpy)	CO ₂ e Emissions (tpy)
Generator 2-4	123.31	0.005	0.001	123.73

tpy = ton(s) per year

Diesel Fuel GHG Emission Factors and Conversions			Source
CO ₂	73.96	kg/MMBtu	40 CFR 98.33, Table C-1
CH ₄	3.00E-03	kg/MMBtu	40 CFR 98.33, Table C-2
N ₂ O	6.00E-04	kg/MMBtu	40 CFR 98.33, Table C-2
Default HHV	0.1380	MMBtu/gal	40 CFR 98.33, Table C-1
Density of Distillate #2	7.05	lbs/gallon	AP-42, Appendix A
Conversion	1.1023	ton/tonne	--
	0.0010	tonne/kg	--
	28.3168	L/ft ³	--
Molar Volume of Air at STP	22.4	L/mol	--

HHV = Higher Heating Value

kg/MMBtu = kilogram(s) per million British thermal unit

MMBtu/gal = million British thermal unit(s) per gallon

lbs = pound(s)

kg = kilogram(s)

L/ft³ = liter(s) per cubic foot

L = liter(s)

Global Warming Potentials		Source
GWP CO ₂ =	1	40 CFR 98 Subpart A, Table A-1
GWP CH ₄ =	25	40 CFR 98 Subpart A, Table A-1
GWP N ₂ O =	298	40 CFR 98 Subpart A, Table A-1

Black Rock Geothermal Project

BRGP Operational Emissions

Table 22. Insulating Gas Emissions

April 2023

Engine Information	Value
Insulating Gas Used in Equipment	Sulfur Hexafluoride
Mass of Insulating Gas Used (lbs)	300
Gas Global Warming Potential ^a	22,800
CO ₂ e System Capacity (Metric Tons) ^b	3,054
Assumed Annual Emissions (Metric Tons/Year)	61.07

lbs = pound(s)

^a Global Warming Potential from 40 CFR Part 98, Table A-1

^b Estimated leak rate based upon California Regulation for Reducing Greenhouse Gas Emissions from Gas-Insulated Equipment (17 CCR 95353, Tables 4 and 5) for data years through 2034.

Black Rock Geothermal Project

BRGP Operational Emissions

Table 23. O&M Equipment Emission Factors

April 2023

O&M Equipment Emission Factor Data					Equipment Exhaust Emission Factors (g/hp-hr) ^{b,c}								
Equipment Type	Fuel	Horsepower ^a	Load Factor ^a	CalEEMOD Equipment Category	CO	VOC	NO _x	SO ₂	PM ₁₀	PM _{2.5}	CO ₂	CH ₄	N ₂ O
Crane-50T	Diesel	367	0.29	Cranes	1.68E+00	2.10E-01	2.13E+00	4.87E-03	8.57E-02	7.89E-02	5.28E+02	2.14E-02	4.28E-03
Water Truck	Diesel	376	0.38	Off-Highway Trucks	1.19E+00	1.83E-01	1.24E+00	4.87E-03	4.43E-02	4.08E-02	5.28E+02	2.14E-02	4.28E-03
Dump Truck	Diesel	376	0.38	Off-Highway Trucks	1.19E+00	1.83E-01	1.24E+00	4.87E-03	4.43E-02	4.08E-02	5.28E+02	2.14E-02	4.28E-03
Excavator	Diesel	36	0.38	Excavators	4.20E+00	4.15E-01	3.50E+00	5.42E-03	1.19E-01	1.10E-01	5.87E+02	2.38E-02	4.76E-03
Backhoe	Diesel	84	0.37	Tractors/Loaders /Backhoes	3.49E+00	2.15E-01	2.19E+00	4.89E-03	9.72E-02	8.94E-02	5.30E+02	2.15E-02	4.30E-03
Yardogs	Diesel	376	0.38	Off-Highway Trucks	1.19E+00	1.83E-01	1.24E+00	4.87E-03	4.43E-02	4.08E-02	5.28E+02	2.14E-02	4.28E-03
Pressure washers	Diesel	14	0.3	Pressure Washers	3.28E+00	5.34E-01	4.41E+00	8.58E-03	1.84E-01	1.69E-01	5.78E+02	2.35E-02	4.69E-03
Welders	Diesel	46	0.45	Welders	4.56E+00	5.34E-01	3.78E+00	7.35E-03	1.31E-01	1.20E-01	5.68E+02	2.31E-02	4.61E-03
Forklift	Diesel	96	0.4	Rough Terrain Forklifts	3.22E+00	1.25E-01	1.79E+00	4.88E-03	4.31E-02	3.97E-02	5.29E+02	2.14E-02	4.29E-03
Boom Truck	Diesel	376	0.38	Off-Highway Trucks	1.19E+00	1.83E-01	1.24E+00	4.87E-03	4.43E-02	4.08E-02	5.28E+02	2.14E-02	4.28E-03
Carry Deck	Diesel	367	0.29	Cranes	1.68E+00	2.10E-01	2.13E+00	4.87E-03	8.57E-02	7.89E-02	5.28E+02	2.14E-02	4.28E-03
Air Compressors	Diesel	37	0.48	Air Compressors	4.88E+00	5.81E-01	3.86E+00	7.35E-03	1.36E-01	1.25E-01	5.68E+02	2.31E-02	4.61E-03
Manlift	Diesel	46	0.31	Aerial Lifts	3.11E+00	1.58E-01	2.89E+00	5.42E-03	2.16E-02	1.99E-02	5.87E+02	2.38E-02	4.76E-03

g/hp-hr = gram(s) per horsepower hour

^a Construction equipment horsepower and load factor taken from Table G-12 of Appendix G of the *CalEEMod User's Guide* (ICF 2022).

^b Construction equipment emission factors taken from Table G-11 of Appendix G of the *CalEEMod User's Guide* (ICF 2022).

^c Based on the preliminary construction schedule, construction is expected to begin in 2024. Despite operations occurring later than construction, 2024 emission factors were used for all calculations to provide a more conservative emissions estimate.

Black Rock Geothermal Project
BRGP Operational Emissions
Table 24. O&M Vehicle Emission Factors
April 2023

Vehicle Exhaust Emission Factors

Vehicle Type	Location of Vehicle Operation ^a	Vehicle Class ^b	2024 Exhaust Emission Factors (g/mile) ^{c, d}									Paved Road Fugitive Dust Emission Factors (g/mile) ^e		Unpaved Road Fugitive Dust Emission Factors (g/mile) ^e	
			CO	VOC	SO2	NO _x	PM ₁₀	PM _{2.5}	CO ₂	CH ₄	N ₂ O	PM ₁₀	PM _{2.5}	PM ₁₀	PM _{2.5}
Pickup Truck	Onsite, Offsite	Light-duty truck	3.313	0.055	0.004	0.213	0.018	0.008	375.110	0.014	0.001	0.299	0.075	658.809	65.743
Haul Trucks	Offsite	Heavy-duty Diesel	0.092	0.010	0.013	1.213	0.102	0.042	1,404.258	0.000	0.003	0.299	0.075	N/A	N/A

g/mile = gram(s) per mile

^a Offsite vehicle emissions occur as a result of roadway travel.

^b The vehicle classes are represented as follows:

Light-duty Truck: Assumed to be 50% LDT1 Gas and 50% LDT2 Gas values, based on an understanding of the vehicle type.

Heavy-duty Diesel: Assumed to be 100% HHDT DSL values, per Section 4.6.4 of Appendix C of the *CalEEMod User's Guide* (ICF 2022).

^c Exhaust and idling emission factors from EMFAC2021 for Imperial County, calendar year 2024. A speed of 40 mph was assumed for all vehicles. An average temperature of 78°F and humidity of 40% were used per Table B-1 of *CT-EMFAC: A Computer Model to Estimate Transportation Project Emissions* (UC Davis 2007).

^d Although operation will occur after 2026, 2024 emission factors and fuel economy were used, as appropriate, to provide a more conservative emissions estimate.

^e Paved and unpaved road emission factors calculated using CalEEMod methodology, as described below assuming no emission controls. The unpaved road fugitive dust emission factors only apply to onsite vehicle travel on unpaved roads.

Derivation of Paved Road Emission Factors
Vehicles on Paved Roads

Parameter	PM ₁₀	PM _{2.5}
Average Weight ^a	2.4	2.4
k ^a	1.0	0.25
sL ^a	0.1	0.1
P ^b	5.0	5.0
Emission Factor (g/mile) ^c	0.299	0.075

g/mile = gram(s) per mile

^a Average Weight, k, and sL taken as the CalEEMod statewide defaults from Section 5.1.4 of Appendix C of the *CalEEMod User's Guide* (ICF 2022).

^b P taken as the CalEEMod default value for the Imperial County Airport from Table G-2 of Appendix G of the *CalEEMod User's Guide* (ICF 2022).

^c Emission factor calculated using the following equation from Section 5.1.4 of Appendix C of the *CalEEMod User's Guide* (ICF 2022):

Emission Factor (g/mile) = k (g/mile) x [sL (g/m²)]^{0.91} x [Average Weight (tons)]^{1.02} x (1 - P (days) / [4 x 365 days])

Fugitive Dust Emission Factors for Unpaved Roads
Vehicles on Unpaved Surfaces at Industrial Sites

Parameter	PM ₁₀	PM _{2.5}
k ^a	1.80	0.18
s ^a	8.5	8.5
M ^a	0.5	0.5
S ^a	40	40
C ^b	0.00047	0.00036
P ^c	5	5
Emission Factor (lb/mile) ^d	1.452	0.145

lb/mile = pound(s) per mile

^a k, s, M, and S are taken as the CalEEMod default values from Section 5.1.4 of Appendix C of the *CalEEMod User's Guide* (ICF 2022); k was converted from g to lbs.

^b C taken as the default values from Table 13.2.2-4 of *AP-42* (EPA 2006), per Section 5.1.4 of Appendix C of the *CalEEMod User's Guide* (ICF 2022).

^c P taken as the CalEEMod default value for the Imperial County Airport from Table G-2 of Appendix G of the *CalEEMod User's Guide* (ICF 2022).

^d Emission factor calculated using the following equation from Section 5.1.4 of Appendix C of the *CalEEMod User's Guide* (ICF 2022):

Emission Factor (lb/mile) = (((k (lb/mile) x (s (%) / 12) x (S (mph) / 30)^{0.5}) / [M (%) / 0.5]^{0.2}) - C (lb/mile)) x (1 - P (days) / 365 days)

Appendix 5.1B

Operational Air Quality Impacts Analysis



Black Rock Geothermal Project

BRGP Operational Air Quality Impacts Analysis

Table 1. Source Parameters

April 2023

BRGP Operational Modeled Source Parameters

Source ID	Source Type	Stack Release Type	Source Description	Easting (X)	Northing (Y)	Base Elevation	Stack Height	Temperature	Exit Velocity	Stack Diameter
				(m)	(m)	(m)	(m)	(K)	(m/s)	(m)
CT1	POINT	DEFAULT	Cooling Tower 1	628,162.65	3,670,643.79	-68.58	12.98	311.76	7.91	10.63
CT2	POINT	DEFAULT	Cooling Tower 2	628,173.54	3,670,632.90	-68.58	12.98	311.76	7.91	10.63
CT3	POINT	DEFAULT	Cooling Tower 3	628,184.72	3,670,622.32	-68.58	12.98	311.76	7.91	10.63
CT4	POINT	DEFAULT	Cooling Tower 4	628,195.30	3,670,611.58	-68.58	12.98	311.76	7.91	10.63
CT5	POINT	DEFAULT	Cooling Tower 5	628,205.74	3,670,601.00	-68.58	12.98	311.76	7.91	10.63
CT6	POINT	DEFAULT	Cooling Tower 6	628,217.07	3,670,589.82	-68.58	12.98	311.76	7.91	10.63
CT7	POINT	DEFAULT	Cooling Tower 7	628,227.66	3,670,579.08	-68.58	12.98	311.76	7.91	10.63
PTU	POINT	DEFAULT	PTU with Warm-up AFT	627,938.28	3,670,757.37	-68.58	18.29	373.15	13.43	2.24
FPUMP	POINT	DEFAULT	Fire Water Pump	628,289.59	3,670,696.05	-68.58	4.60	665.00	53.30	0.15
G2_1	POINT	DEFAULT	Generator 2 (3.49 MW) Stack 1	628,069.50	3,670,535.90	-68.58	6.26	748.15	46.36	0.32
G2_2	POINT	DEFAULT	Generator 2 (3.49 MW) Stack 2	628,069.50	3,670,537.78	-68.58	6.26	748.15	46.36	0.32
G2_3	POINT	DEFAULT	Generator 2 (3.49 MW) Stack 3	628,069.50	3,670,539.66	-68.58	6.26	748.15	46.36	0.32
G3_1	POINT	DEFAULT	Generator 3 (3.49 MW) Stack 1	628,069.42	3,670,528.73	-68.58	6.26	748.15	46.36	0.32
G3_2	POINT	DEFAULT	Generator 3 (3.49 MW) Stack 2	628,069.42	3,670,530.61	-68.58	6.26	748.15	46.36	0.32
G3_3	POINT	DEFAULT	Generator 3 (3.49 MW) Stack 3	628,069.42	3,670,532.49	-68.58	6.26	748.15	46.36	0.32
G4_1	POINT	DEFAULT	Generator 4 (3.49 MW) Stack 1	628,069.64	3,670,521.36	-68.58	6.26	748.15	46.36	0.32
G4_2	POINT	DEFAULT	Generator 4 (3.49 MW) Stack 2	628,069.64	3,670,523.24	-68.58	6.26	748.15	46.36	0.32
G4_3	POINT	DEFAULT	Generator 4 (3.49 MW) Stack 3	628,069.64	3,670,525.12	-68.58	6.26	748.15	46.36	0.32
G1_1	POINT	DEFAULT	Generator 1 (2.7 MW) Stack 1	628,243.55	3,670,726.71	-68.58	6.22	763.15	38.08	0.32
G1_2	POINT	DEFAULT	Generator 1 (2.7 MW) Stack 2	628,243.55	3,670,728.59	-68.58	6.22	763.15	38.08	0.32
G1_3	POINT	DEFAULT	Generator 1 (2.7 MW) Stack 3	628,243.55	3,670,730.47	-68.58	6.22	763.15	38.08	0.32
RMP	POINT	DEFAULT	Rock Muffler	628,114.44	3,670,654.73	-68.58	7.32	400.35	4.75	7.35

Note: Coordinates presented are UTM NAD83 Zone 11

m = meter(s)

K = Kelvin

m/s = meter(s) per second

Black Rock Geothermal Project

BRGP Operational Air Quality Impacts Analysis

Table 2. Source Emission Rates

April 2023

BRGP Operational Modeled Source Emission Rates

Source ID	Source Type	Stack Release Type	Source Description	H2S	CO	CO8	NO2	NO2A	PM25	PM25A	PM10	PM10A	SO2	SO23	SO24	SO2A	NO2C	HNO3
				(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)
CT1	POINT	DEFAULT	Cooling Tower 1	4.15E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.95E-02	1.95E-02	3.26E-02	3.26E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.29E+02
CT2	POINT	DEFAULT	Cooling Tower 2	4.15E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.95E-02	1.95E-02	3.26E-02	3.26E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.29E+02
CT3	POINT	DEFAULT	Cooling Tower 3	4.15E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.95E-02	1.95E-02	3.26E-02	3.26E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.29E+02
CT4	POINT	DEFAULT	Cooling Tower 4	4.15E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.95E-02	1.95E-02	3.26E-02	3.26E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.29E+02
CT5	POINT	DEFAULT	Cooling Tower 5	4.15E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.95E-02	1.95E-02	3.26E-02	3.26E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.29E+02
CT6	POINT	DEFAULT	Cooling Tower 6	4.15E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.95E-02	1.95E-02	3.26E-02	3.26E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.29E+02
CT7	POINT	DEFAULT	Cooling Tower 7	4.15E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.95E-02	1.95E-02	3.26E-02	3.26E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.29E+02
PTU	POINT	DEFAULT	PTU with Warm-up AFT	2.43E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.49E-01
FPUMP	POINT	DEFAULT	Fire Water Pump	0.00E+00	5.24E-02	6.55E-03	1.29E-03	1.29E-03	3.00E-04	4.12E-05	3.00E-04	4.12E-05	3.40E-07	1.14E-07	1.42E-08	1.94E-09	2.24E-01	3.78E-02
G2_1	POINT	DEFAULT	Generator 2 (3.49 MW) Stack 1	0.00E+00	1.13E+00	1.41E-01	1.24E-03	1.24E-03	8.08E-04	5.53E-05	8.08E-04	5.53E-05	5.92E-07	1.98E-07	4.94E-08	3.38E-09	2.17E-01	4.06E-02
G2_2	POINT	DEFAULT	Generator 2 (3.49 MW) Stack 2	0.00E+00	1.13E+00	1.41E-01	1.24E-03	1.24E-03	8.08E-04	5.53E-05	8.08E-04	5.53E-05	5.92E-07	1.98E-07	4.94E-08	3.38E-09	2.17E-01	4.06E-02
G2_3	POINT	DEFAULT	Generator 2 (3.49 MW) Stack 3	0.00E+00	1.13E+00	1.41E-01	1.24E-03	1.24E-03	8.08E-04	5.53E-05	8.08E-04	5.53E-05	5.92E-07	1.98E-07	4.94E-08	3.38E-09	2.17E-01	4.06E-02
G3_1	POINT	DEFAULT	Generator 3 (3.49 MW) Stack 1	0.00E+00	1.13E+00	1.41E-01	1.24E-03	1.24E-03	8.08E-04	5.53E-05	8.08E-04	5.53E-05	5.92E-07	1.98E-07	4.94E-08	3.38E-09	2.17E-01	4.06E-02
G3_2	POINT	DEFAULT	Generator 3 (3.49 MW) Stack 2	0.00E+00	1.13E+00	1.41E-01	1.24E-03	1.24E-03	8.08E-04	5.53E-05	8.08E-04	5.53E-05	5.92E-07	1.98E-07	4.94E-08	3.38E-09	2.17E-01	4.06E-02
G3_3	POINT	DEFAULT	Generator 3 (3.49 MW) Stack 3	0.00E+00	1.13E+00	1.41E-01	1.24E-03	1.24E-03	8.08E-04	5.53E-05	8.08E-04	5.53E-05	5.92E-07	1.98E-07	4.94E-08	3.38E-09	2.17E-01	4.06E-02
G4_1	POINT	DEFAULT	Generator 4 (3.49 MW) Stack 1	0.00E+00	1.13E+00	1.41E-01	1.24E-03	1.24E-03	8.08E-04	5.53E-05	8.08E-04	5.53E-05	5.92E-07	1.98E-07	4.94E-08	3.38E-09	2.17E-01	4.06E-02
G4_2	POINT	DEFAULT	Generator 4 (3.49 MW) Stack 2	0.00E+00	1.13E+00	1.41E-01	1.24E-03	1.24E-03	8.08E-04	5.53E-05	8.08E-04	5.53E-05	5.92E-07	1.98E-07	4.94E-08	3.38E-09	2.17E-01	4.06E-02
G4_3	POINT	DEFAULT	Generator 4 (3.49 MW) Stack 3	0.00E+00	1.13E+00	1.41E-01	1.24E-03	1.24E-03	8.08E-04	5.53E-05	8.08E-04	5.53E-05	5.92E-07	1.98E-07	4.94E-08	3.38E-09	2.17E-01	4.06E-02
G1_1	POINT	DEFAULT	Generator 1 (2.7 MW) Stack 1	0.00E+00	8.74E-01	1.09E-01	9.56E-04	9.56E-04	6.25E-04	4.28E-05	6.25E-04	4.28E-05	3.41E-06	1.14E-06	2.85E-07	1.95E-08	1.68E-01	3.16E-02
G1_2	POINT	DEFAULT	Generator 1 (2.7 MW) Stack 2	0.00E+00	8.74E-01	1.09E-01	9.56E-04	9.56E-04	6.25E-04	4.28E-05	6.25E-04	4.28E-05	3.41E-06	1.14E-06	2.85E-07	1.95E-08	1.68E-01	3.16E-02
G1_3	POINT	DEFAULT	Generator 1 (2.7 MW) Stack 3	0.00E+00	8.74E-01	1.09E-01	9.56E-04	9.56E-04	6.25E-04	4.28E-05	6.25E-04	4.28E-05	3.41E-06	1.14E-06	2.85E-07	1.95E-08	1.68E-01	3.16E-02
RMP	POINT	DEFAULT	Rock Muffler	7.77E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.09E+00

Notes:

Emission rates were derived from Appendix 5.1A, Operational Emissions Inventory, based on the following:

Short-term emissions from cooling tower operation exclude non-routine operations. Short-term emissions from all other emission sources assume the worst-case operating hour.

Annual emissions from all emission sources represent the maximum of a routine operation year with or without startups, shutdowns, and emission control downtime (i.e., excluding a commissioning year).

Cooling tower emission rates represent the sum of cooling tower and sparger emissions as both vent from the cooling tower.

24-hour emission rates from the diesel fire water pump and diesel-fired emergency generators assume 1 hour per day and 2 hours per day, respectively.

For the 1-hour NO₂ standard, the diesel-fired emergency generators and diesel fire water pump were modeled using an average annual hourly emission rate based on EPA's guidance for intermittent source operations.

HNO₃ emissions for nitrogen deposition assume all nitrogen emitted in the form of NO_x and NH₃ converts to HNO₃ in the atmosphere.

Descriptions of pollutant IDs and their associated averaging periods are as follows:

H2S emission rates correspond to the 1-hour H₂S averaging period.

CO emission rates correspond to the 1-hour CO averaging period.

CO8 emission rates correspond to the 8-hour CO averaging period.

NO2 emission rates correspond to the 1-hour NO₂ averaging period.

NO2A emission rates correspond to the Annual NO₂ averaging period.

PM25 emission rates correspond to the 24-hour PM_{2.5} averaging period.

PM25A emission rates correspond to the Annual PM_{2.5} averaging period.

PM10 emission rates correspond to the 24-hour PM₁₀ averaging period.

PM10A emission rates correspond to the Annual PM₁₀ averaging period.

SO2 emission rates correspond to the 1-hour SO₂ averaging period.

SO23 emission rates correspond to the 3-hour SO₂ averaging period.

SO24 emission rates correspond to the 24-hour SO₂ averaging period.

SO2A emission rates correspond to the Annual SO₂ averaging period.

NO2C emission rates correspond to the 1-Hour NO₂ averaging period for the CAAQS analysis.

HNO3 emission rates correspond to the Annual HNO₃ averaging period for nitrogen deposition.

g/s = gram(s) per second

Black Rock Geothermal Project
BRGP Operational Air Quality Impacts Analysis
Table 3. Building Data
April 2023

BRGP Operational Modeled Building Data

Building Name	Number of Tiers	Tier Number	Note	Base Elevation	Tier Height	Number of Corners	Corner 1 East (X)	Corner 1 North (Y)	Corner 2 East (X)	Corner 2 North (Y)	Corner 3 East (X)	Corner 3 North (Y)	Corner 4 East (X)	Corner 4 North (Y)
				(ft)	(ft)		(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)
BLD1	1.00	1.00	#2 Cooling Tower Bldg	-225.00	37.60	4.00	628,226.73	3,670,568.44	628,151.44	3,670,644.10	628,163.18	3,670,655.17	628,238.70	3,670,579.35
BLD2	1.00	1.00	#6 Maintenance Bldg	-225.00	30.00	4.00	628,125.61	3,670,512.27	628,125.28	3,670,545.48	628,175.59	3,670,546.15	628,174.92	3,670,511.94
BLD3	1.00	1.00	#5 Control Bldg	-225.00	20.00	4.00	628,102.47	3,670,732.69	628,101.79	3,670,759.52	628,144.73	3,670,759.52	628,144.73	3,670,732.35
G2_B	1.00	1.00	Gen 2 Enc	-225.00	14.10	4.00	628,065.90	3,670,535.90	628,065.90	3,670,539.66	628,082.20	3,670,539.66	628,082.20	3,670,535.90
G3_B	1.00	1.00	Gen 3 Enc	-225.00	14.10	4.00	628,065.81	3,670,528.73	628,065.81	3,670,532.49	628,082.12	3,670,532.49	628,082.12	3,670,528.73
G4_B	1.00	1.00	Gen 4 Enc	-225.00	14.10	4.00	628,066.04	3,670,521.36	628,066.04	3,670,525.12	628,082.34	3,670,525.12	628,082.34	3,670,521.36
G1_B	1.00	1.00	Gen 1 Enc	-225.00	14.10	4.00	628,239.94	3,670,726.71	628,239.94	3,670,730.47	628,256.25	3,670,730.47	628,256.25	3,670,726.71
FPUMP_B	1.00	1.00	FP Enc	-225.00	10.00	4.00	628,287.14	3,670,695.49	628,287.14	3,670,696.61	628,292.04	3,670,696.61	628,292.04	3,670,695.49
RM_B	1.00	1.00	RM Enc	-225.00	24.00	4.00	628,111.77	3,670,650.77	628,111.77	3,670,658.69	628,117.11	3,670,658.69	628,117.11	3,670,650.77

Note: Coordinates presented are UTM NAD83 Zone 11

ft = feet

m = meter(s)

Black Rock Geothermal Project
BRGP Operational Air Quality Impacts Analysis
Table 4. Tank Data
April 2023

BRGP Operational Modeled Tank Data

Tank Name	Notes	Base Elevation	Center East (X)	Center North (Y)	Tank Height	Tank Diameter
		(ft)	(m)	(m)	(ft)	(ft)
Tank1	#8 TK-2801 THICKENER	-225.00	628,025.67	3,670,551.64	51.00	68.00
Tank2	#11 TK-2601 SEC. CLARIFIER	-225.00	628,042.43	3,670,605.63	51.00	125.00
Tank3	#12 TK-2501 PRIM. CLARIFIER	-225.00	628,042.43	3,670,654.60	53.00	135.00

Note: Coordinates presented are UTM NAD83 Zone 11

ft = feet

m = meter(s)

Appendix 5.1C

Air Dispersion Modeling Protocol

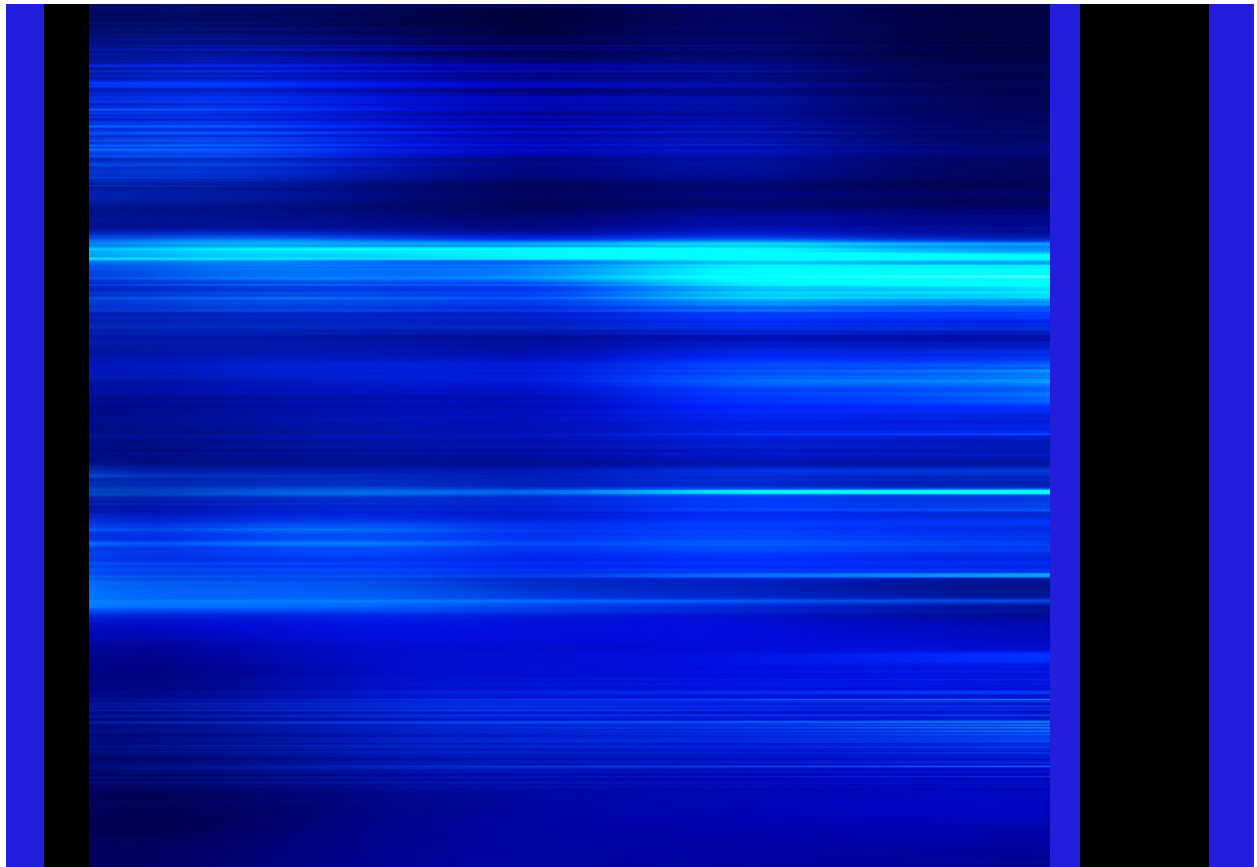


Air Dispersion Modeling Protocol for Black Rock Geothermal Project

Document No: PPS092922145SDO
Revision No: 0

Berkshire Hathaway Energy Renewables, LLC
Salton Sea Geothermal Project
Development

Black Rock Geothermal Project
November 16, 2022



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Acronyms and Abbreviations

$\mu\text{g}/\text{m}^3$	microgram(s) per cubic meter
AERMOD	American Meteorological Society/Environmental Protection Agency Regulatory Model
BHER	Berkshire Hathaway Energy Renewables
BR	Black Rock
CAAQS	California Ambient Air Quality Standards
CARB	California Air Resources Board
CFR	<i>Code of Federal Regulations</i>
CO	carbon monoxide
DPM	diesel particulate matter
EPA	U.S. Environmental Protection Agency
GEP	good engineering practice
H ₂ S	hydrogen sulfide
HAP	hazardous air pollutant
HARP	Hotspots Analysis and Reporting Program
HI	hazard index
HNO ₃	nitric acid
HRA	health risk assessment
ID	identification
MERP	Modeled Emission Rates for Precursor
MW	megawatt(s)
NAAQS	National Ambient Air Quality Standards
NH ₃	ammonia
NLCD	National Land Cover Database
NO ₂	nitrogen dioxide
NO _x	oxides of nitrogen
OEHHA	California Office of Environmental Health Hazard Assessment
PM	particulate matter
PM _{2.5}	particulate matter less than 2.5 micrometers in diameter
PM ₁₀	particulate matter less than 10 micrometers in diameter

Air Dispersion Modeling Protocol for Black Rock Geothermal Plant

ppm	part(s) per million
PRIME	plume rise model enhancement
REL	reference exposure level
SIL	significant impact level
SO ₂	sulfur dioxide
SO _x	oxides of sulfur
VOC	volatile organic compound

1. Project Overview

Berkshire Hathaway Energy Renewables (BHER) plans to develop and construct a new geothermal power plant called Black Rock (BR) in Imperial County, California. The proposed site is expected to have an output of 73.7 megawatts (MW). The new plant will be on a parcel currently owned by BHER southeast of the Salton Sea near BHER's existing geothermal power plants, specifically, adjacent to their Region 2 facility. The BR power plant site will include production and reinjection well pads extending off the power plant site and the electrical interconnection (gen-tie) with a new Imperial Irrigation District switching station. An overview of the BR location is included on Figure 1-1.

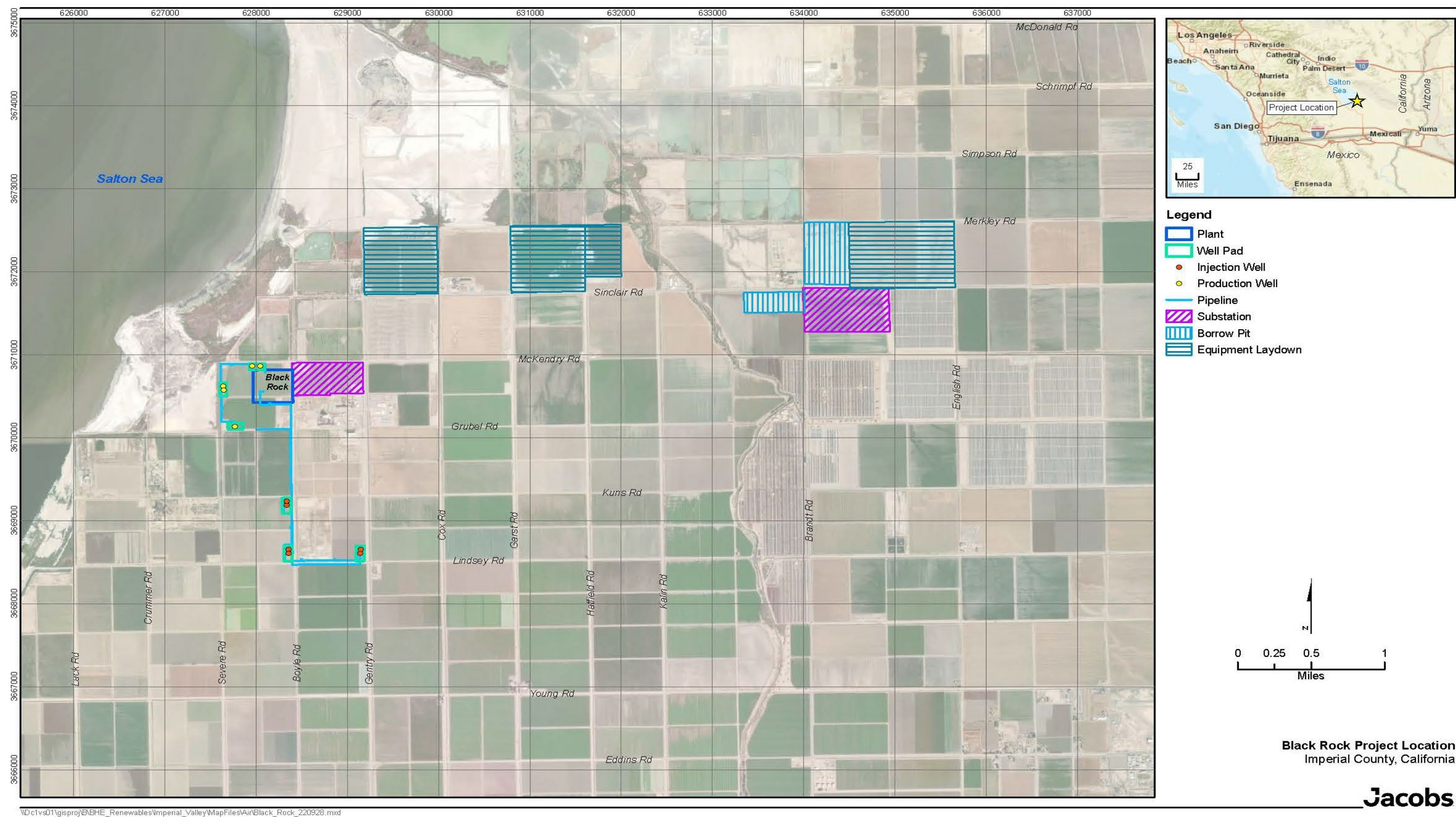


Figure 1-1. Project Location

2. Area and Facility Classification

The proposed BR plant will be situated to the southeast of the Salton Sea southwest from the town of Niland, located in Imperial County, California. Being located in California, the project would be subject to both the federal National Ambient Air Quality Standards (NAAQS) and the State of California Ambient Air Quality Standards (CAAQS).

Imperial County is designated as attainment for the carbon monoxide (CO), sulfur dioxide (SO₂), and nitrogen dioxide (NO₂) NAAQS. The county is in moderate nonattainment for particulate matter less than 2.5 micrometers in diameter (PM_{2.5}), and marginal nonattainment for the 8-hour ozone NAAQS. Particulate matter less than 10 micrometers in diameter (PM₁₀) was redesignated to attainment in September 2020.

At the state level, Imperial County is designated as attainment or unclassified for the PM_{2.5}, CO, NO₂, SO₂, sulfates, lead, hydrogen sulfide (H₂S), and visibility reducing particulates CAAQS. The county is designated as nonattainment for the ozone and PM₁₀ CAAQS.

The primary North American Industrial Classification System for the facility is 221116. The BR plant is not expected to be a “major” source of air pollution. The facility would emit less than 100 tons per year of any regulated pollutant. The site would be a minor source for hazardous air pollutants (HAPs) with total potential aggregate HAP emissions of less than 25 tons per year and emissions of any single HAP of less than 10 tons per year. BR is not a listed facility in 40 *Code of Federal Regulations* (CFR) Part 52 (100 tons per year threshold) and is not otherwise subject to Part 52 Prevention of Significant Deterioration (PSD) requirements due to potential emissions less than 250 tons per year per criteria air pollutants for which the area is designated as attainment. BR emissions are expected to be below the applicable Nonattainment New Source Review threshold of 100 tons per year for moderate nonattainment PM_{2.5} and 100 tons per year each for oxides of nitrogen (NO_x) and volatile organic compound (VOC) for the marginal nonattainment ozone designation as per 40 CFR Part 51.165.

3. Project Description

The proposed BR geothermal power plant would be located on the southern shore of the Salton Sea and is expected to have a net output of 73.7 MW. The new plant will be on a parcel currently owned by BHER east of the Salton Sea near BHER's existing geothermal power plants. The BR power plant site will include production and reinjection well pads extending off the power plant site.

3.1 Emissions Sources

Air emission sources associated with the BR plant will be characterized for inclusion in the dispersion modeling analysis and permit application, where appropriate. The proposed emission sources for the facility include the following source/process types:

- Process-related emissions including:
 - a. Geothermal brine steam flashing activities and venting
 - b. Geothermal brine steam condensation activities
 - c. Drilling operations
- Emergency diesel engines (electrical generators and fire water pump)
- Cooling towers

The well extraction and injection activities would be part of a closed system and not represent a source of emissions; therefore, all emissions would result from within the power plant footprint. A process flow diagram for the facility process is included on Figure 3-1.

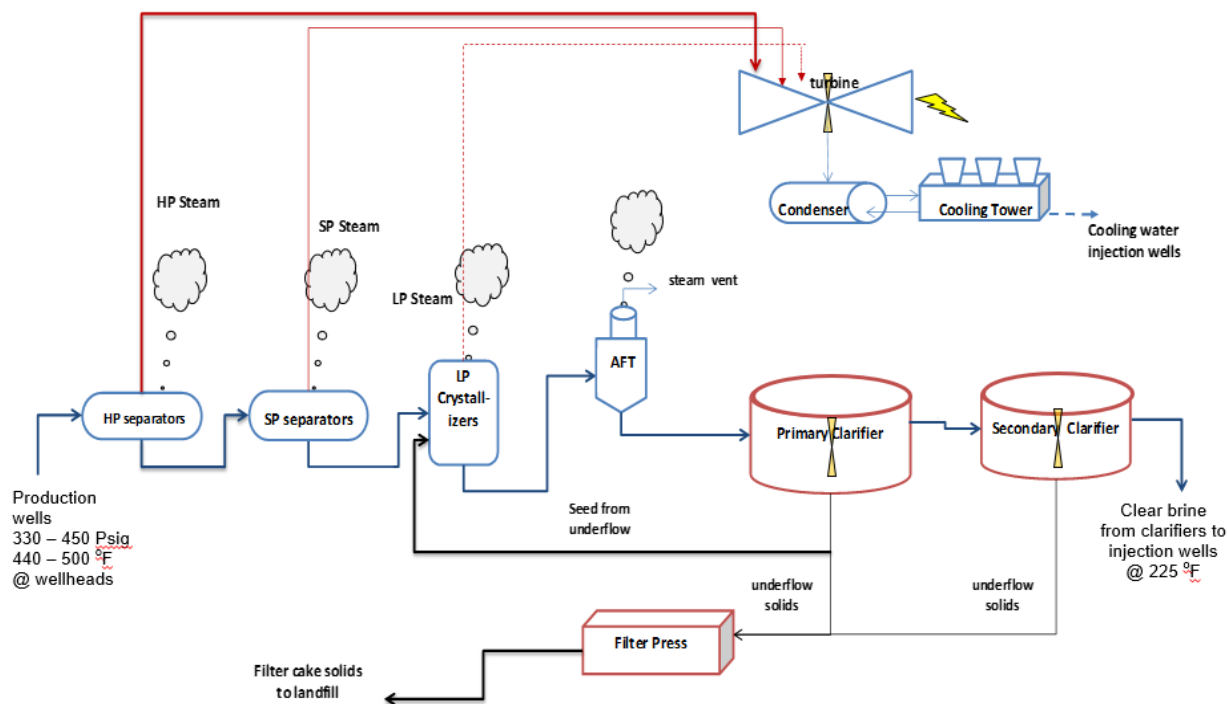


Figure 3-1. Process Flow Diagram

At the time this modeling protocol was submitted, design of the BR project was ongoing. Therefore, detailed information, including source and building locations, is subject to change. Associated emissions data, and other final design data are currently being evaluated and are not presented in this protocol. These data will be finalized and included in the final modeling report.

4. Dispersion Modeling Methodology

4.1 Dispersion Model

The American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD) (Version 22112) will be used as recommended in the U.S. Environmental Protection Agency (EPA) Appendix W, Guideline on Air Quality Models (EPA 2017).

AERMOD is a steady-state Gaussian plume model that simulates air dispersion based on planetary boundary layer turbulence structure and scaling concepts, including treatment of both surface and elevated sources, and both simple and complex terrain. This model is recommended for short-range (less than 50 kilometers) dispersion from the source. The model incorporates the plume rise model enhancement (PRIME) algorithm for modeling building downwash. AERMOD is designed to accept input data prepared by two specific preprocessor programs, AERMET and AERMAP. AERMOD will be run with the following options:

- Direction-specific building downwash
- Regulatory default options unless otherwise specified in this protocol
- Rural dispersion characteristics
- Actual receptor elevations and hill height scales obtained from AERMAP (Version 18081)

4.2 Operational Source Characterization

Operation of the proposed process and equipment systems would result in emissions to the atmosphere of both criteria and toxic air pollutants. Criteria pollutant emissions would consist primarily of NO_x, CO, VOCs, oxides of sulfur (SO_x), PM₁₀, and PM_{2.5}. Other regulated air pollutants of ammonia (NH₃), H₂S, and carbon dioxide equivalent will also be quantified. Toxic air pollutants will consist of a combination of non-condensable gases and toxic particulate matter (PM) species.

The BR project operational scenarios would consist of start-up and commissioning activities as well as normal operating conditions post-startup. Emissions for each of these scenarios will be presented in the final modeling report, with the worst-case emissions from both scenarios modeled as applicable to the respective standards.

4.2.1 Cooling Towers

Cooling tower stack diameter, height, flow rate, temperature, drift eliminator efficiency, and location will be based upon the latest design data. A particle size distribution may be applied to the total PM emissions as calculated using the total dissolved solids of the circulating water. The methodology to develop this particle size distribution will be obtained from the published work of Joel Reisman and Gordon Frisbie in *Calculating Realistic PM₁₀ Emissions from Cooling Towers* (Resiman and Frisbie 2012). A list of each of the specific cooling tower stack parameters used in the modeling analysis will be included in the final modeling report.

4.2.2 Emergency Diesel Engines

Emergency diesel engine stack diameter, height, flow rate, temperature, and location will be based on the design data provided by the vendors. A list of each of the specific emergency engine stack parameters used in the modeling analysis will be included in the final modeling report.

For purposes of the 1-hour NO₂ standard, emergency engines in this analysis would be classified as intermittent sources because they have less than 500 hours per year of operation according to EPA (EPA 2011). As a result, the annual average hourly emission rate for each engine will be used in the

1-hour averaging period NO₂ modeling analysis, consistent with EPA's Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-hour NO₂ NAAQS Memorandum (EPA 2011).

4.2.3 Geothermal Brine Steam Flashing Activities

Onsite operations may occur in the direct release of geothermal brine steam to the atmosphere. At this stage in design, this release would occur either through the use of an atmospheric flash tank or a rock muffler.

Source type characterizations for modeling these sources will be made as their designs are finalized. At the time of this modeling protocol, design is not yet finalized for these sources. All associated data used in the characterization of these sources as well as their release parameters for modeling will be included in the final modeling report.

4.3 Construction Source Characterization

Construction emissions would include emissions from mobile sources including diesel construction-type equipment. These equipment emissions will be evenly distributed over the construction area and modeled as a grid of point (POINT) sources with a horizontal stack release spaced approximately 25 meters apart over the entire construction area. The horizontal release type is an AERMOD option (which negates mechanical plume rise). This conservative approach was used because it is unknown whether all construction equipment will have vertically oriented exhaust stacks. Source parameters for these sources will be included in the final modeling report.

4.4 Building Downwash

Building influences on the air dispersion of emissions from point source stacks will be calculated by incorporating the EPA Building Profile Input Program for use with the PRIME algorithm (BPIP-PRIME). Stack heights, building locations, and building dimensions will be obtained from the most currently available architectural plans and onsite measurements. Stacks located on or adjacent to buildings will be given base elevations of said buildings. A list of the buildings and their coordinates will be included in the final modeling report submitted with the permit application.

As part of this analysis, a good engineering practice (GEP) stack height screening will be performed to determine which stack height will be used in the modeling. The GEP stack height is defined as the height in which the plume dispersion from the stack is not influenced by building downwash. This GEP stack height is calculated as the lesser of the following two criteria:

- 65 meters
- The sum of the maximum building height for which the stack is in the area of influence plus 1.5 times the lesser of the building height or projected building width

The stack heights used in the dispersion modeling will be the actual stack height or the GEP stack height, whichever is less.

4.5 Ambient Air Boundary

The ambient air boundary is defined by the property line that surrounds the BHER-owned property within which non-authorized personnel access is precluded. A final ambient air boundary figure will be included in the final modeling report submitted with the permit application.

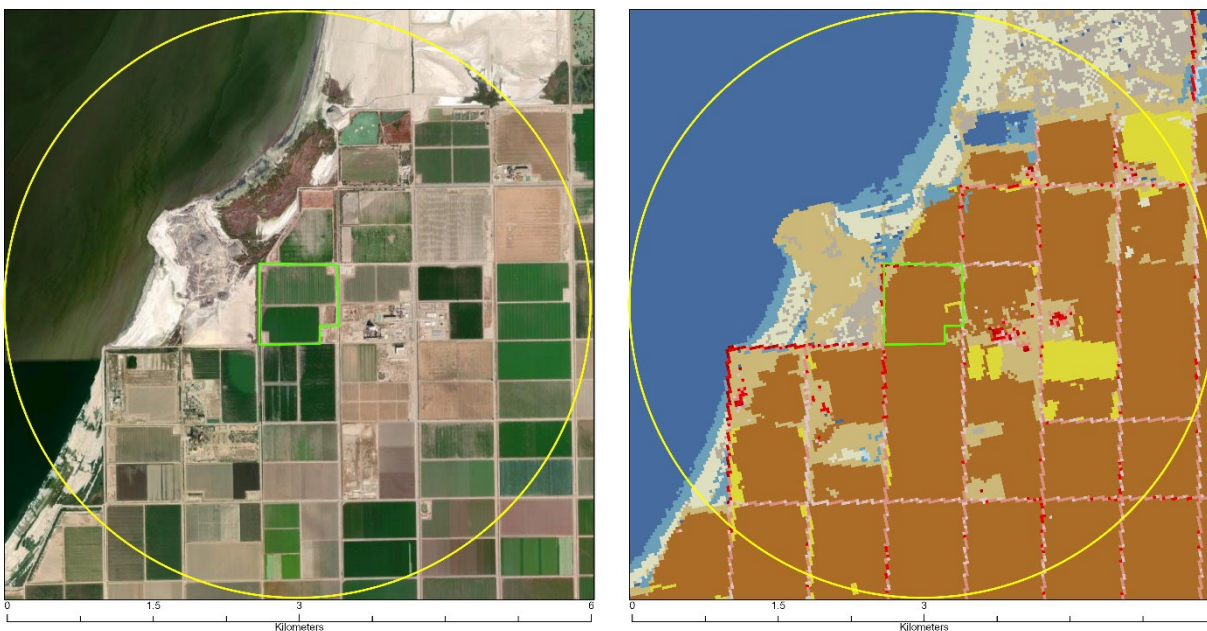
4.6 Rural versus Urban Option

The land use surrounding the facility has been evaluated for classification as either urban or rural. A land use analysis was performed following the Auer land use methodology (Auer 1978) using the most recent

Air Dispersion Modeling Protocol for Black Rock Geothermal Plant

available land use data. Land use data within a 3-kilometer radius for the site was obtained from the U.S. Geological Survey's 2019 National Land Cover Database (NLCD), as shown on Figure 4-1. This data set classified land use for individual 30- by 30-meter cells into 15 primary land use categories for the BR site. Of the 15 land use categories in the 2019 NLCD data set, the following two categories are considered urban for dispersion modeling purposes:

- Developed, Medium Intensity (NLCD Code 23)—This classification includes areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 50 to 79 percent of the total cover.
- Developed, High Intensity (NLCD Code 24)—This classification includes highly developed areas where people reside or work in high numbers. Examples include apartment complexes, row houses, and commercial/industrial spaces. Impervious surfaces account for 80 to 100 percent of the total cover.



Land use Color	Land Use Code ID No.	Land Use Description	Cell Count	% Land Category
	11	Open Water	13,821	28.30%
	21	Developed, Open Space	604	1.24%
	22	Developed, Low Intensity	1,074	2.20%
	23	Developed, Medium Intensity	272	0.56%
	24	Developed, High Intensity	84	0.17%
	31	Barren Land	2,156	4.41%
	52	Shrub/Scrub	4,099	8.39%
	71	Herbaceous	2,289	4.69%
	81	Hay/Pasture	1,231	2.52%
	82	Cultivated Crops	21,743	44.52%
	90	Woody Wetlands	35	0.07%
	95	Emergent Herbaceous Wetlands	1,433	2.93%

Figure 4-1. Land Use Classification for Black Rock Geothermal Plant

If more than 50 percent of the area within 3 kilometers is classified as urban land use, the URBAN option may be used for AERMOD modeling of the facility. The analysis showed that less than 1 percent of the land within a 3-kilometer radius of the facility may be classified as urban; therefore, the URBAN option in AERMOD will not be used in the dispersion modeling analysis.

4.7 Meteorological Data

Five years of AERMET-processed meteorological data were obtained from the California Air Resources Board (CARB) Hotspots Analysis and Reporting Program (HARP) AERMOD Meteorological Files webpage for Imperial County Airport (KIPL, WBAN ID: 03144). The 5 years of data were processed by CARB with AERMET Version 19191 for 2015 through 2018 and 2021. The years 2019 and 2020 were not included in the meteorological data set because they were likely determined to be incomplete by CARB. The data set was selected based on completeness, similar surrounding land use as the BR plant and proximity to the facility as shown on Figure 4-2. Wind speeds and directions for this data set are presented in the wind rose on Figure 4-3. The average wind speed for the 5-year period was 3.45 meters per second.

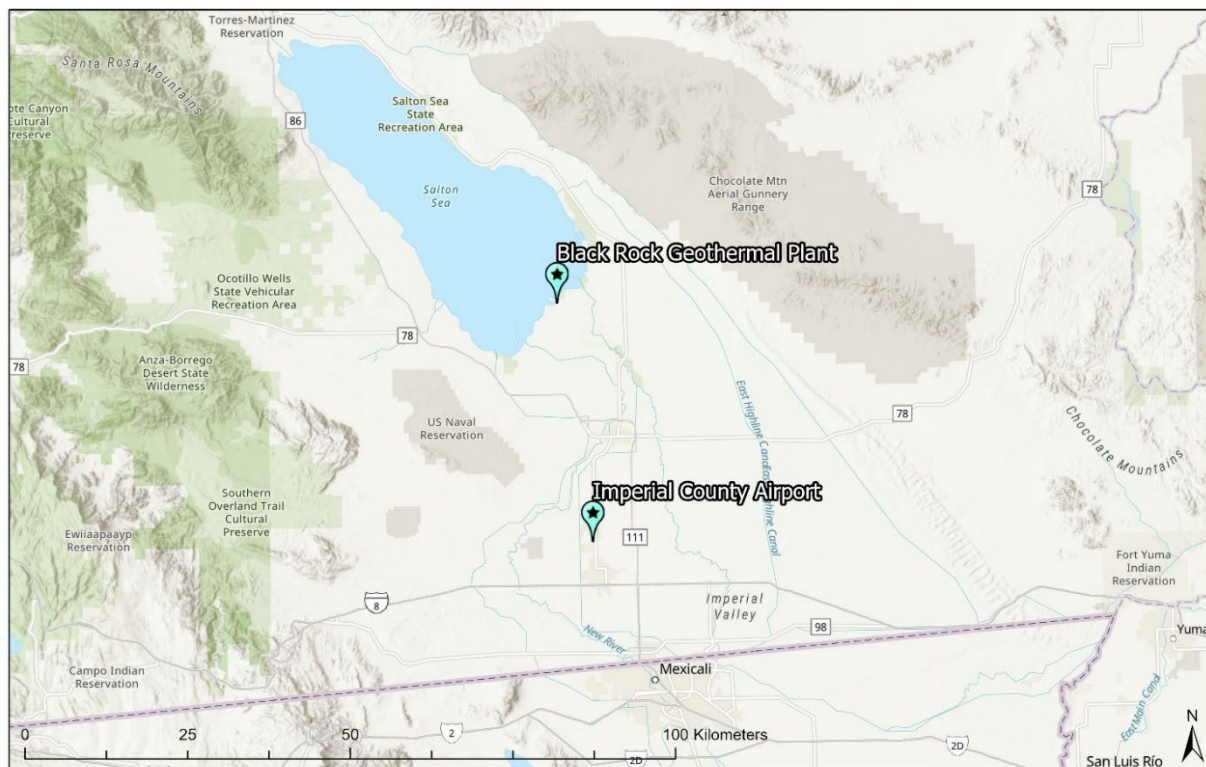


Figure 4-2. Topographical Map of Black Rock Geothermal Plant's Proximity to the Imperial County Airport

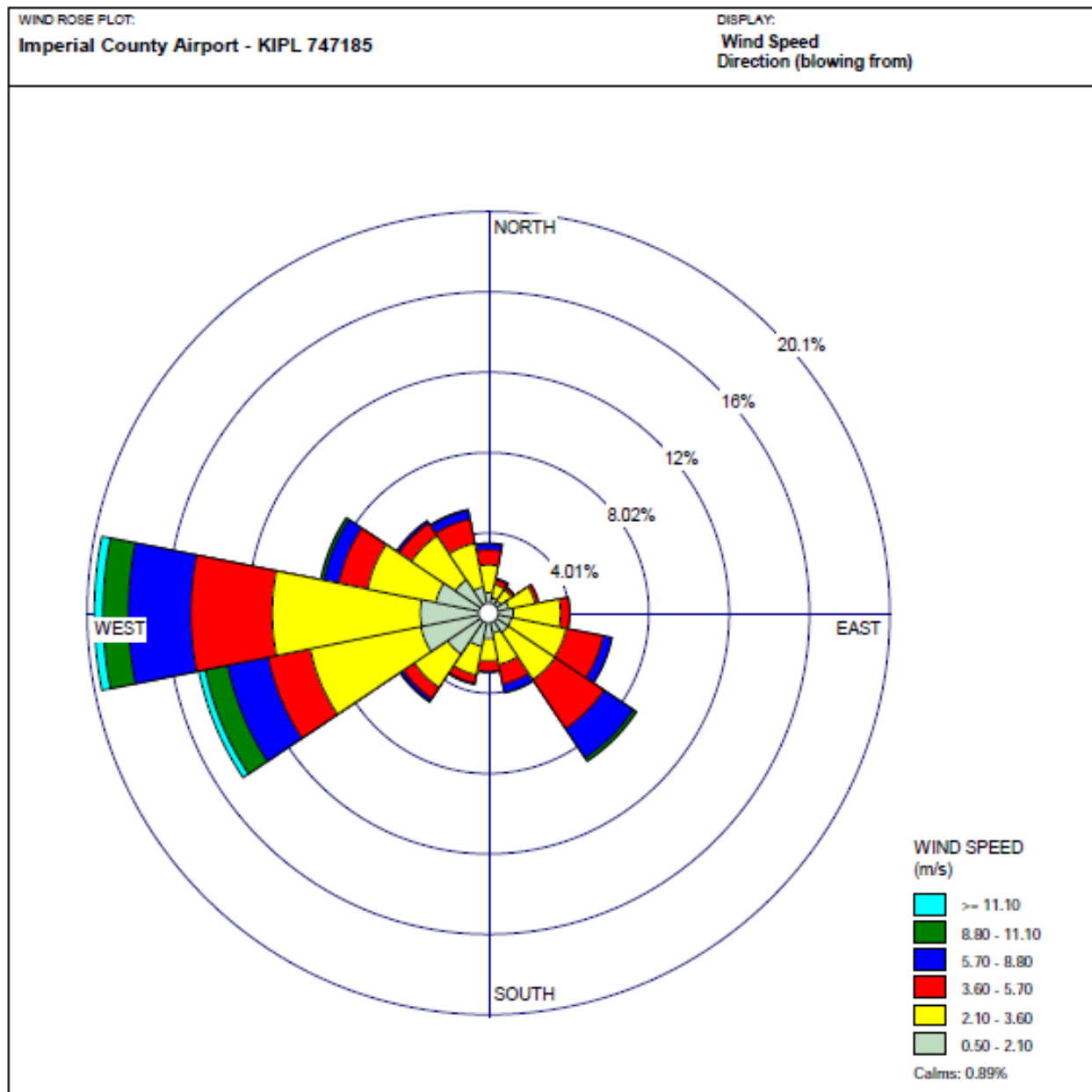


Figure 4-3. Windrose for the 2015 to 2018 and 2021 Meteorological Data for the Imperial County Airport

4.8 Receptors

The ambient air boundary will be defined by the fence line surrounding the facility. The selection of receptors in AERMOD will be as follows:

- Discrete receptors every 25 meters around the ambient air boundary (i.e., fence line)
- 25-meter spacing from the fence line to 500 meters from grid origin
- 100-meter spacing from beyond 500 meters to 1,000 meters from the fence line
- 250-meter spacing from beyond 1,000 meters to 5,000 meters from the fence line
- 500-meter spacing from beyond 5,000 meters to 10,000 meters from the fence line

All receptors and source locations will be expressed in the Universal Transverse Mercator North American Datum 1983, Zone 11 coordinate system. If modeling results show significant impacts at the outer edge of the initial grid, then the grid will be extended accordingly to ensure that the area of maximum modeled impacts is captured. U.S. Geological Survey National Elevation Dataset terrain data will be used in conjunction with the AERMAP preprocessor (Version 18081) to determine receptor elevations and terrain maxima.

4.9 Oxides of Nitrogen Modeling Methodology and Chemistry

The Guideline on Air Quality Models, Appendix W to 40 CFR Part 51 (EPA 2017), recommends a tiered screening approach to characterize the conversion of total NO_x from the proposed source to NO₂. A Tier 1 approach assumes a 100 percent conversion of total NO_x to NO₂ and is typically overly conservative. The Tier 2 approach allows for the use of the Ambient Ratio Method 2 (ARM2). The Tier 1 and Tier 2 options do not require agency approval.

For this analysis, the Tier 2 approach was selected using the ARM2 model with a default in-stack ratio of 0.5 and a default out-of-stack ratio of 0.9. The in-stack ratio may be revised based upon updated engineering data and will be reflected in the final modeling report.

Additionally, emergency diesel engines in this analysis can be classified as intermittent sources because of having less than 500 hours per year of operation according to EPA (EPA 2011). As a result, the annual average hourly emission rate for each engine will be used for the 1-hour averaging period NO₂ modeling analysis, consistent with EPA's *Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-Hour NO₂ National Ambient Air Quality Standard Memorandum* (EPA 2011).

5. Criteria Pollutant Background Concentrations

When necessary, ambient background concentrations will be added to model results for comparison to the NAAQS and CAAQS. Background concentration values for all pollutant averaging times were obtained from EPA's AirData website for years 2019 to 2021. The following sites were used for the 2019-2021 period background concentrations:

- **Monitor Identification (ID):** Niland-English Road (AQS ID: 60254004) [7.6 miles from project]: 24-hour PM₁₀ concentrations (2019-2021)
- **Monitor ID:** Brawley-220 Main Street (AQS ID: 60250007) [13.8 miles from project]: 24-hour PM_{2.5} concentrations (2019-2021), and annual PM_{2.5} concentrations (2019-2020)
- **Monitor ID:** El Centro-9th Street (AQS ID: 60251003) [26.1 miles from project]: annual PM_{2.5} concentrations (2021), 1-hour NO₂ concentrations (2019-2021), and annual NO₂ concentrations (2020-2021)
- **Monitor ID:** Calexico-Ethel Street (AQS ID: 60250005) [34.6 miles from project]: annual NO₂ concentrations (2019), 1-hour SO₂ concentrations (2019-2021), 3-hour SO₂ concentrations (2019-2021), 1-hour CO concentrations (2019-2021), and 8-hour CO concentrations (2019-2021).

Background concentration values for pollutants were pulled from the same monitoring site with the exception of 2021 annual PM_{2.5} and 2019 annual NO₂, which were pulled from different stations due to data incompleteness issues. The locations of these monitors relative to the project location are shown in Figure 5-1.



Figure 5-1. Background Monitor Locations in Proximity to the Black Rock Geothermal Plant

Air Dispersion Modeling Protocol for Black Rock Geothermal Plant

The average background concentrations from 2019 to 2021 were chosen for 1-hour SO₂, 24-hour and annual PM_{2.5}, and 1-hour NO₂. The maximum background concentrations from 2019 to 2021 were chosen for 1-hour and 8-hour CO, 3-hour SO₂, 24-hour PM₁₀, and annual NO₂. Background design values for each criteria pollutant for NAAQS comparison are shown in Table 5-1.

Table 5-1. Criteria Pollutant Background Concentrations

Pollutant	Averaging Period	Value chosen	2019	2020	2021	Design Value	Units	Concentration (µg/m ³) ^e
CO ^a	1-hour	Second Max 1-hour	4.30	4.60	3.80	4.60 ^c	ppm	5,270
CO ^a	8-hour	Second Max 8-hour	3.10	2.70	2.90	3.10 ^e	ppm	3,551
SO ₂ ^a	1-hour	99th Percentile	5.00	7.00	6.00	6.00 ^f	ppb	15.71
SO ₂ ^a	3-hour	First Max 1-hour	7.50	7.10	8.60	8.60 ^f	ppb	22.51
PM ₁₀ ^b	24-hour	First Max	141.00	143.00	186.00	142.00 ^e	µg/m ³	142.00
PM ₁₀ ^b	24-hour	Second Max	124.00	142.00	156.00	N/A	µg/m ³	N/A
PM _{2.5} ^c	24-hour	98th Percentile	21.00	21.00	21.00	21.00 ^f	µg/m ³	21.00
PM _{2.5} ^c	Annual	Weighted Annual Mean	8.30 ^d	9.40	8.30	8.67 ^f	µg/m ³	8.67
NO ₂ ^d	1-hour	98th Percentile	30.00	36.00	38.00	34.67 ^e	ppb	65.22
NO ₂ ^d	Annual	Annual Mean	9.26 ^a	7.93	6.73	9.26 ^e	ppb	17.42

Notes:

^a Monitor Location: 1029 Ethel St, Calexico High School, Calexico, California (Site ID: 60250005)

^b Monitor Location: 7711 English Road, Niland, California (Site ID: 60254004)

^c Monitor Location: 220 Main St., Ste 204, Brawley, California (Site ID: 60250007)

^d Monitor Location: 150 9th St., El Centro, California (Site ID: 60251003)

^e Maximum fourth highest value observed over 3 years (2019-2021)

^f Average 2019 to 2021 value chosen for design value

^e For conversion of ppm and ppb to µg/m³, standard conditions assumed (25 degrees Celsius. and 760 millimeters of mercury)

µg/m³ = microgram(s) per cubic meter

N/A = not applicable

ppb = part(s) per billion

ppm = part(s) per million

6. Impacts Analysis

6.1 Criteria Pollutants

Modeled concentrations of criteria pollutants emitted by the proposed BR geothermal plant will be compared to the applicable significant impact level (SIL) shown in Table 6-1. If the predicted concentrations are not significant (that is, if they are less than the SIL), the modeling is complete for that pollutant and averaging period and compliance with the NAAQS is demonstrated by not causing or contributing to a violation. If impacts are above the SIL, a cumulative modeling analysis would be required. Imperial County would be contacted and a data request for neighboring facilities would be submitted.

Additionally, CAAQS shown in Table 6-1 will also be considered as part of the modeling analysis.

The results of the project and cumulative modeling impact analyses will be combined with respective background data, where appropriate, and compared to the NAAQS as shown in Table 6-1.

Table 6-1. Summary of Criteria Pollutant Air Quality Standards

Pollutant	Averaging Period	SIL ($\mu\text{g}/\text{m}^3$)	NAAQS ($\mu\text{g}/\text{m}^3$)	CAAQS ($\mu\text{g}/\text{m}^3$)
CO	1-hour	2,000 ^a	40,000 ^c	22,900 ^c
	8-hour	500 ^a	10,000 ^d	10,000 ^d
NO ₂	1-hour	7.5 ^b	188 ^e	338.65 ^e
	Annual	1 ^a	100 ^f	56.44 ^f
PM _{2.5}	24-hour	1.2 ^b	35 ^g	--
	Annual	0.2 ^b	12 ^h	12 ^h
PM ₁₀	24-hour	5 ^a	150 ⁱ	50 ⁱ
	Annual	--	--	20 ^f
SO ₂	1-hour	7.9 ^b	196 ^j	--
	3-hour	25 ^a	1,300 ^k	--
	24-hour	--	--	25
H ₂ S	1-hour	--	--	41.79 (0.03 ppm) ^l

^a Design value is the maximum modeled concentration over 5 years

^b Design value is the maximum 5-year average concentration

^c Highest of the second highest (H2H) 1-hour concentration

^d Highest of the second highest (H2H) 8-hour concentration

^e Highest of 5-year averages of the 98th percentile (H8H) of the annual distribution of maximum daily 1-hour concentrations

^f Maximum annual average

^g Annual 98th percentile daily maximum average; 5-year average of eighth high

^h Highest of the 5-year average of annual concentrations

ⁱ Highest of the sixth highest (H6H) 24-hour modeled concentrations

^j Highest of multi-year averages of the 99th percentile (H4H) of the annual distribution of maximum daily 1-hour concentrations

^k Highest of the second highest (H2H) 3-hour concentration over the entire receptor network for each year modeled

^l Highest modeled concentration over the entire receptor network

6.1.1 Hydrogen Sulfide Impacts Analysis

H₂S in the ambient air near the Salton Sea is subject to episodic events that result in concentrations which temporarily exceed the CAAQS of 0.03 parts per million (ppm). These episodic events of H₂S exceedances are well known and largely due to biogenic sources and activity (SCAQMD 2021). As a result, monitoring data in the region may not be representative for use in a CAAQS modeling analysis.

Specifically, the 1-hour H₂S CAAQS was adopted in 1969 for purposes of odor control and not for protection of public and environmental health. People have experienced eye irritation at concentrations of 50-ppm which is much greater than the CAAQS of 0.03-ppm (CARB 2022a). Therefore, temporary exceedances of the H₂S CAAQS would not result in elevated exposure of the public and environment to H₂S health-related risks but would be characterized as a nuisance and an odor impact.

As a result of the project location and nature of the standard, H₂S will be analyzed similarly to nuisance-related impacts caused by odorous compounds. Specifically, the 1-hour H₂S analysis will follow the ICAPCD CEQA Air Quality Handbook methodology for assessing odor-related impacts, as presented in Section 4.6(b), which states that H₂S emissions may result in impacts that would not be significant except as a nuisance. The Guidelines further provide the respective screening distances for odor impacts in Table 3, which is 1 mile for all facility types (ICAPCD 2017).

The nearest residences and sensitive receptors are located greater than 1 mile away from the project location. Given the location of these receptors and the ICAPCD CEQA Guidelines, the 1-hour H₂S modeling analysis will not include any receptors within 1 mile from the project. Any impacts within this 1-mile radius would be considered to be nuisance-related and not expose any nearby residences or sensitive receptors to any potential nuisances.

6.1.2 Significant Impact Level for Ozone and Secondary PM_{2.5}

Although it is expected that the air quality impacts for VOC as an ozone precursor will be below the EPA regulatory limit, the additive precursor impact assessment for ozone may be performed. The lowest illustrative Modeled Emission Rates for Precursors (MERPs) values from Table 4-1 for the southwest of the final MERPs guidance (EPA 2019) will be used for the additive precursor assessment. The following calculation will be carried out to perform the VOC precursor impacts on 8-hour daily maximum ozone:

$$\frac{\text{Total NOx Emissions from Project}}{\text{Lowest Illustrative MERPS value for NOx}} + \frac{\text{Total VOC Emissions from Project}}{\text{Lowest Illustrative MERPS value for VOC}} = \text{Impact (\%)}$$

If the calculated impacts are below 100 percent, then the ozone SIL will not be exceeded.

Air quality impacts from secondary PM_{2.5} may be carried out for SIL analysis. To estimate the impacts of precursors to the PM_{2.5} SIL, primary 24-hour and annual PM_{2.5} will be modeled with AERMOD. The impact from AERMOD will be compared against the SIL and the percentual contribution to the SIL will be calculated for both averaging periods (24-hour and annual). The secondary impacts will be calculated based on the representative lowest MERPs values from Table 4-1 for the southwest of the final MERPs guidance with the following equation:

$$\frac{\text{Total NOx Emissions from Project}}{\text{Lowest Illustrative NOx annual or 24hr PM}_{2.5} \text{ MERPs value}} + \frac{\text{Total SO}_2 \text{ Emissions from Project}}{\text{Lowest Illustrative SO}_2 \text{ annual or 24hr PM}_{2.5} \text{ MERPs value}} = \text{Impact (\%)}$$

The total impact from secondary PM_{2.5} will be added to the contribution from primary PM_{2.5}. If the total contribution from the primary plus secondary PM_{2.5} is greater than 100 percent, then a cumulative analysis and a comparison to the NAAQS will be required.

6.2 Operational Toxic Air Pollutants

The most recent version of HARP2 (Version 22118 [CARB 2022b]), with the revised unit risk and cancer potency values, updated October 2022, will be used for the toxic air pollutants analysis. The updated sensitivity factors will be applied in accordance with the *Risk Management Guidance for Stationary Sources of Air Toxics* (CARB 2015).

The deposition rate modeled in HARP2 will be conservatively set to 0.05 meter per second for uncontrolled sources for preliminary analysis. This assumption may be refined to 0.02 meter per second if refined source information becomes available.

6.2.1 Risk Evaluation

Risk characterization from toxics emitted by the facility will be carried out according to the procedures specified by California Office of Environmental Health Hazard Assessment (OEHHA) guidance for both carcinogenic and noncarcinogenic risks (OEHHA 2015).

As recommended by the 2015 OEHHA and CARB Guidance, a Tier 1 assessment will be performed. The Tier 1 assessment is the most conservative of the four tier assessment methodologies identified in the OEHHA guidance and uses a standard point-estimate approach with standard OEHHA assumptions.

Risk will be evaluated for each of the three receptor types:

- Maximally exposed individual resident (MEIR)
- Maximally exposed individual worker (MEIW)
- Maximally exposed sensitive receptor (MESR)

6.2.2 Carcinogenic Risk

Residential and sensitive cancer risks will be evaluated using the 30-year continuous exposure duration scenario and worker cancer risk will be evaluated using the 25-year exposure duration (8 hours per day starting at age 16 years old) as recommended in the OEHHA guidelines (OEHHA 2015). Based on the OEHHA guidelines, the derived (adjusted) method in HARP2 will be used for the cancer risk evaluation, which uses the 95th percentile breathing rate from the third trimester to 2 years and the 80th percentile inhalation rate from 2 years to 70 years for residential cancer risk assessments (CARB 2015). The 30-year and 25-year exposure durations for residential and commercial/industrial receptors, respectively, are obtained from the OEHHA guidelines (OEHHA 2015).

Cancer risks will be evaluated based on the annual toxic air contaminant (TAC) emission rates from the emission inventory, ground-level concentrations as obtained from the dispersion modeling analysis, inhalation cancer potency, oral slope factor, frequency and duration of exposure at the receptor, age-specific sensitivity factors, and breathing rates of the exposed persons. Cancer risk results will be expressed on an incremental increase of risk above baseline as a number per million basis.

6.2.3 Noncarcinogenic Chronic Exposure

Chronic toxicity is defined as adverse health effects from prolonged chemical exposure caused by chemicals accumulating in the body. To assess chronic noncancer exposures, annual TAC ground-level concentrations are compared with the reference exposure levels (RELs) developed by OEHHA to obtain a chronic hazard index (HI). The REL is a concentration in ambient air at, or below which, no adverse health effects are anticipated. Noncancer chronic health risks are calculated as a hazard quotient, which is the calculated exposure of each contaminant divided by its REL. Hazard quotients for pollutants affecting the same target organ are summed with the resulting totals expressed as HIs for each organ system.

6.2.4 Noncarcinogenic Acute Exposure

Acute toxicity is defined as adverse health effects caused by a brief chemical exposure of no more than 24 hours. To assess acute noncancer exposures, 1 hour TAC ground-level concentrations are compared with the acute REL to obtain an acute HI. Similar to assessing chronic noncancer health risks, acute noncancer health risks are calculated as a hazard quotient, which is the calculated exposure of each contaminant divided by its REL. Hazard quotients for pollutants affecting the same target organ are summed with the resulting totals expressed as HIs for each organ system.

6.3 Exposure Pathways

For this risk analysis, exposure pathways will be included for each risk scenario as specified in Table 6-2.

Table 6-2. Summary of HARP2 Exposure Pathways

Risk Analysis	Model Exposure Pathways	Intake Rate Percentile
Acute	Inhalation	N/A
Noncancer Chronic	Inhalation Soil Ingestion Dermal Absorption Mother's Milk Homegrown Produce Beef/Dairy (Farming) Pig/Chicken/Egg (Farming)	N/A
Cancer	Inhalation Soil Ingestion Dermal Absorption Mother's Milk Homegrown Produce Beef/Dairy (Farming) Pig/Chicken/Egg (Farming)	RMP Using the Derived Method

6.4 Construction Air Toxic Emissions

To determine impacts from TACs from construction activities, a screening-level health risk assessment (HRA) will be performed for the project's construction emissions. Diesel particulate matter (DPM) would be the only TAC evaluated in the HRA for construction equipment and vehicle emissions, which would be based upon construction equipment combustion PM₁₀ emissions as a surrogate.

A screening HRA will be conducted following the OEHHHA's Air Toxics Hot Spots Program *Guidance Manual for Preparation of Health Risk Assessments* (OEHHHA 2015).

Cancer and noncancer chronic health risks at each receptor will be calculated by using equations from the Air Toxics Hot Spots Program *Guidance Manual for Preparation of Health Risk Assessments* (OEHHHA 2015) to convert the modeled ground-level DPM concentrations to health risk values. Cancer risk will be expressed as a numerical excess lifetime cancer risk per 1 million exposed individuals. The noncancer health effects associated with chronic exposures are expressed as chronic HI, which is the ratio of expected exposure levels to acceptable chronic RELs. RELs are concentrations of a chemical at or below which adverse noncancer health effects are not anticipated to occur for a specified exposure duration.

Noncancer acute health risks due to 1-hour exposure to TACs will not be estimated, because currently no acute RELs were developed for DPM (OEHHHA 2015; OEHHHA & CARB 2022).

6.5 Class I Area Analyses

As described above, the project is not expected to result in emission increases that would exceed PSD thresholds. Additionally, there are no federally designated Class I areas located within 50 kilometers of the proposed project. Therefore, no visibility or Class I air quality-related values screening analyses would be required.

6.6 Fumigation Analysis

The proposed project is located within 3,000 meters of the Salton Sea shoreline; therefore, a fumigation screening analysis will be performed as part of this analysis. This analysis will use the EPA developed SCREEN3 model to calculate the air quality impacts during a shoreline fumigation scenario.

6.7 Nitrogen Deposition Analysis

The proposed project may result in emissions of nitrogenous compounds such as NO_x and NH₃. Nitrogen oxide gases (NO and NO₂) convert to nitrate particulates in a form that is suitable for uptake by most plants and could promote plant growth and primary productivity. Coastal salt marshes are a common natural habitat in the vicinity of the project where nitrogen deposition may occur. If required, a deposition analysis would be performed using AERMOD with the options and inputs as described in this modeling protocol. In addition, the following data would be used/assumed for this analysis:

- AERMOD wet and dry deposition options. Depositional rates and parameters would be based upon nitric acid (HNO₃) which, of all the depositing species, has the highest affinity for impacts to soils and vegetation and tendency to stick to what it is deposited on.
- Dry deposition land use characteristics would be developed using satellite aerial imagery for each 10-degree increment within a 3-kilometer radius surrounding the project.
- Dry deposition seasonal categories would be assigned based upon historical meteorological trends for the region.
- NO_x and NH₃ would be 100 percent converted into atmospherically-derived nitrogen at the release point, where applicable, rather than allowing for the conversion of NO_x and NH₃ to occur over distance and time within the atmosphere, which would be more realistic.
- Maximum settling velocities would be selected to produce conservative deposition rates.

7. References

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Appendix 5.1D

Construction Emissions Inventory and Air Quality Impacts Analysis



Black Rock Geothermal Project

BRGP Construction Emissions

Table 1. Construction Emissions Modeling Summary

April 2023

BRGP Onsite Construction Emissions for Modeling

Onsite Construction ^a	Criteria Pollutant Emissions					
	CO	NO _x	SO _x	PM ₁₀ - Combustion	PM _{2.5} - Combustion	Fugitive PM ₁₀
Maximum Daily Emissions (lb/day)	240	118	0.58	3.37	3.15	4.74
Average Annual Emissions (tpy) ^b	16.4	6.68	0.04	0.19	0.17	0.48

Notes:

^a For purposes of determining air quality impacts associated with construction activities, only emissions from onsite construction activities were evaluated. This includes emissions resulting from operation of onsite construction equipment and vehicles, as well as onsite fugitive dust emissions. It was also assumed that construction activities would occur for up to 20 hours per day.

^b Maximum project emissions were conservatively averaged over the months in which heavy construction activity is expected to determine a 12-month total for modeling.

Black Rock Geothermal Project

BRGP Construction Emissions

Table 2. Construction Emissions Summary and Threshold Comparison

April 2023

BRGP Construction Emissions

Construction	Criteria Pollutant Emissions					
	CO	VOC	NO _x	SO _x	PM ₁₀ ^a	PM _{2.5} ^a
Average Daily Emissions (lb/day) ^b	480	49.5	119	1.19	23.6	18.4
Maximum Project Emissions (tons)	160	16.5	39.7	0.40	7.86	6.12
ICAPCD Thresholds of Significance (lb/day) ^c	550	75	100	N/A	150	N/A
Exceeds Threshold (Y/N)?	N	N	Y	N/A	N	N/A

Construction	GHG Emissions			
	CO ₂	N ₂ O	CH ₄	CO ₂ e ^d
Average Daily Emissions (metric tons/day) ^b	45.6	3.64E-04	1.83E-03	45.7
Maximum Project Emissions (metric tons)	30,396	2.43E-01	1.22E+00	30,499
Average Yearly Construction Emissions (metric tons/year)	12,578	1.00E-01	5.05E-01	12,620
Thresholds of Significance (metric tons/year) ^e	N/A	N/A	N/A	10,000
Exceeds Threshold (Y/N)?	N/A	N/A	N/A	Y

Notes:

N/A = Not applicable (no construction significance threshold exists for this pollutant)

^a These estimates include both fugitive dust emissions and exhaust emissions.

^b The results reported here are the total project emissions conservatively averaged over the months in which heavy construction activity is expected. Peak daily emissions may be higher than what is presented.

^c ICAPCD Thresholds of Significance taken from Table 4 of the *2017 CEQA Air Quality Handbook* (ICAPCD 2017).

^d The following global warming potentials were used to estimate CO₂ equivalent emissions, per 40 CFR Part 98, Table A-1:

CH₄ = 25

N₂O = 298

^e ICAPCD does not have thresholds of significance for GHGs, so the SCAQMD threshold was used for CO₂e (<http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf>).

Black Rock Geothermal Project
BRGP Construction Emissions
Table 3. Construction Emissions Summary by Source Category
April 2023

CO Emissions																			
Emission Source		CO Emissions by Month																	
		2024												2025					
		January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Onsite Construction Equipment																			
	Total (lb/month)	0.00	0.00	0.00	1,928.16	2,403.64	2,890.25	3,133.61	1,376.77	1,721.04	1,794.88	3,478.61	3,478.61	4,208.88	4,208.88	5,518.17	4,479.42	4,208.88	4,208.88
	Total (lb/day)	0.00	0.00	0.00	83.83	104.51	125.66	136.24	59.86	74.83	78.04	151.24	151.24	182.99	182.99	239.92	194.76	182.99	182.99
Offsite Construction Equipment																			
	Total (lb/month)	0.00	0.00	0.00	0.00	0.00	10,829.38	10,829.38	10,829.38	10,829.38	10,829.38	10,985.10	10,985.10	10,985.10	10,985.10	11,210.59	11,210.59	10,829.38	10,829.38
	Total (lb/day)	0.00	0.00	0.00	0.00	0.00	470.84	470.84	470.84	470.84	470.84	477.61	477.61	477.61	477.61	487.42	487.42	470.84	470.84
Onsite Construction Vehicle																			
	Total (lb/month)	0.00	0.00	0.00	1.77	1.77	1.77	1.77	1.77	1.77	1.77	1.77	1.77	1.77	1.77	1.77	1.77	1.77	1.77
	Total (lb/day) ^a	0.00	0.00	0.00	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Onsite Construction Vehicle Idle Emissions																			
	Total (lb/month)	0.04	0.06	0.13	0.20	0.34	0.34	0.38	0.52	0.62	0.62	0.78	0.95	1.16	1.30	1.29	1.23	1.14	0.92
	Total (lb/day) ^a	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.03	0.03	0.03	0.04	0.05	0.06	0.06	0.05	0.05	0.04
Onroad Construction Vehicle																			
	Total (lb/month)	0.02	0.04	0.08	25.42	38.16	103.50	217.33	221.64	274.39	282.82	379.88	396.90	523.55	565.95	549.07	574.23	586.76	670.83
	Total (lb/day) ^a	0.00	0.00	0.00	1.11	1.66	4.50	9.45	9.64	11.93	12.30	16.52	17.26	22.76	24.61	23.87	24.97	25.51	29.17
Total Project CO Emissions (Construction Equipment and Vehicles)																			
	Total Onsite Monthly Emissions (lb/month)	0.04	0.06	0.13	1,930.14	2,405.75	2,892.37	3,135.76	1,379.06	1,723.42	1,797.27	3,481.17	3,481.33	4,211.82	4,211.96	5,521.23	4,482.42	4,211.80	4,211.57
	Total Onsite Daily Emissions (lb/day)	0.00	0.00	0.01	83.92	104.60	125.76	136.34	59.96	74.93	78.14	151.36	151.36	183.12	183.13	240.05	194.89	183.12	183.11
	Total Offsite Monthly Emissions (lb/month)	0.02	0.04	0.08	25.42	38.16	10,932.88	11,046.72	11,051.02	11,103.77	11,112.21	11,364.98	11,382.00	11,508.65	11,551.05	11,759.66	11,784.82	11,416.15	11,500.22
	Total Offsite Daily Emissions (lb/day)	0.00	0.00	0.00	1.11	1.66	475.34	480.29	480.48	482.77	483.14	494.13	494.87	500.38	502.22	511.29	512.38	496.35	500.01
	Total Monthly Emissions (lb/month)	0.06	0.10	0.21	1,955.56	2,443.91	13,825.25	14,182.48	12,430.08	12,827.20	12,909.47	14,846.15	14,863.33	15,720.47	15,763.01	17,280.89	16,267.25	15,627.94	15,711.79
	Total Daily Emissions (lb/day)	0.00	0.00	0.01	85.02	106.26	601.10	616.63	540.44	557.70	561.28	645.48	646.23	683.50	685.35	751.34	707.27	679.48	683.12
	Rolling 12 Month Total (Tons)												50.14	58.00	65.88	74.52	81.68	88.27	89.22
	Total Project Emissions (tons)	159.92																	
	Average Daily Emissions (lb/day) ^{b, c}	479.52																	

VOC Emissions																			
Emission Source		VOC Emissions by Month																	
		2024												2025					
		January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Onsite Construction Equipment																			
	Total (lb/month)	0.00	0.00	0.00	125.22	180.12	189.78	238.03	93.10	100.65	102.27	134.65	134.65	164.85	164.85	328.57	169.11	164.85	164.85
	Total (lb/day)	0.00	0.00	0.00	5.44	7.83	8.25	10.35	4.05	4.38	4.45	5.85	5.85	7.17	7.17	14.29	7.35	7.17	7.17
Offsite Construction Equipment																			
	Total (lb/month)	0.00	0.00	0.00	0.00	0.00	1,379.26	1,379.26	1,379.26	1,379.26	1,379.26	1,381.37	1,381.37	1,381.37	1,381.37	1,385.26	1,385.26	1,379.26	1,379.26
	Total (lb/day)	0.00	0.00	0.00	0.00	0.00	59.97	59.97	59.97	59.97	59.97	60.06	60.06	60.06	60.06	60.23	60.23	59.97	59.97
Onsite Construction Vehicle																			
	Total (lb/month)	0.00	0.00	0.00	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
	Total (lb/day) ^a	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Onsite Construction Vehicle Idle Emissions																			
	Total (lb/month)	0.00	0.00	0.01	0.01	0.02	0.02	0.02	0.03	0.04	0.04	0.05	0.06	0.07	0.08	0.08	0.08	0.07	0.06
	Total (lb/day) ^a	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Onsite Paving																			
	Total (lb/month)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.72	15.72	0.00	0.00
	Total (lb/day)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.68	0.68	0.00	0.00
Offsite Paving																			
	Total (lb/month)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	22.15	22.15	0.00	0.00
	Total (lb/day)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.96	0.96	0.00	0.00
Onroad Construction Vehicle																			
	Total (lb/month)	0.00	0.01	0.01	0.40	0.61	1.59	3.32	3.39	4.20	4.32	5.81	6.08	8.01	8.67	8.42	8.79	8.97	10.21
	Total (lb/day) ^a	0.00	0.00	0.00	0.02	0.03	0.07	0.14	0.15	0.18	0.19	0.25	0.26	0.35	0.38	0.37	0.38	0.39	0.44
Total Project VOC Emissions (Construction Equipment, Paving, and V																			
	Total Onsite Monthly Emissions (lb/month)	0.00	0.00	0.01	125.29	180.20	189.85	238.10	93.18	100.75	102.37	134.76	134.77	164.98	164.99	344.42	184.96	164.98	164.96
	Total Onsite Daily Emissions (lb/day)	0.00	0.00	0.00	5.45	7.83	8.25	10.35	4.05	4.38	4.45	5.86	5.86	7.17	7.17	14.97	8.04	7.17	7.17
	Total Offsite Monthly Emissions (lb/month)	0.00	0.01	0.01	0.40	0.61	1,380.86	1,382.58	1,382.66	1,383.46	1,383.59	1,387.17	1,387.45	1,389.38	1,390.04	1,415.82	1,416.19	1,388.23	1,389.47
	Total Offsite Daily Emissions (lb/day)	0.00	0.00	0.00	0.02	0.03	60.04	60.11	60.12	60.15	60.16	60.31	60.32	60.41	60.44	61.56	61.57	60.36	60.41
	Total Monthly Emissions (lb/month)	0.01	0.01	0.02	125.69	180.80	1,570.71	1,620.68	1,475.84	1,484.21	1,485.95	1,521.93	1,522.21	1,554.36	1,555.03	1,760.25	1,601.15	1,553.21	1,554.44
	Total Daily Emissions (lb/day)	0.00	0.00	0.00	5.46	7.86	68.29	70.46	64.17	64.53	64.61	66.17	66.18	67.58	67.61	76.53	69.62	67.53	67.58
	Rolling 12 Month Total (Tons)												5.49	6.27	7.05	7.93	8.67	9.35	9.34
	Total Project Emissions (tons)	16.52																	
	Average Daily Emissions (lb/day) ^{b, c}	49.54																	

Black Rock Geothermal Project
BRGP Construction Emissions
Table 3. Construction Emissions Summary by Source Category
April 2023

CO Emissions																			
Emission Source		2026																	
		July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
Onsite Construction Equipment																			
	Total (lb/month)	4,489.51	4,770.13	4,453.19	4,453.19	4,453.19	4,453.19	769.09	683.02	609.18	518.38	346.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total (lb/day)	195.20	207.40	193.62	193.62	193.62	193.62	33.44	29.70	26.49	22.54	15.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite Construction Equipment																			
	Total (lb/month)	10,829.38	10,829.38	10,829.38	10,829.38	10,829.38	10,829.38	10,829.38	10,829.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total (lb/day)	470.84	470.84	470.84	470.84	470.84	470.84	470.84	470.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Onsite Construction Vehicle																			
	Total (lb/month)	1.77	1.77	1.77	1.77	1.77	1.77	1.77	1.77	1.77	1.77	1.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total (lb/day) ^a	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Onsite Construction Vehicle Idle Emissions																			
	Total (lb/month)	0.82	0.82	0.78	0.78	0.35	0.26	0.26	0.26	0.26	0.07	0.07	0.07	0.47	0.47	0.44	0.44	0.35	0.35
	Total (lb/day) ^a	0.04	0.04	0.03	0.03	0.02	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	0.02
Onroad Construction Vehicle																			
	Total (lb/month)	704.50	868.90	898.38	860.44	788.51	767.37	556.60	514.45	206.72	122.29	71.71	63.28	55.10	42.45	0.28	0.28	0.22	0.22
	Total (lb/day) ^a	30.63	37.78	39.06	37.41	34.28	33.36	24.20	22.37	8.99	5.32	3.12	2.75	2.40	1.85	0.01	0.01	0.01	0.01
Total Project CO Emissions (Construction Equipment and Vehicles)																			
	Total Onsite Monthly Emissions (lb/month)	4,492.10	4,772.72	4,455.74	4,455.74	4,455.31	4,455.22	771.12	685.05	611.21	520.23	348.09	0.07	0.47	0.47	0.44	0.44	0.35	0.35
	Total Onsite Daily Emissions (lb/day)	195.31	207.51	193.73	193.73	193.71	193.71	33.53	29.78	26.57	22.62	15.13	0.00	0.02	0.02	0.02	0.02	0.02	0.02
	Total Offsite Monthly Emissions (lb/month)	11,533.88	11,698.28	11,727.76	11,689.82	11,617.89	11,596.75	11,385.98	11,343.83	206.72	122.29	71.71	63.28	55.10	42.45	0.28	0.28	0.22	0.22
	Total Offsite Daily Emissions (lb/day)	501.47	508.62	509.90	508.25	505.13	504.21	495.04	493.21	8.99	5.32	3.12	2.75	2.40	1.85	0.01	0.01	0.01	0.01
	Total Monthly Emissions (lb/month)	16,025.98	16,471.01	16,183.49	16,145.56	16,073.21	16,051.97	12,157.10	12,028.88	817.93	642.52	419.80	63.35	55.57	42.93	0.73	0.73	0.57	0.57
	Total Daily Emissions (lb/day)	696.78	716.13	703.63	701.98	698.84	697.91	528.57	522.99	35.56	27.94	18.25	2.75	2.42	1.87	0.03	0.03	0.02	0.02
	Rolling 12 Month Total (Tons)	90.14	92.16	93.84	95.45	96.07	96.66	94.88	93.01	84.78	76.97	69.36	61.54	53.56	45.34	37.25	29.18	21.14	13.12
	Total Project Emissions (tons)																		
	Average Daily Emissions (lb/day) ^{b, c}																		

VOC Emissions																			
Emission Source		2026																	
		July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
Onsite Construction Equipment																			
	Total (lb/month)	170.25	175.64	164.53	164.53	164.53	164.53	77.64	75.75	74.13	56.93	53.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total (lb/day)	7.40	7.64	7.15	7.15	7.15	7.15	3.38	3.29	3.22	2.48	2.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite Construction Equipment																			
	Total (lb/month)	1,379.26	1,379.26	1,379.26	1,379.26	1,379.26	1,379.26	1,379.26	1,379.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total (lb/day)	59.97	59.97	59.97	59.97	59.97	59.97	59.97	59.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Onsite Construction Vehicle																			
	Total (lb/month)	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total (lb/day) ^a	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Onsite Construction Vehicle Idle Emissions																			
	Total (lb/month)	0.05	0.05	0.05	0.05	0.02	0.02	0.02	0.02	0.02	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.02	0.02
	Total (lb/day) ^a	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Onsite Paving																			
	Total (lb/month)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total (lb/day)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite Paving																			
	Total (lb/month)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total (lb/day)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Onroad Construction Vehicle																			
	Total (lb/month)	10.71	13.19	13.64	13.06	11.94	11.61	8.43	7.79	3.14	1.85	1.09	0.96	0.87	0.68	0.04	0.04	0.03	0.03
	Total (lb/day) ^a	0.47	0.57	0.59	0.57	0.52	0.50	0.37	0.34	0.14	0.08	0.05	0.04	0.04	0.03	0.00	0.00	0.00	0.00
Total Project VOC Emissions (Construction Equipment, Paving, and Vehicles)																			
	Total Onsite Monthly Emissions (lb/month)	170.35	175.75	164.63	164.63	164.60	164.60	77.71	75.82	74.20	56.99	53.21	0.00	0.03	0.03	0.03	0.03	0.02	0.02
	Total Onsite Daily Emissions (lb/day)	7.41	7.64	7.16	7.16	7.16	7.16	3.38	3.30	3.23	2.48	2.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total Offsite Monthly Emissions (lb/month)	1,389.97	1,392.46	1,392.90	1,392.33	1,391.20	1,390.88	1,387.69	1,387.06	3.14	1.85	1.09	0.96	0.87	0.68	0.04	0.04	0.03	0.03
	Total Offsite Daily Emissions (lb/day)	60.43	60.54	60.56	60.54	60.49	60.47	60.33	60.31	0.14	0.08	0.05	0.04	0.04	0.03	0.00	0.00	0.00	0.00
	Total Monthly Emissions (lb/month)	1,560.33	1,568.21	1,557.53	1,556.95	1,555.81	1,555.47	1,465.40	1,462.88	77.35	58.85	54.30	0.97	0.90	0.71	0.07	0.07	0.06	0.06
	Total Daily Emissions (lb/day)	67.84	68.18	67.72	67.69	67.64	67.63	63.71	63.60	3.36	2.56	2.36	0.04	0.04	0.03	0.00	0.00	0.00	0.00
	Rolling 12 Month Total (Tons)	9.31	9.36	9.40	9.43	9.45	9.47	9.42	9.38	8.53	7.76	7.01	6.24	5.46	4.67	3.89	3.12	2.34	1.56
	Total Project Emissions (tons)																		
	Average Daily Emissions (lb/day) ^{b, c}																		

Black Rock Geothermal Project
BRGP Construction Emissions
Table 3. Construction Emissions Summary by Source Category
April 2023

SO _x Emissions																			
Emission Source		SO _x Emissions by Month																	
		2024												2025					
		January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Onsite Construction Equipment																			
	Total (lb/month)	0.00	0.00	0.00	4.68	6.26	7.15	8.12	3.41	4.03	4.16	7.32	7.32	8.66	8.66	13.25	9.01	8.66	8.66
	Total (lb/day)	0.00	0.00	0.00	0.20	0.27	0.31	0.35	0.15	0.18	0.18	0.32	0.32	0.38	0.38	0.58	0.39	0.38	0.38
Offsite Construction Equipment																			
	Total (lb/month)	0.00	0.00	0.00	0.00	0.00	28.37	28.37	28.37	28.37	28.37	28.57	28.57	28.57	28.57	28.87	28.87	28.37	28.37
	Total (lb/day)	0.00	0.00	0.00	0.00	0.00	1.23	1.23	1.23	1.23	1.23	1.24	1.24	1.24	1.24	1.26	1.26	1.23	1.23
Onsite Construction Vehicle																			
	Total (lb/month)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total (lb/day) ^a	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Onsite Construction Vehicle Idle Emissions																			
	Total (lb/month)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total (lb/day) ^a	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Onroad Construction Vehicle																			
	Total (lb/month)	0.00	0.00	0.01	0.05	0.08	0.18	0.34	0.36	0.45	0.46	0.61	0.66	0.87	0.96	0.94	0.95	0.96	1.04
	Total (lb/day) ^a	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.02	0.03	0.03	0.04	0.04	0.04	0.04	0.04	0.05
Total Project SO _x Emissions (Construction Equipment and Vehicles)																			
	Total Onsite Monthly Emissions (lb/month)	0.00	0.00	0.00	4.68	6.26	7.15	8.12	3.42	4.03	4.17	7.32	7.32	8.66	8.66	13.26	9.02	8.66	8.66
	Total Onsite Daily Emissions (lb/day)	0.00	0.00	0.00	0.20	0.27	0.31	0.35	0.15	0.18	0.18	0.32	0.32	0.38	0.38	0.58	0.39	0.38	0.38
	Total Offsite Monthly Emissions (lb/month)	0.00	0.00	0.01	0.05	0.08	28.54	28.71	28.73	28.81	28.82	29.18	29.23	29.43	29.53	29.81	29.82	29.32	29.41
	Total Offsite Daily Emissions (lb/day)	0.00	0.00	0.00	0.00	0.00	1.24	1.25	1.25	1.25	1.25	1.27	1.27	1.28	1.28	1.30	1.30	1.27	1.28
	Total Monthly Emissions (lb/month)	0.00	0.01	0.01	4.73	6.35	35.69	36.83	32.15	32.85	32.99	36.50	36.55	38.10	38.19	43.06	38.84	37.98	38.07
	Total Daily Emissions (lb/day)	0.00	0.00	0.00	0.21	0.28	1.55	1.60	1.40	1.43	1.43	1.59	1.59	1.66	1.66	1.87	1.69	1.65	1.66
	Rolling 12 Month Total (Tons)												0.13	0.15	0.17	0.19	0.20	0.22	0.22
	Total Project Emissions (tons)	0.40																	
	Average Daily Emissions (lb/day) ^{b, c}	1.19																	

NO _x Emissions																			
Emission Source		NO _x Emissions by Month																	
		2024												2025					
		January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Onsite Construction Equipment																			
	Total (lb/month)	0.00	0.00	0.00	814.56	1,181.75	1,263.62	1,585.71	627.81	858.72	908.25	1,076.62	1,076.62	1,569.47	1,569.47	2,705.34	1,631.01	1,569.47	1,569.47
	Total (lb/day)	0.00	0.00	0.00	35.42	51.38	54.94	68.94	27.30	37.34	39.49	46.81	46.81	68.24	68.24	117.62	70.91	68.24	68.24
Offsite Construction Equipment																			
	Total (lb/month)	0.00	0.00	0.00	0.00	0.00	2,191.23	2,191.23	2,191.23	2,191.23	2,191.23	2,202.18	2,202.18	2,202.18	2,202.18	2,277.95	2,277.95	2,191.23	2,191.23
	Total (lb/day)	0.00	0.00	0.00	0.00	0.00	95.27	95.27	95.27	95.27	95.27	95.75	95.75	95.75	95.75	99.04	99.04	95.27	95.27
Onsite Construction Vehicle																			
	Total (lb/month)	0.00	0.00	0.00	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
	Total (lb/day) ^a	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Onsite Construction Vehicle Idle Emissions																			
	Total (lb/month)	0.04	0.07	0.14	0.22	0.38	0.38	0.42	0.57	0.68	0.68	0.86	1.02	1.24	1.32	1.31	1.28	1.21	1.01
	Total (lb/day) ^a	0.00	0.00	0.01	0.01	0.02	0.02	0.02	0.02	0.03	0.03	0.04	0.04	0.05	0.06	0.06	0.06	0.05	0.04
Onroad Construction Vehicle																			
	Total (lb/month)	0.31	0.48	1.06	3.18	5.10	9.06	16.25	17.67	21.64	22.15	29.38	32.43	42.51	48.31	47.04	46.89	46.15	48.13
	Total (lb/day) ^a	0.01	0.02	0.05	0.14	0.22	0.39	0.71	0.77	0.94	0.96	1.28	1.41	1.85	2.10	2.05	2.04	2.01	2.09
Total Project NO _x Emissions (Construction Equipment and Vehicles)																			
	Total Onsite Monthly Emissions (lb/month)	0.04	0.07	0.14	814.88	1,182.23	1,264.10	1,586.23	628.49	859.51	909.03	1,077.59	1,077.75	1,570.81	1,570.90	2,706.76	1,632.40	1,570.79	1,570.59
	Total Onsite Daily Emissions (lb/day)	0.00	0.00	0.01	35.43	51.40	54.96	68.97	27.33	37.37	39.52	46.85	46.86	68.30	68.30	117.69	70.97	68.30	68.29
	Total Offsite Monthly Emissions (lb/month)	0.31	0.48	1.06	3.18	5.10	2,200.30	2,207.49	2,208.90	2,212.87	2,213.38	2,231.55	2,234.60	2,244.69	2,250.49	2,324.99	2,324.84	2,237.38	2,239.36
	Total Offsite Daily Emissions (lb/day)	0.01	0.02	0.05	0.14	0.22	95.67	95.98	96.04	96.21	96.23	97.02	97.16	97.60	97.85	101.09	101.08	97.28	97.36
	Total Monthly Emissions (lb/month)	0.35	0.55	1.21	818.06	1,187.33	3,464.40	3,793.72	2,837.39	3,072.38	3,122.42	3,309.14	3,312.36	3,815.50	3,821.39	5,031.75	3,957.25	3,808.17	3,809.95
	Total Daily Emissions (lb/day)	0.02	0.02	0.05	35.57	51.62	150.63	164.94	123.36	133.58	135.76	143.88	144.02	165.89	166.15	218.77	172.05	165.57	165.65
	Rolling 12 Month Total (Tons)												12.46	14.37	16.28	18.79	20.36	21.67	21.85
	Total Project Emissions (tons)	39.71																	
	Average Daily Emissions (lb/day) ^{b, c}	119.07																	

Black Rock Geothermal Project
BRGP Construction Emissions
Table 3. Construction Emissions Summary by Source Category
April 2023

SO _x Emissions																			
Emission Source		2026																	
		July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
Onsite Construction Equipment																			
	Total (lb/month)	9.18	9.71	9.09	9.09	9.09	9.09	2.26	2.10	1.97	1.72	1.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total (lb/day)	0.40	0.42	0.40	0.40	0.40	0.40	0.10	0.09	0.09	0.07	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite Construction Equipment																			
	Total (lb/month)	28.37	28.37	28.37	28.37	28.37	28.37	28.37	28.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total (lb/day)	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Onsite Construction Vehicle																			
	Total (lb/month)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total (lb/day) ^a	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Onsite Construction Vehicle Idle Emissions																			
	Total (lb/month)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total (lb/day) ^a	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Onroad Construction Vehicle																			
	Total (lb/month)	1.08	1.32	1.36	1.30	1.17	1.13	0.82	0.76	0.32	0.18	0.11	0.10	0.12	0.10	0.04	0.04	0.03	0.03
	Total (lb/day) ^a	0.05	0.06	0.06	0.06	0.05	0.05	0.04	0.03	0.01	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00
Total Project SO _x Emissions (Construction Equipment and Vehicles)																			
	Total Onsite Monthly Emissions (lb/month)	9.19	9.71	9.09	9.09	9.09	9.09	2.26	2.11	1.97	1.72	1.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total Onsite Daily Emissions (lb/day)	0.40	0.42	0.40	0.40	0.40	0.40	0.10	0.09	0.09	0.07	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total Offsite Monthly Emissions (lb/month)	29.45	29.69	29.73	29.67	29.53	29.49	29.19	29.13	0.32	0.18	0.11	0.10	0.12	0.10	0.04	0.04	0.03	0.03
	Total Offsite Daily Emissions (lb/day)	1.28	1.29	1.29	1.29	1.28	1.28	1.27	1.27	0.01	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00
	Total Monthly Emissions (lb/month)	38.64	39.40	38.82	38.76	38.62	38.59	31.45	31.24	2.29	1.91	1.53	0.10	0.12	0.10	0.04	0.04	0.03	0.03
	Total Daily Emissions (lb/day)	1.68	1.71	1.69	1.69	1.68	1.68	1.37	1.36	0.10	0.08	0.07	0.00	0.01	0.00	0.00	0.00	0.00	0.00
	Rolling 12 Month Total (Tons)	0.22	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.21	0.19	0.17	0.15	0.13	0.11	0.09	0.07	0.05	0.03
	Total Project Emissions (tons)																		
	Average Daily Emissions (lb/day) ^{b, c}																		

NO _x Emissions																			
Emission Source		2026																	
		July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
Onsite Construction Equipment																			
	Total (lb/month)	1,597.53	1,625.59	1,554.17	1,554.17	1,554.17	1,554.17	718.65	660.92	611.39	473.57	358.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total (lb/day)	69.46	70.68	67.57	67.57	67.57	67.57	31.25	28.74	26.58	20.59	15.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite Construction Equipment																			
	Total (lb/month)	2,191.23	2,191.23	2,191.23	2,191.23	2,191.23	2,191.23	2,191.23	2,191.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total (lb/day)	95.27	95.27	95.27	95.27	95.27	95.27	95.27	95.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Onsite Construction Vehicle																			
	Total (lb/month)	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total (lb/day) ^a	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Onsite Construction Vehicle Idle Emissions																			
	Total (lb/month)	0.91	0.91	0.85	0.85	0.39	0.29	0.29	0.29	0.29	0.08	0.08	0.08	0.52	0.52	0.49	0.49	0.39	0.39
	Total (lb/day) ^a	0.04	0.04	0.04	0.04	0.02	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	0.02
Onroad Construction Vehicle																			
	Total (lb/month)	49.40	59.37	60.77	58.47	50.68	48.63	35.86	33.30	14.65	7.99	4.92	4.41	7.19	6.42	3.63	3.63	2.86	2.86
	Total (lb/day) ^a	2.15	2.58	2.64	2.54	2.20	2.11	1.56	1.45	0.64	0.35	0.21	0.19	0.31	0.28	0.16	0.16	0.12	0.12
Total Project NO _x Emissions (Construction Equipment and Vehicles)																			
	Total Onsite Monthly Emissions (lb/month)	1,598.54	1,626.61	1,555.13	1,555.13	1,554.67	1,554.56	719.04	661.32	611.79	473.75	358.29	0.08	0.52	0.52	0.49	0.49	0.39	0.39
	Total Onsite Daily Emissions (lb/day)	69.50	70.72	67.61	67.61	67.59	67.59	31.26	28.75	26.60	20.60	15.58	0.00	0.02	0.02	0.02	0.02	0.02	0.02
	Total Offsite Monthly Emissions (lb/month)	2,240.63	2,250.60	2,252.00	2,249.70	2,241.92	2,239.87	2,227.09	2,224.54	14.65	7.99	4.92	4.41	7.19	6.42	3.63	3.63	2.86	2.86
	Total Offsite Daily Emissions (lb/day)	97.42	97.85	97.91	97.81	97.47	97.39	96.83	96.72	0.64	0.35	0.21	0.19	0.31	0.28	0.16	0.16	0.12	0.12
	Total Monthly Emissions (lb/month)	3,839.18	3,877.21	3,807.13	3,804.83	3,796.59	3,794.43	2,946.13	2,885.85	626.43	481.74	363.22	4.49	7.71	6.94	4.12	4.12	3.25	3.25
	Total Daily Emissions (lb/day)	166.92	168.57	165.53	165.43	165.07	164.98	128.09	125.47	27.24	20.95	15.79	0.20	0.34	0.30	0.18	0.18	0.14	0.14
	Rolling 12 Month Total (Tons)	21.87	22.39	22.76	23.10	23.34	23.58	23.15	22.68	20.48	18.74	17.02	15.11	13.20	11.26	9.36	7.46	5.56	3.67
	Total Project Emissions (tons)																		
	Average Daily Emissions (lb/day) ^{b, c}																		

Black Rock Geothermal Project
BRGP Construction Emissions
Table 3. Construction Emissions Summary by Source Category
April 2023

PM ₁₀ Emissions		PM ₁₀ Emissions by Month																	
Emission Source		2024												2025					
		January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Onsite Construction Equipment																			
	Total (lb/month)	0.00	0.00	0.00	29.46	42.65	44.47	58.11	23.61	24.45	24.63	31.10	31.10	38.37	38.37	77.60	39.08	38.37	38.37
	Total (lb/day)	0.00	0.00	0.00	1.28	1.85	1.93	2.53	1.03	1.06	1.07	1.35	1.35	1.67	1.67	3.37	1.70	1.67	1.67
Offsite Construction Equipment																			
	Total (lb/month)	0.00	0.00	0.00	0.00	0.00	509.44	509.44	509.44	509.44	509.44	509.86	509.86	509.86	509.86	510.44	510.44	509.44	509.44
	Total (lb/day)	0.00	0.00	0.00	0.00	0.00	22.15	22.15	22.15	22.15	22.15	22.17	22.17	22.17	22.17	22.19	22.19	22.15	22.15
Onsite Construction Vehicle																			
	Total (lb/month)	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	Total (lb/day) ^a	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Onsite Fugitive Dust																			
	Total (lb/month)	0.00	0.00	0.00	109.08	109.08	93.74	93.74	86.86	86.86	86.86	86.86	86.86	86.86	86.86	86.86	86.86	86.86	86.86
	Total (lb/day)	0.00	0.00	0.00	4.74	4.74	4.08	4.08	3.78	3.78	3.78	3.78	3.78	3.78	3.78	3.78	3.78	3.78	3.78
Onsite Construction Vehicle Idle Emissions																			
	Total (lb/month)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total (lb/day) ^a	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Onroad Construction Vehicle																			
	Total (lb/month)	0.10	0.16	0.36	4.26	6.51	16.10	32.91	33.92	41.91	43.15	57.84	60.98	80.35	87.59	85.03	88.20	89.57	100.92
	Total (lb/day) ^a	0.00	0.01	0.02	0.19	0.28	0.70	1.43	1.47	1.82	1.88	2.51	2.65	3.49	3.81	3.70	3.83	3.89	4.39
Total Project PM ₁₀ Emissions (Construction Equipment, Fugitive Dust)																			
	Total Onsite Monthly Emissions (lb/month)	0.00	0.00	0.00	138.55	151.73	138.22	151.87	110.47	111.31	111.49	117.97	117.97	125.24	125.24	164.46	125.95	125.24	125.24
	Total Onsite Monthly Emissions Without Fugitive Dust (lb/month)	0.00	0.00	0.00	29.47	42.66	44.48	58.12	23.62	24.46	24.64	31.12	31.12	38.38	38.38	77.61	39.09	38.38	38.38
	Total Onsite Daily Emissions (lb/day)	0.00	0.00	0.00	6.02	6.60	6.01	6.60	4.80	4.84	4.85	5.13	5.13	5.45	5.45	7.15	5.48	5.45	5.45
	Total Onsite Daily Emissions (lb/day) Without Fugitive Dust	0.00	0.00	0.00	1.28	1.85	1.93	2.53	1.03	1.06	1.07	1.35	1.35	1.67	1.67	3.37	1.70	1.67	1.67
	Total Offsite Monthly Emissions (lb/month)	0.10	0.16	0.36	4.26	6.51	525.54	542.35	543.35	551.35	552.59	567.70	570.84	590.21	597.45	595.47	598.64	599.00	610.35
	Total Offsite Daily Emissions (lb/day)	0.00	0.01	0.02	0.19	0.28	22.85	23.58	23.62	23.97	24.03	24.68	24.82	25.66	25.98	25.89	26.03	26.04	26.54
	Total Monthly Emissions (lb/month)	0.10	0.16	0.36	142.81	158.25	663.76	694.21	653.83	662.66	664.08	685.67	688.81	715.44	722.68	759.94	724.59	724.24	735.59
	Total Daily Emissions (lb/day)	0.00	0.01	0.02	6.21	6.88	28.86	30.18	28.43	28.81	28.87	29.81	29.95	31.11	31.42	33.04	31.50	31.49	31.98
	Rolling 12 Month Total (Tons)												2.51	2.87	3.23	3.61	3.90	4.18	4.22
	Total Project Emissions (tons)	7.86																	
	Average Daily Emissions (lb/day) ^{b, c}	23.57																	

PM _{2.5} Emissions		PM _{2.5} Emissions by Month																	
Emission Source		2024												2025					
		January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Onsite Construction Equipment																			
	Total (lb/month)	0.00	0.00	0.00	27.40	39.56	41.39	53.93	21.99	22.83	23.01	29.49	29.49	36.30	36.30	72.45	37.01	36.30	36.30
	Total (lb/day)	0.00	0.00	0.00	1.19	1.72	1.80	2.34	0.96	0.99	1.00	1.28	1.28	1.58	1.58	3.15	1.61	1.58	1.58
Offsite Construction Equipment																			
	Total (lb/month)	0.00	0.00	0.00	0.00	0.00	509.44	509.44	509.44	509.44	509.44	509.86	509.86	509.86	509.86	510.44	510.44	509.44	509.44
	Total (lb/day)	0.00	0.00	0.00	0.00	0.00	22.15	22.15	22.15	22.15	22.15	22.17	22.17	22.17	22.17	22.19	22.19	22.15	22.15
Onsite Construction Vehicle																			
	Total (lb/month)	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	Total (lb/day) ^a	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Onsite Fugitive Dust																			
	Total (lb/month)	0.00	0.00	0.00	11.35	11.35	9.69	9.69	8.65	8.65	8.65	8.65	8.65	8.65	8.65	8.65	8.65	8.65	8.65
	Total (lb/day)	0.00	0.00	0.00	0.49	0.49	0.42	0.42	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38
Onsite Construction Vehicle Idle Emissions																			
	Total (lb/month)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total (lb/day) ^a	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Onroad Construction Vehicle																			
	Total (lb/month)	0.03	0.05	0.10	1.12	1.71	4.18	8.52	8.79	10.86	11.18	14.98	15.82	20.84	22.74	22.08	22.88	23.21	26.11
	Total (lb/day) ^a	0.00	0.00	0.00	0.05	0.07	0.18	0.37	0.38	0.47	0.49	0.65	0.69	0.91	0.99	0.96	0.99	1.01	1.14
Total Project PM _{2.5} Emissions (Construction Equipment, Fugitive Dust)																			
	Total Onsite Monthly Emissions (lb/month)	0.00	0.00	0.00	38.76	50.92	51.09	63.63	30.65	31.49	31.67	38.15	38.15	44.96	44.96	81.10	45.67	44.96	44.96
	Total Onsite Monthly Emissions Without Fugitive Dust (lb/month)	0.00	0.00	0.00	27.41	39.57	41.39	53.94	22.00	22.84	23.02	29.49	29.49	36.31	36.31	72.45	37.02	36.31	36.31
	Total Onsite Daily Emissions (lb/day)	0.00	0.00	0.00	1.69	2.21	2.22	2.77	1.33	1.37	1.38	1.66	1.66	1.95	1.95	3.53	1.99	1.95	1.95
	Total Onsite Daily Emissions Without Fugitive Dust (lb/day)	0.00	0.00	0.00	1.19	1.72	1.80	2.35	0.96	0.99	1.00	1.28	1.28	1.58	1.58	3.15	1.61	1.58	1.58
	Total Offsite Monthly Emissions (lb/month)	0.03	0.05	0.10	1.12	1.71	513.62	517.96	518.23	520.30	520.62	524.84	525.67	530.69	532.60	532.52	533.32	532.65	535.54
	Total Offsite Daily Emissions (lb/day)	0.00	0.00	0.00	0.05	0.07	22.33	22.52	22.53	22.62	22.64	22.82	22.86	23.07	23.16	23.15	23.19	23.16	23.28
	Total Monthly Emissions (lb/month)	0.03	0.05	0.10	39.88	52.63	564.70	581.59	548.88	551.79	552.29	562.99	563.82	575.65	577.56	613.62	578.99	577.61	580.50
	Total Daily Emissions (lb/day)	0.00	0.00	0.00	1.73	2.29	24.55	25.29	23.86	23.99	24.01	24.48	24.51	25.03	25.11	26.68	25.17	25.11	25.24
	Rolling 12 Month Total (Tons)												2.01	2.30	2.59	2.89	3.16	3.42	3.43
	Total Project Emissions (tons)	6.12																	
	Average Daily Emissions (lb/day) ^{b, c}	18.35																	

Black Rock Geothermal Project
BRGP Construction Emissions
Table 3. Construction Emissions Summary by Source Category
April 2023

PM ₁₀ Emissions																			
Emission Source		2026																	
		July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
Onsite Construction Equipment																			
	Total (lb/month)	39.45	40.53	37.75	37.75	37.75	37.75	19.32	19.11	18.93	13.26	12.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total (lb/day)	1.72	1.76	1.64	1.64	1.64	1.64	0.84	0.83	0.82	0.58	0.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite Construction Equipment																			
	Total (lb/month)	509.44	509.44	509.44	509.44	509.44	509.44	509.44	509.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total (lb/day)	22.15	22.15	22.15	22.15	22.15	22.15	22.15	22.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Onsite Construction Vehicle																			
	Total (lb/month)	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total (lb/day) ^a	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Onsite Fugitive Dust																			
	Total (lb/month)	86.86	86.86	86.86	86.86	86.86	86.86	86.86	86.86	86.86	86.86	86.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total (lb/day)	3.78	3.78	3.78	3.78	3.78	3.78	3.78	3.78	3.78	3.78	3.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Onsite Construction Vehicle Idle Emissions																			
	Total (lb/month)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total (lb/day) ^a	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Onroad Construction Vehicle																			
	Total (lb/month)	105.61	129.74	133.94	128.37	116.70	113.34	82.40	76.21	31.04	18.14	10.72	9.48	9.34	7.49	1.22	1.22	0.96	0.96
	Total (lb/day) ^a	4.59	5.64	5.82	5.58	5.07	4.93	3.58	3.31	1.35	0.79	0.47	0.41	0.41	0.33	0.05	0.05	0.04	0.04
Total Project PM ₁₀ Emissions (Construction Equipment, Fugitive Dust, Onsite Construction Vehicle, Onsite Fugitive Dust, Onsite Construction Vehicle Idle Emissions, Onroad Construction Vehicle)																			
	Total Onsite Monthly Emissions (lb/month)	126.31	127.39	124.62	124.62	124.62	124.62	106.19	105.98	105.80	100.12	99.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total Onsite Monthly Emissions Without Fugitive Dust (lb/month)	39.46	40.54	37.77	37.77	37.76	37.76	19.33	19.12	18.94	13.27	12.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total Onsite Daily Emissions (lb/day)	5.49	5.54	5.42	5.42	5.42	5.42	4.62	4.61	4.60	4.35	4.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total Onsite Daily Emissions (lb/day) Without Fugitive Dust	1.72	1.76	1.64	1.64	1.64	1.64	0.84	0.83	0.82	0.58	0.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total Offsite Monthly Emissions (lb/month)	615.04	639.18	643.38	637.81	626.13	622.78	591.84	585.65	31.04	18.14	10.72	9.48	9.34	7.49	1.22	1.22	0.96	0.96
	Total Offsite Daily Emissions (lb/day)	26.74	27.79	27.97	27.73	27.22	27.08	25.73	25.46	1.35	0.79	0.47	0.41	0.41	0.33	0.05	0.05	0.04	0.04
	Total Monthly Emissions (lb/month)	741.36	766.57	768.00	762.43	750.75	747.40	698.02	691.63	136.83	118.26	110.42	9.48	9.34	7.49	1.22	1.22	0.96	0.96
	Total Daily Emissions (lb/day)	32.23	33.33	33.39	33.15	32.64	32.50	30.35	30.07	5.95	5.14	4.80	0.41	0.41	0.33	0.05	0.05	0.04	0.04
	Rolling 12 Month Total (Tons)	4.24	4.30	4.35	4.40	4.43	4.46	4.45	4.44	4.12	3.82	3.51	3.15	2.78	2.41	2.02	1.64	1.27	0.89
	Total Project Emissions (tons)																		
	Average Daily Emissions (lb/day) ^{b, c}																		

PM _{2.5} Emissions																			
Emission Source		2026																	
		July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
Onsite Construction Equipment																			
	Total (lb/month)	37.38	38.46	35.82	35.82	35.82	35.82	17.84	17.63	17.45	12.23	11.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total (lb/day)	1.63	1.67	1.56	1.56	1.56	1.56	0.78	0.77	0.76	0.53	0.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite Construction Equipment																			
	Total (lb/month)	509.44	509.44	509.44	509.44	509.44	509.44	509.44	509.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total (lb/day)	22.15	22.15	22.15	22.15	22.15	22.15	22.15	22.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Onsite Construction Vehicle																			
	Total (lb/month)	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total (lb/day) ^a	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Onsite Fugitive Dust																			
	Total (lb/month)	8.65	8.65	8.65	8.65	8.65	8.65	8.65	8.65	8.65	8.65	8.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total (lb/day)	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Onsite Construction Vehicle Idle Emissions																			
	Total (lb/month)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total (lb/day) ^a	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Onroad Construction Vehicle																			
	Total (lb/month)	27.31	33.54	34.62	33.18	30.14	29.26	21.28	19.68	8.03	4.69	2.77	2.45	2.45	1.97	0.35	0.35	0.28	0.28
	Total (lb/day) ^a	1.19	1.46	1.51	1.44	1.31	1.27	0.93	0.86	0.35	0.20	0.12	0.11	0.11	0.09	0.02	0.02	0.01	0.01
Total Project PM _{2.5} Emissions (Construction Equipment, Fugitive Dust, Onsite Construction Vehicle, Onsite Fugitive Dust, Onsite Construction Vehicle Idle Emissions, Onroad Construction Vehicle)																			
	Total Onsite Monthly Emissions (lb/month)	46.04	47.12	44.48	44.48	44.48	44.48	26.50	26.29	26.11	20.89	20.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total Onsite Monthly Emissions Without Fugitive Dust (lb/month)	37.39	38.46	35.83	35.83	35.83	35.83	17.85	17.64	17.46	12.24	11.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total Onsite Daily Emissions (lb/day)	2.00	2.05	1.93	1.93	1.93	1.93	1.15	1.14	1.14	0.91	0.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total Onsite Daily Emissions Without Fugitive Dust (lb/day)	1.63	1.67	1.56	1.56	1.56	1.56	0.78	0.77	0.76	0.53	0.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total Offsite Monthly Emissions (lb/month)	536.75	542.97	544.05	542.62	539.57	538.70	530.72	529.12	8.03	4.69	2.77	2.45	2.45	1.97	0.35	0.35	0.28	0.28
	Total Offsite Daily Emissions (lb/day)	23.34	23.61	23.65	23.59	23.46	23.42	23.07	23.01	0.35	0.20	0.12	0.11	0.11	0.09	0.02	0.02	0.01	0.01
	Total Monthly Emissions (lb/month)	582.78	590.09	588.53	587.09	584.05	583.18	557.21	555.41	34.13	25.57	23.24	2.45	2.45	1.97	0.35	0.35	0.28	0.28
	Total Daily Emissions (lb/day)	25.34	25.66	25.59	25.53	25.39	25.36	24.23	24.15	1.48	1.11	1.01	0.11	0.11	0.09	0.02	0.02	0.01	0.01
	Rolling 12 Month Total (Tons)	3.43	3.45	3.47	3.49	3.50	3.51	3.50	3.49	3.20	2.92	2.65	2.36	2.07	1.77	1.48	1.19	0.89	0.60
	Total Project Emissions (tons)																		
	Average Daily Emissions (lb/day) ^{b, c}																		

Black Rock Geothermal Project
BRGP Construction Emissions
Table 3. Construction Emissions Summary by Source Category
April 2023

CO ₂ Emissions																			
Emission Source		CO ₂ Emissions by Month																	
		2024												2025					
		January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Onsite Construction Equipment																			
	Total (metric tons/month)	0.00	0.00	0.00	229.75	307.50	351.01	392.83	161.65	183.30	187.94	342.90	342.90	391.45	391.45	617.11	408.99	391.45	391.45
	Total (metric tons/day)	0.00	0.00	0.00	9.99	13.37	15.26	17.08	7.03	7.97	8.17	14.91	14.91	17.02	17.02	26.83	17.78	17.02	17.02
Offsite Construction Equipment																			
	Total (metric tons/month)	0.00	0.00	0.00	0.00	0.00	1,019.33	1,019.33	1,019.33	1,019.33	1,019.33	1,029.29	1,029.29	1,029.29	1,029.29	1,044.05	1,044.05	1,019.33	1,019.33
	Total (metric tons/day)	0.00	0.00	0.00	0.00	0.00	44.32	44.32	44.32	44.32	44.32	44.75	44.75	44.75	44.75	45.39	45.39	44.32	44.32
Onsite Construction Vehicle																			
	Total (metric tons/month)	0.00	0.00	0.00	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
	Total (metric tons/day) ^a	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Onsite Construction Vehicle Idle Emissions																			
	Total (metric tons/month)	0.00	0.01	0.01	0.02	0.03	0.03	0.03	0.05	0.05	0.05	0.07	0.08	0.10	0.11	0.11	0.10	0.10	0.08
	Total (metric tons/day) ^a	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Onroad Construction Vehicle																			
	Total (metric tons/month)	0.15	0.23	0.51	2.43	3.82	8.05	15.57	16.40	20.19	20.74	27.68	29.81	39.23	43.70	42.47	43.20	43.23	47.08
	Total (metric tons/day) ^a	0.01	0.01	0.02	0.11	0.17	0.35	0.68	0.71	0.88	0.90	1.20	1.30	1.71	1.90	1.85	1.88	1.88	2.05
Total Project CO ₂ Emissions (Construction Equipment and Vehicles)																			
	Total Onsite Monthly Emissions (metric tons/month)	0.00	0.01	0.01	229.90	307.66	351.17	392.99	161.83	183.48	188.13	343.10	343.11	391.68	391.69	617.35	409.22	391.67	391.66
	Total Onsite Daily Emissions (metric tons/day)	0.00	0.00	0.00	10.00	13.38	15.27	17.09	7.04	7.98	8.18	14.92	14.92	17.03	17.03	26.84	17.79	17.03	17.03
	Total Offsite Monthly Emissions (metric tons/month)	0.15	0.23	0.51	2.43	3.82	1,027.39	1,034.90	1,035.74	1,039.53	1,040.08	1,056.97	1,059.10	1,068.51	1,072.98	1,086.52	1,087.25	1,062.57	1,066.41
	Total Offsite Daily Emissions (metric tons/day)	0.01	0.01	0.02	0.11	0.17	44.67	45.00	45.03	45.20	45.22	45.96	46.05	46.46	46.65	47.24	47.27	46.20	46.37
	Total Monthly Emissions (metric tons/month)	0.15	0.24	0.53	232.34	311.48	1,378.56	1,427.90	1,197.57	1,223.01	1,228.20	1,400.07	1,402.21	1,460.19	1,464.67	1,703.86	1,496.47	1,454.24	1,458.07
	Total Daily Emissions (metric tons/day)	0.01	0.01	0.02	10.10	13.54	59.94	62.08	52.07	53.17	53.40	60.87	60.97	63.49	63.68	74.08	65.06	63.23	63.39
	Rolling 12 Month Total (Metric Tons)												9,802.25	11,262.29	12,726.72	14,430.06	15,694.19	16,836.95	16,916.46
	Total Project Emissions (metric tons)	30,395.91																	
	Average Daily Emissions (metric tons/day) ^{b, c}	45.57																	

N ₂ O Emissions																			
Emission Source		N ₂ O Emissions by Month																	
		2024												2025					
		January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Onsite Construction Equipment																			
	Total (metric tons/month)	0.00E+00	0.00E+00	0.00E+00	1.86E-03	2.49E-03	2.85E-03	3.19E-03	1.31E-03	1.49E-03	1.52E-03	2.78E-03	2.78E-03	3.18E-03	3.18E-03	5.01E-03	3.32E-03	3.18E-03	3.18E-03
	Total (metric tons/day)	0.00E+00	0.00E+00	0.00E+00	8.10E-05	1.08E-04	1.24E-04	1.39E-04	5.70E-05	6.47E-05	6.63E-05	1.21E-04	1.21E-04	1.38E-04	1.38E-04	2.18E-04	1.44E-04	1.38E-04	1.38E-04
Offsite Construction Equipment																			
	Total (metric tons/month)	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	Total (metric tons/day)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Onsite Construction Vehicle																			
	Total (metric tons/month)	0.00E+00	0.00E+00	0.00E+00	2.45E-07	2.45E-07	2.45E-07	2.45E-07	2.45E-07	2.45E-07	2.45E-07	2.45E-07	2.45E-07	2.45E-07	2.45E-07	2.45E-07	2.45E-07	2.45E-07	2.45E-07
	Total (metric tons/day) ^a	0.00E+00	0.00E+00	0.00E+00	1.07E-08	1.07E-08	1.07E-08	1.07E-08	1.07E-08	1.07E-08	1.07E-08	1.07E-08	1.07E-08	1.07E-08	1.07E-08	1.07E-08	1.07E-08	1.07E-08	1.07E-08
Onsite Construction Vehicle Idle Emissions																			
	Total (metric tons/month)	6.73E-09	1.05E-08	2.32E-08	3.58E-08	6.10E-08	6.10E-08	6.73E-08	9.26E-08	1.09E-07	1.09E-07	1.39E-07	1.72E-07	2.14E-07	2.49E-07	2.46E-07	2.29E-07	2.09E-07	1.63E-07
	Total (metric tons/day) ^a	2.93E-10	4.58E-10	1.01E-09	1.56E-09	2.65E-09	2.65E-09	2.93E-09	4.03E-09	4.76E-09	4.76E-09	6.04E-09	7.48E-09	9.28E-09	1.08E-08	1.07E-08	9.95E-09	9.10E-09	7.10E-09
Onroad Construction Vehicle																			
	Total (metric tons/month)	2.34E-07	3.65E-07	8.03E-07	7.76E-06	1.19E-05	2.87E-05	5.83E-05	6.03E-05	7.44E-05	7.66E-05	1.03E-04	1.09E-04	1.44E-04	1.59E-04	1.54E-04	1.59E-04	1.60E-04	1.78E-04
	Total (metric tons/day) ^a	1.02E-08	1.59E-08	3.49E-08	3.37E-07	5.17E-07	1.25E-06	2.53E-06	2.62E-06	3.24E-06	3.33E-06	4.46E-06	4.74E-06	6.26E-06	6.91E-06	6.70E-06	6.89E-06	6.96E-06	7.76E-06
Total Project N ₂ O Emissions (Construction Equipment and Vehicles)																			
	Total Onsite Monthly Emissions (metric tons/month)	6.73E-09	1.05E-08	2.32E-08	1.86E-03	2.50E-03	2.85E-03	3.19E-03	1.31E-03	1.49E-03	1.53E-03	2.78E-03	2.78E-03	3.18E-03	3.18E-03	5.01E-03	3.32E-03	3.18E-03	3.18E-03
	Total Onsite Daily Emissions (metric tons/day)	2.93E-10	4.58E-10	1.01E-09	8.11E-05	1.08E-04	1.24E-04	1.39E-04	5.70E-05	6.47E-05	6.63E-05	1.21E-04	1.21E-04	1.38E-04	1.38E-04	2.18E-04	1.44E-04	1.38E-04	1.38E-04
	Total Offsite Monthly Emissions (metric tons/month)	2.34E-07	3.65E-07	8.03E-07	7.76E-06	1.19E-05	8.30E-03	8.33E-03	8.34E-03	8.35E-03	8.45E-03	8.46E-03	8.49E-03	8.51E-03	8.62E-03	8.63E-03	8.43E-03	8.45E-03	8.45E-03
	Total Offsite Daily Emissions (metric tons/day)	1.02E-08	1.59E-08	3.49E-08	3.37E-07	5.17E-07	3.61E-04	3.62E-04	3.62E-04	3.63E-04	3.63E-04	3.68E-04	3.68E-04	3.69E-04	3.70E-04	3.75E-04	3.75E-04	3.67E-04	3.67E-04
	Total Monthly Emissions (metric tons/month)	2.40E-07	3.76E-07	8.26E-07	1.87E-03	2.51E-03	1.11E-02	9.64E-03	9.83E-03	9.87E-03	1.12E-02	1.12E-02	1.17E-02	1.17E-02	1.17E-02	1.36E-02	1.19E-02	1.16E-02	1.16E-02
	Total Daily Emissions (metric tons/day)	1.05E-08	1.63E-08	3.59E-08	8.14E-05	1.09E-04	4.85E-04	5.01E-04	4.19E-04	4.27E-04	4.29E-04	4.88E-04	4.89E-04	5.07E-04	5.08E-04	5.93E-04	5.19E-04	5.05E-04	5.05E-04
	Rolling 12 Month Total (Metric Tons)												0.08	0.09	0.10	0.12	0.13	0.14	0.14
	Total Project Emissions (metric tons)	2.43E-01																	
	Average Daily Emissions (metric tons/day) ^{b, c}	3.64E-04																	

Black Rock Geothermal Project
BRGP Construction Emissions
Table 3. Construction Emissions Summary by Source Category
April 2023

CO ₂ Emissions																			
Emission Source		2026																	
		July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
Onsite Construction Equipment																			
	Total (metric tons/month)	417.27	443.10	414.58	414.58	414.58	414.58	98.38	92.97	88.32	80.20	69.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total (metric tons/day)	18.14	19.27	18.03	18.03	18.03	18.03	4.28	4.04	3.84	3.49	3.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite Construction Equipment																			
	Total (metric tons/month)	1,019.33	1,019.33	1,019.33	1,019.33	1,019.33	1,019.33	1,019.33	1,019.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total (metric tons/day)	44.32	44.32	44.32	44.32	44.32	44.32	44.32	44.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Onsite Construction Vehicle																			
	Total (metric tons/month)	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total (metric tons/day) ^a	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Onsite Construction Vehicle Idle Emissions																			
	Total (metric tons/month)	0.07	0.07	0.07	0.07	0.03	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.04	0.04	0.04	0.04	0.03	0.03
	Total (metric tons/day) ^a	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Onroad Construction Vehicle																			
	Total (metric tons/month)	48.89	59.55	61.27	58.81	52.50	50.76	37.10	34.37	14.42	8.20	4.93	4.38	5.42	4.60	1.76	1.76	1.38	1.38
	Total (metric tons/day) ^a	2.13	2.59	2.66	2.56	2.28	2.21	1.61	1.49	0.63	0.36	0.21	0.19	0.24	0.20	0.08	0.08	0.06	0.06
Total Project CO ₂ Emissions (Construction Equipment and Vehicles)																			
	Total Onsite Monthly Emissions (metric tons/month)	417.48	443.30	414.77	414.77	414.74	414.73	98.53	93.12	88.48	80.33	69.51	0.01	0.04	0.04	0.04	0.04	0.03	0.03
	Total Onsite Daily Emissions (metric tons/day)	18.15	19.27	18.03	18.03	18.03	18.03	4.28	4.05	3.85	3.49	3.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total Offsite Monthly Emissions (metric tons/month)	1,068.22	1,078.88	1,080.61	1,078.15	1,071.84	1,070.10	1,056.43	1,053.70	14.42	8.20	4.93	4.38	5.42	4.60	1.76	1.76	1.38	1.38
	Total Offsite Daily Emissions (metric tons/day)	46.44	46.91	46.98	46.88	46.60	46.53	45.93	45.81	0.63	0.36	0.21	0.19	0.24	0.20	0.08	0.08	0.06	0.06
	Total Monthly Emissions (metric tons/month)	1,485.70	1,522.18	1,495.38	1,492.92	1,486.57	1,484.82	1,154.96	1,146.82	102.89	88.54	74.44	4.39	5.46	4.64	1.80	1.80	1.42	1.42
	Total Daily Emissions (metric tons/day)	64.60	66.18	65.02	64.91	64.63	64.56	50.22	49.86	4.47	3.85	3.24	0.19	0.24	0.20	0.08	0.08	0.06	0.06
	Rolling 12 Month Total (Metric Tons)	16,974.27	17,298.88	17,571.25	17,835.97	17,922.47	18,005.09	17,699.86	17,382.01	15,781.04	14,373.11	12,993.30	11,539.62	10,059.38	8,541.85	7,048.26	5,557.14	4,071.98	2,588.57
	Total Project Emissions (metric tons)																		
	Average Daily Emissions (metric tons/day) ^{b, c}																		

N ₂ O Emissions																			
Emission Source		2026																	
		July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
Onsite Construction Equipment																			
	Total (metric tons/month)	3.39E-03	3.59E-03	3.36E-03	3.36E-03	3.36E-03	3.36E-03	7.98E-04	7.54E-04	7.17E-04	6.51E-04	5.63E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Total (metric tons/day)	1.47E-04	1.56E-04	1.46E-04	1.46E-04	1.46E-04	1.46E-04	3.47E-05	3.28E-05	3.12E-05	2.83E-05	2.45E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Offsite Construction Equipment																			
	Total (metric tons/month)	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total (metric tons/day)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Onsite Construction Vehicle																			
	Total (metric tons/month)	2.45E-07	2.45E-07	2.45E-07	2.45E-07	2.45E-07	2.45E-07	2.45E-07	2.45E-07	2.45E-07	2.45E-07	2.45E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Total (metric tons/day) ^a	1.07E-08	1.07E-08	1.07E-08	1.07E-08	1.07E-08	1.07E-08	1.07E-08	1.07E-08	1.07E-08	1.07E-08	1.07E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Onsite Construction Vehicle Idle Emissions																			
	Total (metric tons/month)	1.46E-07	1.46E-07	1.38E-07	1.38E-07	6.31E-08	4.63E-08	4.63E-08	4.63E-08	4.63E-08	1.26E-08	1.26E-08	1.26E-08	8.42E-08	8.42E-08	7.91E-08	7.91E-08	6.23E-08	6.23E-08
	Total (metric tons/day) ^a	6.37E-09	6.37E-09	6.00E-09	6.00E-09	2.75E-09	2.01E-09	2.01E-09	2.01E-09	2.01E-09	5.49E-10	5.49E-10	5.49E-10	3.66E-09	3.66E-09	3.44E-09	3.44E-09	2.71E-09	2.71E-09
Onroad Construction Vehicle																			
	Total (metric tons/month)	1.87E-04	2.29E-04	2.36E-04	2.26E-04	2.05E-04	1.99E-04	1.45E-04	1.34E-04	5.49E-05	3.20E-05	1.89E-05	1.67E-05	1.70E-05	1.38E-05	2.75E-06	2.75E-06	2.16E-06	2.16E-06
	Total (metric tons/day) ^a	8.11E-06	9.95E-06	1.03E-05	9.85E-06	8.93E-06	8.67E-06	6.31E-06	5.83E-06	2.39E-06	1.39E-06	8.22E-07	7.28E-07	7.41E-07	5.99E-07	1.19E-07	1.19E-07	9.40E-08	9.40E-08
Total Project N ₂ O Emissions (Construction Equipment and Vehicles)																			
	Total Onsite Monthly Emissions (metric tons/month)	3.39E-03	3.60E-03	3.36E-03	3.36E-03	3.36E-03	3.36E-03	7.98E-04	7.55E-04	7.17E-04	6.51E-04	5.63E-04	1.26E-08	8.42E-08	8.42E-08	7.91E-08	7.91E-08	6.23E-08	6.23E-08
	Total Onsite Daily Emissions (metric tons/day)	1.47E-04	1.56E-04	1.46E-04	1.46E-04	1.46E-04	1.46E-04	3.47E-05	3.28E-05	3.12E-05	2.83E-05	2.45E-05	5.49E-10	3.66E-09	3.66E-09	3.44E-09	3.44E-09	2.71E-09	2.71E-09
	Total Offsite Monthly Emissions (metric tons/month)	8.46E-03	8.50E-03	8.51E-03	8.50E-03	8.48E-03	8.47E-03	8.41E-03	8.40E-03	5.49E-05	3.20E-05	1.89E-05	1.67E-05	1.70E-05	1.38E-05	2.75E-06	2.75E-06	2.16E-06	2.16E-06
	Total Offsite Daily Emissions (metric tons/day)	3.68E-04	3.70E-04	3.70E-04	3.69E-04	3.68E-04	3.68E-04	3.66E-04	3.65E-04	2.39E-06	1.39E-06	8.22E-07	7.28E-07	7.41E-07	5.99E-07	1.19E-07	1.19E-07	9.40E-08	9.40E-08
	Total Monthly Emissions (metric tons/month)	1.18E-02	1.21E-02	1.19E-02	1.19E-02	1.18E-02	1.18E-02	9.21E-03	9.16E-03	7.72E-04	6.83E-04	5.82E-04	1.68E-05	1.71E-05	1.39E-05	2.82E-06	2.82E-06	2.22E-06	2.22E-06
	Total Daily Emissions (metric tons/day)	5.15E-04	5.26E-04	5.16E-04	5.16E-04	5.15E-04	5.14E-04	4.01E-04	3.98E-04	3.36E-05	2.97E-05	2.53E-05	7.28E-07	7.45E-07	6.03E-07	1.23E-07	1.23E-07	9.67E-08	9.67E-08
	Rolling 12 Month Total (Metric Tons)	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.13	0.11	0.10	0.09	0.08	0.07	0.06	0.04	0.03	0.02
	Total Project Emissions (metric tons)																		
	Average Daily Emissions (metric tons/day) ^{b, c}																		

Black Rock Geothermal Project
BRGP Construction Emissions
Table 3. Construction Emissions Summary by Source Category
April 2023

CH ₄ Emissions		CH ₄ Emissions by Month																	
Emission Source		2024												2025					
		January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Onsite Construction Equipment																			
	Total (metric tons/month)	0.00E+00	0.00E+00	0.00E+00	9.32E-03	1.25E-02	1.42E-02	1.59E-02	6.56E-03	7.44E-03	7.62E-03	1.39E-02	1.39E-02	1.59E-02	1.59E-02	2.50E-02	1.66E-02	1.59E-02	1.59E-02
	Total (metric tons/day)	0.00E+00	0.00E+00	0.00E+00	4.05E-04	5.42E-04	6.19E-04	6.93E-04	2.85E-04	3.23E-04	3.31E-04	6.05E-04	6.05E-04	6.90E-04	6.90E-04	1.09E-03	7.21E-04	6.90E-04	6.90E-04
Offsite Construction Equipment																			
	Total (metric tons/month)	0.00	0.00	0.00	0.00	0.00	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
	Total (metric tons/day)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Onsite Construction Vehicle																			
	Total (metric tons/month)	0.00E+00	0.00E+00	0.00E+00	5.52E-06	5.52E-06	5.52E-06	5.52E-06	5.52E-06	5.52E-06	5.52E-06	5.52E-06	5.52E-06	5.52E-06	5.52E-06	5.52E-06	5.52E-06	5.52E-06	5.52E-06
	Total (metric tons/day) ^a	0.00E+00	0.00E+00	0.00E+00	2.40E-07	2.40E-07	2.40E-07	2.40E-07	2.40E-07	2.40E-07	2.40E-07	2.40E-07	2.40E-07	2.40E-07	2.40E-07	2.40E-07	2.40E-07	2.40E-07	2.40E-07
Onsite Construction Vehicle Idle Emissions																			
	Total (metric tons/month)	4.88E-08	7.62E-08	1.68E-07	2.59E-07	4.42E-07	4.42E-07	4.88E-07	6.70E-07	7.92E-07	7.92E-07	1.01E-06	1.23E-06	1.52E-06	1.74E-06	1.72E-06	1.62E-06	1.49E-06	1.18E-06
	Total (metric tons/day) ^a	2.12E-09	3.31E-09	7.29E-09	1.13E-08	1.92E-08	1.92E-08	2.12E-08	2.92E-08	3.45E-08	3.45E-08	4.37E-08	5.36E-08	6.61E-08	7.55E-08	7.46E-08	7.03E-08	6.48E-08	5.14E-08
Onroad Construction Vehicle																			
	Total (metric tons/month)	7.67E-08	1.20E-07	2.64E-07	4.50E-05	6.76E-05	1.83E-04	3.84E-04	3.91E-04	4.84E-04	4.99E-04	6.70E-04	7.01E-04	9.24E-04	9.99E-04	9.69E-04	1.01E-03	1.04E-03	1.18E-03
	Total (metric tons/day) ^a	3.34E-09	5.21E-09	1.15E-08	1.96E-06	2.94E-06	7.95E-06	1.67E-05	1.70E-05	2.11E-05	2.17E-05	2.92E-05	3.05E-05	4.02E-05	4.34E-05	4.21E-05	4.41E-05	4.50E-05	5.15E-05
Total Project CH ₄ Emissions (Construction Equipment and Vehicles)																			
	Total Onsite Monthly Emissions (metric tons/month)	4.88E-08	7.62E-08	1.68E-07	9.33E-03	1.25E-02	1.42E-02	1.59E-02	6.56E-03	7.44E-03	7.63E-03	1.39E-02	1.39E-02	1.59E-02	1.59E-02	2.50E-02	1.66E-02	1.59E-02	1.59E-02
	Total Onsite Daily Emissions (metric tons/day)	2.12E-09	3.31E-09	7.29E-09	4.05E-04	5.43E-04	6.19E-04	6.93E-04	2.85E-04	3.24E-04	3.32E-04	6.05E-04	6.05E-04	6.91E-04	6.91E-04	1.09E-03	7.22E-04	6.91E-04	6.91E-04
	Total Offsite Monthly Emissions (metric tons/month)	7.67E-08	1.20E-07	2.64E-07	4.50E-05	6.76E-05	4.15E-02	4.17E-02	4.17E-02	4.18E-02	4.18E-02	4.24E-02	4.25E-02	4.27E-02	4.28E-02	4.33E-02	4.34E-02	4.24E-02	4.25E-02
	Total Offsite Daily Emissions (metric tons/day)	3.34E-09	5.21E-09	1.15E-08	1.96E-06	2.94E-06	1.81E-03	1.81E-03	1.81E-03	1.82E-03	1.82E-03	1.84E-03	1.85E-03	1.86E-03	1.86E-03	1.88E-03	1.89E-03	1.84E-03	1.85E-03
	Total Monthly Emissions (metric tons/month)	1.26E-07	1.96E-07	4.31E-07	9.37E-03	1.25E-02	5.58E-02	5.77E-02	4.83E-02	4.93E-02	4.95E-02	5.63E-02	5.64E-02	5.86E-02	5.86E-02	6.84E-02	6.00E-02	5.83E-02	5.84E-02
	Total Daily Emissions (metric tons/day)	5.46E-09	8.53E-09	1.88E-08	4.07E-04	5.46E-04	2.43E-03	2.51E-03	2.10E-03	2.14E-03	2.15E-03	2.45E-03	2.45E-03	2.55E-03	2.55E-03	2.97E-03	2.61E-03	2.53E-03	2.54E-03
	Rolling 12 Month Total (Metric Tons)												0.40	0.45	0.51	0.58	0.63	0.68	0.68
	Total Project Emissions (metric tons)	1.22E+00																	
	Average Daily Emissions (metric tons/day) ^{b, c}	1.83E-03																	

Notes:
^a Daily transportation emissions are presented as average daily emissions.
^b Per information provided by the Applicant's engineering contractor, work days per month are as follows: 23
^c Average daily emissions conservatively estimated based on the months in which heavy construction activity is expected, as follows: 29

Black Rock Geothermal Project
BRGP Construction Emissions
Table 3. Construction Emissions Summary by Source Category
April 2023

CH ₄ Emissions																			
Emission Source								2026											
		July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
Onsite Construction Equipment																			
	Total (metric tons/month)	1.69E-02	1.80E-02	1.68E-02	1.68E-02	1.68E-02	1.68E-02	3.99E-03	3.77E-03	3.58E-03	3.25E-03	2.81E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Total (metric tons/day)	7.36E-04	7.81E-04	7.31E-04	7.31E-04	7.31E-04	7.31E-04	1.74E-04	1.64E-04	1.56E-04	1.41E-04	1.22E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Offsite Construction Equipment																			
	Total (metric tons/month)	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total (metric tons/day)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Onsite Construction Vehicle																			
	Total (metric tons/month)	5.52E-06	5.52E-06	5.52E-06	5.52E-06	5.52E-06	5.52E-06	5.52E-06	5.52E-06	5.52E-06	5.52E-06	5.52E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Total (metric tons/day) ^a	2.40E-07	2.40E-07	2.40E-07	2.40E-07	2.40E-07	2.40E-07	2.40E-07	2.40E-07	2.40E-07	2.40E-07	2.40E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Onsite Construction Vehicle Idle Emissions																			
	Total (metric tons/month)	1.06E-06	1.06E-06	1.00E-06	1.00E-06	4.57E-07	3.35E-07	3.35E-07	3.35E-07	3.35E-07	9.14E-08	9.14E-08	9.14E-08	6.10E-07	6.10E-07	5.73E-07	5.73E-07	4.51E-07	4.51E-07
	Total (metric tons/day) ^a	4.61E-08	4.61E-08	4.35E-08	4.35E-08	1.99E-08	1.46E-08	1.46E-08	1.46E-08	1.46E-08	3.98E-09	3.98E-09	3.98E-09	2.65E-08	2.65E-08	2.49E-08	2.49E-08	1.96E-08	1.96E-08
Onroad Construction Vehicle																			
	Total (metric tons/month)	1.24E-03	1.53E-03	1.58E-03	1.52E-03	1.39E-03	1.35E-03	9.82E-04	9.07E-04	3.65E-04	2.16E-04	1.26E-04	1.12E-04	9.76E-05	7.53E-05	9.02E-07	9.02E-07	7.10E-07	7.10E-07
	Total (metric tons/day) ^a	5.40E-05	6.66E-05	6.89E-05	6.60E-05	6.05E-05	5.88E-05	4.27E-05	3.94E-05	1.59E-05	9.38E-06	5.50E-06	4.85E-06	4.24E-06	3.27E-06	3.92E-08	3.92E-08	3.09E-08	3.09E-08
Total Project CH ₄ Emissions (Construction Equipment and Vehicles)																			
	Total Onsite Monthly Emissions (metric tons/month)	1.69E-02	1.80E-02	1.68E-02	1.68E-02	1.68E-02	1.68E-02	4.00E-03	3.78E-03	3.59E-03	3.26E-03	2.82E-03	9.14E-08	6.10E-07	6.10E-07	5.73E-07	5.73E-07	4.51E-07	4.51E-07
	Total Onsite Daily Emissions (metric tons/day)	7.36E-04	7.82E-04	7.31E-04	7.31E-04	7.31E-04	7.31E-04	1.74E-04	1.64E-04	1.56E-04	1.42E-04	1.23E-04	3.98E-09	2.65E-08	2.65E-08	2.49E-08	2.49E-08	1.96E-08	1.96E-08
	Total Offsite Monthly Emissions (metric tons/month)	4.26E-02	4.29E-02	4.29E-02	4.29E-02	4.27E-02	4.27E-02	4.23E-02	4.23E-02	3.65E-04	2.16E-04	1.26E-04	1.12E-04	9.76E-05	7.53E-05	9.02E-07	9.02E-07	7.10E-07	7.10E-07
	Total Offsite Daily Emissions (metric tons/day)	1.85E-03	1.86E-03	1.87E-03	1.86E-03	1.86E-03	1.86E-03	1.84E-03	1.84E-03	1.59E-05	9.38E-06	5.50E-06	4.85E-06	4.24E-06	3.27E-06	3.92E-08	3.92E-08	3.09E-08	3.09E-08
	Total Monthly Emissions (metric tons/month)	5.95E-02	6.09E-02	5.98E-02	5.97E-02	5.96E-02	5.95E-02	4.63E-02	4.60E-02	3.95E-03	3.47E-03	2.95E-03	1.12E-04	9.82E-05	7.59E-05	1.47E-06	1.47E-06	1.16E-06	1.16E-06
	Total Daily Emissions (metric tons/day)	2.59E-03	2.65E-03	2.60E-03	2.60E-03	2.59E-03	2.59E-03	2.01E-03	2.00E-03	1.72E-04	1.51E-04	1.28E-04	4.86E-06	4.27E-06	3.30E-06	6.41E-08	6.41E-08	5.05E-08	5.05E-08
	Rolling 12 Month Total (Metric Tons)	0.68	0.69	0.70	0.71	0.72	0.72	0.71	0.70	0.63	0.58	0.52	0.46	0.40	0.34	0.28	0.22	0.16	0.10
	Total Project Emissions (metric tons)																		
	Average Daily Emissions (metric tons/day) ^{b, c}																		

Notes:
^a Daily transportation emissions are presented as average daily emissions.
^b Per information provided by the Applicant's engineering contractor, work c
^c Average daily emissions conservatively estimated based on the months i

Black Rock Geothermal Project
BRGP Construction Emissions
Table 4. Number of Equipment and Vehicles
April 2023

Number of Construction Equipment for BRGP Construction

Construction Equipment	Location of Equipment Operation	Number of Equipment																	
		2024												2025					
		January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Excavator	Onsite	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Backhoe	Onsite	0	0	0	2	2	2	2	0	0	0	0	0	0	0	0	0	0	0
10 Wheel Dump Truck	Onsite	0	0	0	2	4	4	4	0	0	0	0	0	0	0	0	0	0	0
Dozer	Onsite	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Front End Loader	Onsite	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0
150 Ton Hydraulic Crane	Onsite	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
75 Ton Hydraulic Crane	Onsite	0	0	0	0	0	0	0	0	0	0	3	3	3	3	3	3	3	3
35 Ton Hydraulic Crane	Onsite	0	0	0	0	0	3	3	3	3	3	6	6	6	6	6	6	6	6
Pile Driver	Onsite	0	0	0	3	4	4	4	0	0	0	0	0	0	0	0	0	0	0
Fork Lift	Onsite	0	0	0	0	0	0	0	1	1	1	1	1	3	3	3	3	3	3
Grader	Onsite	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Drill Rigs	Offsite ^b	0	0	0	0	0	1	1	1	1	1	2	2	2	2	1	1	1	1
Drilling Diesel Generator (Kenai)	Offsite ^b	0	0	0	0	0	3	3	3	3	3	3	3	3	3	3	3	3	3
Drilling Rental Generator	Offsite ^b	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1
Drilling Pump	Offsite ^b	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1
Drilling Forklift	Offsite ^b	0	0	0	0	0	5	5	5	5	5	5	5	5	5	5	5	5	5
Drilling Manlift	Offsite ^b	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1
Drilling Backhoe	Offsite ^b	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1
Drilling Light Tower	Offsite ^b	0	0	0	0	0	5	5	5	5	5	5	5	5	5	5	5	5	5
Pavers ^d	Onsite and Offsite ^c	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0
Paving Equipment ^d	Onsite and Offsite ^c	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0
Paving Rollers ^d	Onsite and Offsite ^c	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	0	0
Paving Tractor/Loader/Backhoe ^d	Onsite and Offsite ^c	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0
Electrical Generators	Onsite	0	0	0	0	0	0	3	3	3	3	3	3	6	6	6	6	6	6
Concrete Pump Trucks	Onsite	0	0	0	0	0	0	1	0	0	0	0	0	0	0	6	0	0	0
Diesel Welders	Onsite	0	0	0	0	0	0	0	0	4	4	4	4	10	10	10	10	10	10
Compactor	Onsite	0	0	0	0	0	0	3	3	3	3	3	3	3	3	3	3	3	3
Stake Truck	Onsite	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Water Truck (shared between 3 projects)	Onsite	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Air Compressor	Onsite	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1
Light Towers	Onsite	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Heavy Lift Lattice boom Main Crane	Onsite	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Heavy Lift Lattice boom Tail Crane	Onsite	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Heavy lift Gantry Crane	Onsite	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Notes:
^a Equipment counts presented above were provided by the Applicant’s engineering contractor.
^b Drilling equipment will not be stationed at a single area longer than 2 months.
^c Paving operations will occur both onsite and offsite. The same equipment will be used at all paving locations
^d Paving equipment types, counts, and duration are from default data in CalEEMOD for paving.

Number of Vehicles for BRGP Construction

Vehicle Type	Location of Vehicle Operation	Average Number of Vehicles																	
		2024												2025					
		January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Delivery Truck	Offsite	0.4	0.625	1.375	2.125	3.625	3.625	4	5.5	6.5	6.5	8.25	9.25	10.75	9.75	9.75	10.5	10.5	9.7
Pickup Truck	Onsite	0	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Heavy Haul Truck	Offsite	0	0	0	0	0	0	0	0	0	0	0	0.5	1	2.6	2.5	1.6	1	0
Worker Commutes ^b	Offsite	0	0	0	12	18	49	103	105	130	134	180	188	248	268	260	272	278	318

Notes:
^a Vehicle counts presented above were provided by the Applicant’s engineering contractor.
^b Assumed 1 commute per 1 worker; number of workers traveling to both onsite and offsite locations provided by the Applicant’s engineering contractor as Total Staffing each

Black Rock Geothermal Project
BRGP Construction Emissions
Table 4. Number of Equipment and Vehicles
April 2023

Number of Construction Equipment for BRGP

Construction Equipment	Number per Day ^a																	
	2025						2026											
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
Excavator	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Backhoe	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10 Wheel Dump Truck	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dozer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Front End Loader	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
150 Ton Hydraulic Crane	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
75 Ton Hydraulic Crane	3	3	3	3	3	3	0	0	0	0	0	0	0	0	0	0	0	0
35 Ton Hydraulic Crane	6	6	6	6	6	6	0	0	0	0	0	0	0	0	0	0	0	0
Pile Driver	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fork Lift	3	3	3	3	3	3	0	0	0	0	0	0	0	0	0	0	0	0
Grader	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Drill Rigs	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0
Drilling Diesel Generator (Kenai)	3	3	3	3	3	3	3	3	0	0	0	0	0	0	0	0	0	0
Drilling Rental Generator	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0
Drilling Pump	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0
Drilling Forklift	5	5	5	5	5	5	5	5	0	0	0	0	0	0	0	0	0	0
Drilling Manlift	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0
Drilling Backhoe	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0
Drilling Light Tower	5	5	5	5	5	5	5	5	0	0	0	0	0	0	0	0	0	0
Pavers ^d	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment ^d	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Paving Rollers ^d	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Paving Tractor/Loader/Backhoe ^d	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Electrical Generators	6	6	6	6	6	6	3	3	3	0	0	0	0	0	0	0	0	0
Concrete Pump Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Diesel Welders	10	10	10	10	10	10	3	2	2	2	0	0	0	0	0	0	0	0
Compactor	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Stake Truck	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0
Water Truck (shared between 3 projects)	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0
Air Compressor	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0
Light Towers	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Heavy Lift Lattice boom Main Crane	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Heavy Lift Lattice boom Tail Crane	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Heavy lift Gantry Crane	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Notes:
^a Equipment counts presented above were provided by the Applicant's engineering contractor.
^b Drilling equipment will not be stationed at a single location.
^c Paving operations will occur both onsite and offsite.
^d Paving equipment types, counts, and duration are provided by the Applicant's engineering contractor.

Number of Vehicles for BRGP Construction

Vehicle Type	Number per Day ^a																	
	2025						2026											
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
Delivery Truck	8.7	8.7	8.2	8.2	3.75	2.75	2.75	2.75	2.75	0.75	0.75	0.75	5	5	4.7	4.7	3.7	3.7
Pickup Truck	2	2	2	2	2	2	2	2	2	2	2	0	0	0	0	0	0	0
Heavy Haul Truck	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Worker Commutes ^b	334	412	426	408	374	364	264	244	98	58	34	30	26	20	0	0	0	0

Notes:
^a Vehicle counts presented above were provided by the Applicant's engineering contractor.
^b Assumed 1 commute per 1 worker; number of workers traveling to both onsite and offsite locations provided by the Applicant's engineering contractor as Total Staffing each

Black Rock Geothermal Project

BRGP Construction Emissions

Table 5. Construction Equipment Emissions

April 2023

Construction Equipment CO Emissions from BRGP Construction

Onsite Equipment	Equipment Location	CO Emissions (lb/month) ^{a, b}																	
		2024												2025					
		January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Excavator	Onsite	0.00	0.00	0.00	0.00	0.00	56.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Backhoe	Onsite	0.00	0.00	0.00	233.24	233.24	233.24	233.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10 Wheel Dump Truck	Onsite	0.00	0.00	0.00	346.25	692.50	692.50	692.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dozer	Onsite	0.00	0.00	0.00	387.07	387.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Front End Loader	Onsite	0.00	0.00	0.00	0.00	0.00	202.62	202.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
150 Ton Hydraulic Crane	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
75 Ton Hydraulic Crane	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	841.87	841.87	841.87	841.87	841.87	841.87	841.87	841.87
35 Ton Hydraulic Crane	Onsite	0.00	0.00	0.00	0.00	0.00	841.87	841.87	841.87	841.87	841.87	1,683.73	1,683.73	1,683.73	1,683.73	1,683.73	1,683.73	1,683.73	1,683.73
Pile Driver	Onsite	0.00	0.00	0.00	387.68	516.90	516.90	516.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fork Lift	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	61.54	61.54	61.54	61.54	61.54	184.61	184.61	184.61	184.61	184.61	184.61
Grader	Onsite	0.00	0.00	0.00	227.68	227.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drill Rigs	Offsite	0.00	0.00	0.00	0.00	0.00	155.72	155.72	155.72	155.72	155.72	311.43	311.43	311.43	311.43	155.72	155.72	155.72	155.72
Drilling Diesel Generator (Kenai)	Offsite	0.00	0.00	0.00	0.00	0.00	8,707.77	8,707.77	8,707.77	8,707.77	8,707.77	8,707.77	8,707.77	8,707.77	8,707.77	8,707.77	8,707.77	8,707.77	8,707.77
Drilling Rental Generator	Offsite	0.00	0.00	0.00	0.00	0.00	615.10	615.10	615.10	615.10	615.10	615.10	615.10	615.10	615.10	615.10	615.10	615.10	615.10
Drilling Pump	Offsite	0.00	0.00	0.00	0.00	0.00	207.07	207.07	207.07	207.07	207.07	207.07	207.07	207.07	207.07	207.07	207.07	207.07	207.07
Drilling Forklift	Offsite	0.00	0.00	0.00	0.00	0.00	720.42	720.42	720.42	720.42	720.42	720.42	720.42	720.42	720.42	720.42	720.42	720.42	720.42
Drilling Manlift	Offsite	0.00	0.00	0.00	0.00	0.00	59.29	59.29	59.29	59.29	59.29	59.29	59.29	59.29	59.29	59.29	59.29	59.29	59.29
Drilling Backhoe	Offsite	0.00	0.00	0.00	0.00	0.00	116.62	116.62	116.62	116.62	116.62	116.62	116.62	116.62	116.62	116.62	116.62	116.62	116.62
Drilling Light Tower	Offsite	0.00	0.00	0.00	0.00	0.00	247.39	247.39	247.39	247.39	247.39	247.39	247.39	247.39	247.39	247.39	247.39	247.39	247.39
Pavers	Onsite and Offsite ^c	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	127.65	127.65	0.00	0.00
Paving Equipment	Onsite and Offsite ^c	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	120.22	120.22	0.00	0.00
Paving Rollers	Onsite and Offsite ^c	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	170.64	170.64	0.00	0.00
Paving Tractor/Loader/Backhoe	Onsite and Offsite ^c	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	233.24	233.24	0.00	0.00
Electrical Generators	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	90.79	90.79	90.79	90.79	90.79	90.79	181.59	181.59	181.59	181.59	181.59	181.59
Concrete Pump Trucks	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	173.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1,038.75	0.00	0.00	0.00
Diesel Welders	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	344.27	344.27	344.27	344.27	860.67	860.67	860.67	860.67	860.67	860.67
Compactor	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	36.32	36.32	36.32	36.32	36.32	36.32	36.32	36.32	36.32	36.32	36.32	36.32
Stake Truck	Onsite	0.00	0.00	0.00	173.12	173.12	173.12	173.12	173.12	173.12	173.12	173.12	173.12	173.12	173.12	173.12	173.12	173.12	173.12
Water Truck (shared between 3 projects)	Onsite	0.00	0.00	0.00	173.12	173.12	173.12	173.12	173.12	173.12	173.12	173.12	173.12	173.12	173.12	173.12	173.12	173.12	173.12
Air Compressor	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	73.84	73.84	73.84	73.84	73.84	73.84	73.84	73.84	73.84
Light Towers	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heavy Lift Lattice boom Main Crane	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heavy Lift Lattice boom Tail Crane	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heavy lift Gantry Crane	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Monthly Onsite Emissions (lb/month)		0.00	0.00	0.00	1,928.16	2,403.64	2,890.25	3,133.61	1,376.77	1,721.04	1,794.88	3,478.61	3,478.61	4,208.88	4,208.88	5,518.17	4,479.42	4,208.88	4,208.88
Total Monthly Offsite Emissions (lb/month)		0.00	0.00	0.00	0.00	0.00	10,829.38	10,829.38	10,829.38	10,829.38	10,829.38	10,985.10	10,985.10	10,985.10	10,985.10	11,210.59	11,210.59	10,829.38	10,829.38
Total Daily Onsite Emissions (lb/day) ^b		0.00	0.00	0.00	83.83	104.51	125.66	136.24	59.86	74.83	78.04	151.24	151.24	182.99	182.99	239.92	194.76	182.99	182.99
Total Daily Offsite Emissions (lb/day) ^b		0.00	0.00	0.00	0.00	0.00	470.84	470.84	470.84	470.84	470.84	477.61	477.61	477.61	477.61	487.42	487.42	470.84	470.84
Total Project Emissions (tons)		153.92																	

Black Rock Geothermal Project

BRGP Construction Emissions

Table 5. Construction Equipment Emissions

April 2023

Construction Equipment CO Emissions from BRGP Construction

Onsite Equipment	Equipment Location	2026																	
		July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
Excavator	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Backhoe	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10 Wheel Dump Truck	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dozer	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Front End Loader	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
150 Ton Hydraulic Crane	Onsite	0.00	280.62	280.62	280.62	280.62	280.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
75 Ton Hydraulic Crane	Onsite	841.87	841.87	841.87	841.87	841.87	841.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
35 Ton Hydraulic Crane	Onsite	1,683.73	1,683.73	1,683.73	1,683.73	1,683.73	1,683.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pile Driver	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fork Lift	Onsite	184.61	184.61	184.61	184.61	184.61	184.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grader	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drill Rigs	Offsite	155.72	155.72	155.72	155.72	155.72	155.72	155.72	155.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drilling Diesel Generator (Kenai)	Offsite	8,707.77	8,707.77	8,707.77	8,707.77	8,707.77	8,707.77	8,707.77	8,707.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drilling Rental Generator	Offsite	615.10	615.10	615.10	615.10	615.10	615.10	615.10	615.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drilling Pump	Offsite	207.07	207.07	207.07	207.07	207.07	207.07	207.07	207.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drilling Forklift	Offsite	720.42	720.42	720.42	720.42	720.42	720.42	720.42	720.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drilling Manlift	Offsite	59.29	59.29	59.29	59.29	59.29	59.29	59.29	59.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drilling Backhoe	Offsite	116.62	116.62	116.62	116.62	116.62	116.62	116.62	116.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drilling Light Tower	Offsite	247.39	247.39	247.39	247.39	247.39	247.39	247.39	247.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pavers	Onsite and Offsite ^c	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Equipment	Onsite and Offsite ^c	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Rollers	Onsite and Offsite ^c	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Tractor/Loader/Backhoe	Onsite and Offsite ^c	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electrical Generators	Onsite	181.59	181.59	181.59	181.59	181.59	181.59	90.79	90.79	90.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Concrete Pump Trucks	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Diesel Welders	Onsite	860.67	860.67	860.67	860.67	860.67	860.67	258.20	172.13	172.13	172.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Compactor	Onsite	36.32	36.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stake Truck	Onsite	173.12	173.12	173.12	173.12	173.12	173.12	173.12	173.12	173.12	173.12	173.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water Truck (shared between 3 projects)	Onsite	173.12	173.12	173.12	173.12	173.12	173.12	173.12	173.12	173.12	173.12	173.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Air Compressor	Onsite	73.84	73.84	73.84	73.84	73.84	73.84	73.84	73.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Light Towers	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heavy Lift Lattice boom Main Crane	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heavy Lift Lattice boom Tail Crane	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heavy lift Gantry Crane	Onsite	280.62	280.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Monthly Onsite Emissions (lb/month)		4,489.51	4,770.13	4,453.19	4,453.19	4,453.19	4,453.19	769.09	683.02	609.18	518.38	346.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Monthly Offsite Emissions (lb/month)		10,829.38	10,829.38	10,829.38	10,829.38	10,829.38	10,829.38	10,829.38	10,829.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Daily Onsite Emissions (lb/day) ^b		195.20	207.40	193.62	193.62	193.62	193.62	33.44	29.70	26.49	22.54	15.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Daily Offsite Emissions (lb/day) ^b		470.84	470.84	470.84	470.84	470.84	470.84	470.84	470.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Project Emissions (tons)																			

Black Rock Geothermal Project
BRGP Construction Emissions
Table 5. Construction Equipment Emissions
April 2023

Construction Equipment VOC Emissions from BRGP Construction																			
Onsite Equipment	Equipment Location	VOC Emissions (lb/month) ^{a, b}																	
		2024												2025					
		January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Excavator	Onsite	0.00	0.00	0.00	0.00	0.00	1.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Backhoe	Onsite	0.00	0.00	0.00	3.15	3.15	3.15	3.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10 Wheel Dump Truck	Onsite	0.00	0.00	0.00	53.15	106.31	106.31	106.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dozer	Onsite	0.00	0.00	0.00	7.44	7.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Front End Loader	Onsite	0.00	0.00	0.00	0.00	0.00	2.74	2.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
150 Ton Hydraulic Crane	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
75 Ton Hydraulic Crane	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.19	16.19	16.19	16.19	16.19	16.19	16.19	16.19
35 Ton Hydraulic Crane	Onsite	0.00	0.00	0.00	0.00	0.00	16.19	16.19	16.19	16.19	16.19	32.38	32.38	32.38	32.38	32.38	32.38	32.38	32.38
Pile Driver	Onsite	0.00	0.00	0.00	5.24	6.99	6.99	6.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fork Lift	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.83	0.83	0.83	0.83	0.83	2.49	2.49	2.49	2.49	2.49	2.49
Grader	Onsite	0.00	0.00	0.00	3.08	3.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drill Rigs	Offsite	0.00	0.00	0.00	0.00	0.00	2.10	2.10	2.10	2.10	2.10	4.21	4.21	4.21	4.21	2.10	2.10	2.10	2.10
Drilling Diesel Generator (Kenai)	Offsite	0.00	0.00	0.00	0.00	0.00	1,273.44	1,273.44	1,273.44	1,273.44	1,273.44	1,273.44	1,273.44	1,273.44	1,273.44	1,273.44	1,273.44	1,273.44	1,273.44
Drilling Rental Generator	Offsite	0.00	0.00	0.00	0.00	0.00	70.12	70.12	70.12	70.12	70.12	70.12	70.12	70.12	70.12	70.12	70.12	70.12	70.12
Drilling Pump	Offsite	0.00	0.00	0.00	0.00	0.00	15.56	15.56	15.56	15.56	15.56	15.56	15.56	15.56	15.56	15.56	15.56	15.56	15.56
Drilling Forklift	Offsite	0.00	0.00	0.00	0.00	0.00	9.74	9.74	9.74	9.74	9.74	9.74	9.74	9.74	9.74	9.74	9.74	9.74	9.74
Drilling Manlift	Offsite	0.00	0.00	0.00	0.00	0.00	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30
Drilling Backhoe	Offsite	0.00	0.00	0.00	0.00	0.00	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58
Drilling Light Tower	Offsite	0.00	0.00	0.00	0.00	0.00	5.43	5.43	5.43	5.43	5.43	5.43	5.43	5.43	5.43	5.43	5.43	5.43	5.43
Pavers	Onsite and Offsite ^c	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.73	1.73	0.00	0.00
Paving Equipment	Onsite and Offsite ^c	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.62	1.62	0.00	0.00
Paving Rollers	Onsite and Offsite ^c	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.75	3.75	0.00	0.00
Paving Tractor/Loader/Backhoe	Onsite and Offsite ^c	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.15	3.15	0.00	0.00
Electrical Generators	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	17.20	17.20	17.20	17.20	17.20	17.20	34.40	34.40	34.40	34.40	34.40	34.40
Concrete Pump Trucks	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	26.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	159.46	0.00	0.00	0.00
Diesel Welders	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.56	7.56	7.56	7.56	18.89	18.89	18.89	18.89	18.89	18.89
Compactor	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	5.72	5.72	5.72	5.72	5.72	5.72	5.72	5.72	5.72	5.72	5.72	5.72
Stake Truck	Onsite	0.00	0.00	0.00	26.58	26.58	26.58	26.58	26.58	26.58	26.58	26.58	26.58	26.58	26.58	26.58	26.58	26.58	26.58
Water Truck (shared between 3 projects)	Onsite	0.00	0.00	0.00	26.58	26.58	26.58	26.58	26.58	26.58	26.58	26.58	26.58	26.58	26.58	26.58	26.58	26.58	26.58
Air Compressor	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.62	1.62	1.62	1.62	1.62	1.62	1.62	1.62	1.62
Light Towers	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heavy Lift Lattice boom Main Crane	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heavy Lift Lattice boom Tail Crane	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heavy lift Gantry Crane	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Monthly Onsite Emissions (lb/month)		0.00	0.00	0.00	125.22	180.12	189.78	238.03	93.10	100.65	102.27	134.65	134.65	164.85	164.85	328.57	169.11	164.85	164.85
Total Monthly Offsite Emissions (lb/month)		0.00	0.00	0.00	0.00	0.00	1,379.26	1,379.26	1,379.26	1,379.26	1,379.26	1,381.37	1,381.37	1,381.37	1,381.37	1,385.26	1,385.26	1,379.26	1,379.26
Total Daily Onsite Emissions (lb/day) ^b		0.00	0.00	0.00	5.44	7.83	8.25	10.35	4.05	4.38	4.45	5.85	5.85	7.17	7.17	14.29	7.35	7.17	7.17
Total Daily Offsite Emissions (lb/day) ^b		0.00	0.00	0.00	0.00	0.00	59.97	59.97	59.97	59.97	59.97	60.06	60.06	60.06	60.06	60.23	60.23	59.97	59.97
Total Project Emissions (tons)		16.39																	

Black Rock Geothermal Project
BRGP Construction Emissions
Table 5. Construction Equipment Emissions
April 2023

Construction Equipment VOC Emissions from BRGP Construction																			
Onsite Equipment	Equipment Location	2026																	
		July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
Excavator	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Backhoe	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10 Wheel Dump Truck	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dozer	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Front End Loader	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
150 Ton Hydraulic Crane	Onsite	0.00	5.40	5.40	5.40	5.40	5.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
75 Ton Hydraulic Crane	Onsite	16.19	16.19	16.19	16.19	16.19	16.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
35 Ton Hydraulic Crane	Onsite	32.38	32.38	32.38	32.38	32.38	32.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pile Driver	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fork Lift	Onsite	2.49	2.49	2.49	2.49	2.49	2.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grader	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drill Rigs	Offsite	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drilling Diesel Generator (Kenai)	Offsite	1,273.44	1,273.44	1,273.44	1,273.44	1,273.44	1,273.44	1,273.44	1,273.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drilling Rental Generator	Offsite	70.12	70.12	70.12	70.12	70.12	70.12	70.12	70.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drilling Pump	Offsite	15.56	15.56	15.56	15.56	15.56	15.56	15.56	15.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drilling Forklift	Offsite	9.74	9.74	9.74	9.74	9.74	9.74	9.74	9.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drilling Manlift	Offsite	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drilling Backhoe	Offsite	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drilling Light Tower	Offsite	5.43	5.43	5.43	5.43	5.43	5.43	5.43	5.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pavers	Onsite and Offsite ^c	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Equipment	Onsite and Offsite ^c	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Rollers	Onsite and Offsite ^c	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Tractor/Loader/Backhoe	Onsite and Offsite ^c	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electrical Generators	Onsite	34.40	34.40	34.40	34.40	34.40	34.40	17.20	17.20	17.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Concrete Pump Trucks	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Diesel Welders	Onsite	18.89	18.89	18.89	18.89	18.89	18.89	5.67	3.78	3.78	3.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Compactor	Onsite	5.72	5.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stake Truck	Onsite	26.58	26.58	26.58	26.58	26.58	26.58	26.58	26.58	26.58	26.58	26.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water Truck (shared between 3 projects)	Onsite	26.58	26.58	26.58	26.58	26.58	26.58	26.58	26.58	26.58	26.58	26.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Air Compressor	Onsite	1.62	1.62	1.62	1.62	1.62	1.62	1.62	1.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Light Towers	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heavy Lift Lattice boom Main Crane	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heavy Lift Lattice boom Tail Crane	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heavy lift Gantry Crane	Onsite	5.40	5.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Monthly Onsite Emissions (lb/month)		170.25	175.64	164.53	164.53	164.53	164.53	77.64	75.75	74.13	56.93	53.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Monthly Offsite Emissions (lb/month)		1,379.26	1,379.26	1,379.26	1,379.26	1,379.26	1,379.26	1,379.26	1,379.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Daily Onsite Emissions (lb/day) ^b		7.40	7.64	7.15	7.15	7.15	7.15	3.38	3.29	3.22	2.48	2.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Daily Offsite Emissions (lb/day) ^b		59.97	59.97	59.97	59.97	59.97	59.97	59.97	59.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Project Emissions (tons)																			

Black Rock Geothermal Project
BRGP Construction Emissions
Table 5. Construction Equipment Emissions
April 2023

Construction Equipment NO _x Emissions from BRGP Construction																			
Onsite Equipment	Equipment Location	NO _x Emissions (lb/month) ^{a, b}																	
		2024												2025					
		January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Excavator	Onsite	0.00	0.00	0.00	0.00	0.00	38.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Backhoe	Onsite	0.00	0.00	0.00	16.39	16.39	16.39	16.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10 Wheel Dump Truck	Onsite	0.00	0.00	0.00	358.11	716.22	716.22	716.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dozer	Onsite	0.00	0.00	0.00	38.71	38.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Front End Loader	Onsite	0.00	0.00	0.00	0.00	0.00	14.24	14.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
150 Ton Hydraulic Crane	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
75 Ton Hydraulic Crane	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	84.19	84.19	84.19	84.19	84.19	84.19	84.19	84.19
35 Ton Hydraulic Crane	Onsite	0.00	0.00	0.00	0.00	0.00	84.19	84.19	84.19	84.19	84.19	168.37	168.37	168.37	168.37	168.37	168.37	168.37	168.37
Pile Driver	Onsite	0.00	0.00	0.00	27.24	36.32	36.32	36.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fork Lift	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.32	4.32	4.32	4.32	4.32	12.97	12.97	12.97	12.97	12.97	12.97
Grader	Onsite	0.00	0.00	0.00	16.00	16.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drill Rigs	Offsite	0.00	0.00	0.00	0.00	0.00	10.94	10.94	10.94	10.94	10.94	21.88	21.88	21.88	21.88	10.94	10.94	10.94	10.94
Drilling Diesel Generator (Kenai)	Offsite	0.00	0.00	0.00	0.00	0.00	1,666.60	1,666.60	1,666.60	1,666.60	1,666.60	1,666.60	1,666.60	1,666.60	1,666.60	1,666.60	1,666.60	1,666.60	1,666.60
Drilling Rental Generator	Offsite	0.00	0.00	0.00	0.00	0.00	70.12	70.12	70.12	70.12	70.12	70.12	70.12	70.12	70.12	70.12	70.12	70.12	70.12
Drilling Pump	Offsite	0.00	0.00	0.00	0.00	0.00	179.05	179.05	179.05	179.05	179.05	179.05	179.05	179.05	179.05	179.05	179.05	179.05	179.05
Drilling Forklift	Offsite	0.00	0.00	0.00	0.00	0.00	50.62	50.62	50.62	50.62	50.62	50.62	50.62	50.62	50.62	50.62	50.62	50.62	50.62
Drilling Manlift	Offsite	0.00	0.00	0.00	0.00	0.00	39.77	39.77	39.77	39.77	39.77	39.77	39.77	39.77	39.77	39.77	39.77	39.77	39.77
Drilling Backhoe	Offsite	0.00	0.00	0.00	0.00	0.00	8.19	8.19	8.19	8.19	8.19	8.19	8.19	8.19	8.19	8.19	8.19	8.19	8.19
Drilling Light Tower	Offsite	0.00	0.00	0.00	0.00	0.00	165.93	165.93	165.93	165.93	165.93	165.93	165.93	165.93	165.93	165.93	165.93	165.93	165.93
Pavers	Onsite and Offsite ^c	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.97	8.97	0.00	0.00
Paving Equipment	Onsite and Offsite ^c	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.45	8.45	0.00	0.00
Paving Rollers	Onsite and Offsite ^c	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	114.45	114.45	0.00	0.00
Paving Tractor/Loader/Backhoe	Onsite and Offsite ^c	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.39	16.39	0.00	0.00
Electrical Generators	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	137.83	137.83	137.83	137.83	137.83	137.83	275.66	275.66	275.66	275.66	275.66	275.66
Concrete Pump Trucks	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	179.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1,074.33	0.00	0.00	0.00
Diesel Welders	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	230.91	230.91	230.91	230.91	230.91	577.28	577.28	577.28	577.28	577.28	577.28
Compactor	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	43.36	43.36	43.36	43.36	43.36	43.36	43.36	43.36	43.36	43.36	43.36	43.36
Stake Truck	Onsite	0.00	0.00	0.00	179.05	179.05	179.05	179.05	179.05	179.05	179.05	179.05	179.05	179.05	179.05	179.05	179.05	179.05	179.05
Water Truck (shared between 3 projects)	Onsite	0.00	0.00	0.00	179.05	179.05	179.05	179.05	179.05	179.05	179.05	179.05	179.05	179.05	179.05	179.05	179.05	179.05	179.05
Air Compressor	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.53	49.53	49.53	49.53	49.53	49.53	49.53	49.53	49.53
Light Towers	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heavy Lift Lattice boom Main Crane	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heavy Lift Lattice boom Tail Crane	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heavy lift Gantry Crane	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Monthly Onsite Emissions (lb/month)		0.00	0.00	0.00	814.56	1,181.75	1,263.62	1,585.71	627.81	858.72	908.25	1,076.62	1,076.62	1,569.47	1,569.47	2,705.34	1,631.01	1,569.47	1,569.47
Total Monthly Offsite Emissions (lb/month)		0.00	0.00	0.00	0.00	0.00	2,191.23	2,191.23	2,191.23	2,191.23	2,191.23	2,202.18	2,202.18	2,202.18	2,202.18	2,277.95	2,277.95	2,191.23	2,191.23
Total Daily Onsite Emissions (lb/day) ^b		0.00	0.00	0.00	35.42	51.38	54.94	68.94	27.30	37.34	39.49	46.81	46.81	68.24	68.24	117.62	70.91	68.24	68.24
Total Daily Offsite Emissions (lb/day) ^b		0.00	0.00	0.00	0.00	0.00	95.27	95.27	95.27	95.27	95.27	95.75	95.75	95.75	95.75	99.04	99.04	95.27	95.27
Total Project Emissions (tons)		39.25																	

Black Rock Geothermal Project

BRGP Construction Emissions

Table 5. Construction Equipment Emissions

April 2023

Construction Equipment NO_x Emissions from BRGP Construction

Onsite Equipment	Equipment Location																		
								2026											
		July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
Excavator	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Backhoe	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10 Wheel Dump Truck	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dozer	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Front End Loader	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
150 Ton Hydraulic Crane	Onsite	0.00	28.06	28.06	28.06	28.06	28.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
75 Ton Hydraulic Crane	Onsite	84.19	84.19	84.19	84.19	84.19	84.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
35 Ton Hydraulic Crane	Onsite	168.37	168.37	168.37	168.37	168.37	168.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pile Driver	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fork Lift	Onsite	12.97	12.97	12.97	12.97	12.97	12.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grader	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drill Rigs	Offsite	10.94	10.94	10.94	10.94	10.94	10.94	10.94	10.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drilling Diesel Generator (Kenai)	Offsite	1,666.60	1,666.60	1,666.60	1,666.60	1,666.60	1,666.60	1,666.60	1,666.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drilling Rental Generator	Offsite	70.12	70.12	70.12	70.12	70.12	70.12	70.12	70.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drilling Pump	Offsite	179.05	179.05	179.05	179.05	179.05	179.05	179.05	179.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drilling Forklift	Offsite	50.62	50.62	50.62	50.62	50.62	50.62	50.62	50.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drilling Manlift	Offsite	39.77	39.77	39.77	39.77	39.77	39.77	39.77	39.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drilling Backhoe	Offsite	8.19	8.19	8.19	8.19	8.19	8.19	8.19	8.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drilling Light Tower	Offsite	165.93	165.93	165.93	165.93	165.93	165.93	165.93	165.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pavers	Onsite and Offsite ^c	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Equipment	Onsite and Offsite ^c	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Rollers	Onsite and Offsite ^c	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Tractor/Loader/Backhoe	Onsite and Offsite ^c	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electrical Generators	Onsite	275.66	275.66	275.66	275.66	275.66	275.66	137.83	137.83	137.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Concrete Pump Trucks	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Diesel Welders	Onsite	577.28	577.28	577.28	577.28	577.28	577.28	173.18	115.46	115.46	115.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Compactor	Onsite	43.36	43.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stake Truck	Onsite	179.05	179.05	179.05	179.05	179.05	179.05	179.05	179.05	179.05	179.05	179.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water Truck (shared between 3 projects)	Onsite	179.05	179.05	179.05	179.05	179.05	179.05	179.05	179.05	179.05	179.05	179.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Air Compressor	Onsite	49.53	49.53	49.53	49.53	49.53	49.53	49.53	49.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Light Towers	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heavy Lift Lattice boom Main Crane	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heavy Lift Lattice boom Tail Crane	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heavy lift Gantry Crane	Onsite	28.06	28.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Monthly Onsite Emissions (lb/month)		1,597.53	1,625.59	1,554.17	1,554.17	1,554.17	1,554.17	718.65	660.92	611.39	473.57	358.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Monthly Offsite Emissions (lb/month)		2,191.23	2,191.23	2,191.23	2,191.23	2,191.23	2,191.23	2,191.23	2,191.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Daily Onsite Emissions (lb/day) ^b		69.46	70.68	67.57	67.57	67.57	67.57	31.25	28.74	26.58	20.59	15.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Daily Offsite Emissions (lb/day) ^b		95.27	95.27	95.27	95.27	95.27	95.27	95.27	95.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Project Emissions (tons)																			

Black Rock Geothermal Project
BRGP Construction Emissions
Table 5. Construction Equipment Emissions
April 2023

Construction Equipment SO _x Emissions from BRGP Construction																			
Onsite Equipment	Equipment Location	SO _x Emissions (lb/month) ^{a, b}																	
		2024												2025					
		January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Excavator	Onsite	0.00	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Backhoe	Onsite	0.00	0.00	0.00	0.31	0.31	0.31	0.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10 Wheel Dump Truck	Onsite	0.00	0.00	0.00	1.41	2.83	2.83	2.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dozer	Onsite	0.00	0.00	0.00	0.73	0.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Front End Loader	Onsite	0.00	0.00	0.00	0.00	0.00	0.27	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
150 Ton Hydraulic Crane	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
75 Ton Hydraulic Crane	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58
35 Ton Hydraulic Crane	Onsite	0.00	0.00	0.00	0.00	0.00	1.58	1.58	1.58	1.58	1.58	3.16	3.16	3.16	3.16	3.16	3.16	3.16	3.16
Pile Driver	Onsite	0.00	0.00	0.00	0.51	0.68	0.68	0.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fork Lift	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.08	0.08	0.08	0.08	0.24	0.24	0.24	0.24	0.24	0.24
Grader	Onsite	0.00	0.00	0.00	0.30	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drill Rigs	Offsite	0.00	0.00	0.00	0.00	0.00	0.20	0.20	0.20	0.20	0.20	0.41	0.41	0.41	0.41	0.20	0.20	0.20	0.20
Drilling Diesel Generator (Kenai)	Offsite	0.00	0.00	0.00	0.00	0.00	24.51	24.51	24.51	24.51	24.51	24.51	24.51	24.51	24.51	24.51	24.51	24.51	24.51
Drilling Rental Generator	Offsite	0.00	0.00	0.00	0.00	0.00	1.73	1.73	1.73	1.73	1.73	1.73	1.73	1.73	1.73	1.73	1.73	1.73	1.73
Drilling Pump	Offsite	0.00	0.00	0.00	0.00	0.00	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41
Drilling Forklift	Offsite	0.00	0.00	0.00	0.00	0.00	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Drilling Manlift	Offsite	0.00	0.00	0.00	0.00	0.00	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Drilling Backhoe	Offsite	0.00	0.00	0.00	0.00	0.00	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Drilling Light Tower	Offsite	0.00	0.00	0.00	0.00	0.00	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
Pavers	Onsite and Offsite ^c	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.17	0.00	0.00
Paving Equipment	Onsite and Offsite ^c	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.16	0.00	0.00
Paving Rollers	Onsite and Offsite ^c	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23	0.23	0.00	0.00
Paving Tractor/Loader/Backhoe	Onsite and Offsite ^c	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.31	0.31	0.00	0.00
Electrical Generators	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.25	0.25	0.25	0.25	0.25	0.50	0.50	0.50	0.50	0.50	0.50
Concrete Pump Trucks	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.24	0.00	0.00	0.00
Diesel Welders	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.62	0.62	0.62	0.62	1.54	1.54	1.54	1.54	1.54	1.54
Compactor	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
Stake Truck	Onsite	0.00	0.00	0.00	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
Water Truck (shared between 3 projects)	Onsite	0.00	0.00	0.00	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
Air Compressor	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
Light Towers	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heavy Lift Lattice boom Main Crane	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heavy Lift Lattice boom Tail Crane	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heavy lift Gantry Crane	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Monthly Onsite Emissions (lb/month)		0.00	0.00	0.00	4.68	6.26	7.15	8.12	3.41	4.03	4.16	7.32	7.32	8.66	8.66	13.25	9.01	8.66	8.66
Total Monthly Offsite Emissions (lb/month)		0.00	0.00	0.00	0.00	0.00	28.37	28.37	28.37	28.37	28.37	28.57	28.57	28.57	28.57	28.87	28.87	28.37	28.37
Total Daily Onsite Emissions (lb/day) ^b		0.00	0.00	0.00	0.20	0.27	0.31	0.35	0.15	0.18	0.18	0.32	0.32	0.38	0.38	0.58	0.39	0.38	0.38
Total Daily Offsite Emissions (lb/day) ^b		0.00	0.00	0.00	0.00	0.00	1.23	1.23	1.23	1.23	1.23	1.24	1.24	1.24	1.24	1.26	1.26	1.23	1.23
Total Project Emissions (tons)		0.39																	

Black Rock Geothermal Project
BRGP Construction Emissions
Table 5. Construction Equipment Emissions
April 2023

Construction Equipment SO_x Emissions from BRGP Construction

Onsite Equipment	Equipment Location	2026																	
		July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
Excavator	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Backhoe	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10 Wheel Dump Truck	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dozer	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Front End Loader	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
150 Ton Hydraulic Crane	Onsite	0.00	0.53	0.53	0.53	0.53	0.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
75 Ton Hydraulic Crane	Onsite	1.58	1.58	1.58	1.58	1.58	1.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
35 Ton Hydraulic Crane	Onsite	3.16	3.16	3.16	3.16	3.16	3.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pile Driver	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fork Lift	Onsite	0.24	0.24	0.24	0.24	0.24	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grader	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drill Rigs	Offsite	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drilling Diesel Generator (Kenai)	Offsite	24.51	24.51	24.51	24.51	24.51	24.51	24.51	24.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drilling Rental Generator	Offsite	1.73	1.73	1.73	1.73	1.73	1.73	1.73	1.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drilling Pump	Offsite	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drilling Forklift	Offsite	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drilling Manlift	Offsite	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drilling Backhoe	Offsite	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drilling Light Tower	Offsite	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pavers	Onsite and Offsite ^c	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Equipment	Onsite and Offsite ^c	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Rollers	Onsite and Offsite ^c	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Tractor/Loader/Backhoe	Onsite and Offsite ^c	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electrical Generators	Onsite	0.50	0.50	0.50	0.50	0.50	0.50	0.25	0.25	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Concrete Pump Trucks	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Diesel Welders	Onsite	1.54	1.54	1.54	1.54	1.54	1.54	0.46	0.31	0.31	0.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Compactor	Onsite	0.09	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stake Truck	Onsite	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water Truck (shared between 3 projects)	Onsite	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Air Compressor	Onsite	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Light Towers	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heavy Lift Lattice boom Main Crane	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heavy Lift Lattice boom Tail Crane	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heavy lift Gantry Crane	Onsite	0.53	0.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Monthly Onsite Emissions (lb/month)		9.18	9.71	9.09	9.09	9.09	9.09	2.26	2.10	1.97	1.72	1.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Monthly Offsite Emissions (lb/month)		28.37	28.37	28.37	28.37	28.37	28.37	28.37	28.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Daily Onsite Emissions (lb/day) ^b		0.40	0.42	0.40	0.40	0.40	0.40	0.10	0.09	0.09	0.07	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Daily Offsite Emissions (lb/day) ^b		1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Project Emissions (tons)																			

Black Rock Geothermal Project
BRGP Construction Emissions
Table 5. Construction Equipment Emissions
April 2023

Construction Equipment PM ₁₀ Emissions from BRGP Construction																			
Onsite Equipment	Equipment Location	PM ₁₀ Emissions (lb/month) ^{a, b}																	
		2024												2025					
		January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Excavator	Onsite	0.00	0.00	0.00	0.00	0.00	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Backhoe	Onsite	0.00	0.00	0.00	0.63	0.63	0.63	0.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10 Wheel Dump Truck	Onsite	0.00	0.00	0.00	12.84	25.68	25.68	25.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dozer	Onsite	0.00	0.00	0.00	1.49	1.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Front End Loader	Onsite	0.00	0.00	0.00	0.00	0.00	0.55	0.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
150 Ton Hydraulic Crane	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
75 Ton Hydraulic Crane	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.24	3.24	3.24	3.24	3.24	3.24	3.24	3.24
35 Ton Hydraulic Crane	Onsite	0.00	0.00	0.00	0.00	0.00	3.24	3.24	3.24	3.24	3.24	6.48	6.48	6.48	6.48	6.48	6.48	6.48	6.48
Pile Driver	Onsite	0.00	0.00	0.00	1.05	1.40	1.40	1.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fork Lift	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.17	0.17	0.17	0.17	0.50	0.50	0.50	0.50	0.50	0.50
Grader	Onsite	0.00	0.00	0.00	0.62	0.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drill Rigs	Offsite	0.00	0.00	0.00	0.00	0.00	0.42	0.42	0.42	0.42	0.42	0.84	0.84	0.84	0.84	0.42	0.42	0.42	0.42
Drilling Diesel Generator (Kenai)	Offsite	0.00	0.00	0.00	0.00	0.00	497.32	497.32	497.32	497.32	497.32	497.32	497.32	497.32	497.32	497.32	497.32	497.32	497.32
Drilling Rental Generator	Offsite	0.00	0.00	0.00	0.00	0.00	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40
Drilling Pump	Offsite	0.00	0.00	0.00	0.00	0.00	5.28	5.28	5.28	5.28	5.28	5.28	5.28	5.28	5.28	5.28	5.28	5.28	5.28
Drilling Forklift	Offsite	0.00	0.00	0.00	0.00	0.00	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.95
Drilling Manlift	Offsite	0.00	0.00	0.00	0.00	0.00	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
Drilling Backhoe	Offsite	0.00	0.00	0.00	0.00	0.00	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32
Drilling Light Tower	Offsite	0.00	0.00	0.00	0.00	0.00	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
Pavers	Onsite and Offsite ^c	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.34	0.34	0.00	0.00
Paving Equipment	Onsite and Offsite ^c	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.32	0.32	0.00	0.00
Paving Rollers	Onsite and Offsite ^c	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.42	0.42	0.00	0.00
Paving Tractor/Loader/Backhoe	Onsite and Offsite ^c	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.63	0.63	0.00	0.00
Electrical Generators	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	5.67	5.67	5.67	5.67	5.67	5.67	11.35	11.35	11.35	11.35	11.35	11.35
Concrete Pump Trucks	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	6.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	38.51	0.00	0.00	0.00
Diesel Welders	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.84	0.84	0.84	0.84	2.10	2.10	2.10	2.10	2.10	2.10
Compactor	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	1.69	1.69	1.69	1.69	1.69	1.69	1.69	1.69	1.69	1.69	1.69	1.69
Stake Truck	Onsite	0.00	0.00	0.00	6.42	6.42	6.42	6.42	6.42	6.42	6.42	6.42	6.42	6.42	6.42	6.42	6.42	6.42	6.42
Water Truck (shared between 3 projects)	Onsite	0.00	0.00	0.00	6.42	6.42	6.42	6.42	6.42	6.42	6.42	6.42	6.42	6.42	6.42	6.42	6.42	6.42	6.42
Air Compressor	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
Light Towers	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heavy Lift Lattice boom Main Crane	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heavy Lift Lattice boom Tail Crane	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heavy lift Gantry Crane	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Monthly Onsite Emissions (lb/month)		0.00	0.00	0.00	29.46	42.65	44.47	58.11	23.61	24.45	24.63	31.10	31.10	38.37	38.37	77.60	39.08	38.37	38.37
Total Monthly Offsite Emissions (lb/month)		0.00	0.00	0.00	0.00	0.00	509.44	509.44	509.44	509.44	509.44	509.86	509.86	509.86	509.86	510.44	510.44	509.44	509.44
Total Daily Onsite Emissions (lb/day) ^b		0.00	0.00	0.00	1.28	1.85	1.93	2.53	1.03	1.06	1.07	1.35	1.35	1.67	1.67	3.37	1.70	1.67	1.67
Total Daily Offsite Emissions (lb/day) ^b		0.00	0.00	0.00	0.00	0.00	22.15	22.15	22.15	22.15	22.15	22.17	22.17	22.17	22.17	22.19	22.19	22.15	22.15
Total Project Emissions (tons)		5.80																	

Black Rock Geothermal Project
BRGP Construction Emissions
Table 5. Construction Equipment Emissions
April 2023

Construction Equipment PM₁₀ Emissions from BRGP Construction

Onsite Equipment	Equipment Location																		
								2026											
		July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
Excavator	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Backhoe	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10 Wheel Dump Truck	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dozer	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Front End Loader	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
150 Ton Hydraulic Crane	Onsite	0.00	1.08	1.08	1.08	1.08	1.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
75 Ton Hydraulic Crane	Onsite	3.24	3.24	3.24	3.24	3.24	3.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
35 Ton Hydraulic Crane	Onsite	6.48	6.48	6.48	6.48	6.48	6.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pile Driver	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fork Lift	Onsite	0.50	0.50	0.50	0.50	0.50	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grader	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drill Rigs	Offsite	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drilling Diesel Generator (Kenai)	Offsite	497.32	497.32	497.32	497.32	497.32	497.32	497.32	497.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drilling Rental Generator	Offsite	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drilling Pump	Offsite	5.28	5.28	5.28	5.28	5.28	5.28	5.28	5.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drilling Forklift	Offsite	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drilling Manlift	Offsite	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drilling Backhoe	Offsite	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drilling Light Tower	Offsite	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pavers	Onsite and Offsite ^c	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Equipment	Onsite and Offsite ^c	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Rollers	Onsite and Offsite ^c	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Tractor/Loader/Backhoe	Onsite and Offsite ^c	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electrical Generators	Onsite	11.35	11.35	11.35	11.35	11.35	11.35	5.67	5.67	5.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Concrete Pump Trucks	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Diesel Welders	Onsite	2.10	2.10	2.10	2.10	2.10	2.10	0.63	0.42	0.42	0.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Compactor	Onsite	1.69	1.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stake Truck	Onsite	6.42	6.42	6.42	6.42	6.42	6.42	6.42	6.42	6.42	6.42	6.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water Truck (shared between 3 projects)	Onsite	6.42	6.42	6.42	6.42	6.42	6.42	6.42	6.42	6.42	6.42	6.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Air Compressor	Onsite	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Light Towers	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heavy Lift Lattice boom Main Crane	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heavy Lift Lattice boom Tail Crane	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heavy lift Gantry Crane	Onsite	1.08	1.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Monthly Onsite Emissions (lb/month)		39.45	40.53	37.75	37.75	37.75	37.75	19.32	19.11	18.93	13.26	12.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Monthly Offsite Emissions (lb/month)		509.44	509.44	509.44	509.44	509.44	509.44	509.44	509.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Daily Onsite Emissions (lb/day) ^b		1.72	1.76	1.64	1.64	1.64	1.64	0.84	0.83	0.82	0.58	0.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Daily Offsite Emissions (lb/day) ^b		22.15	22.15	22.15	22.15	22.15	22.15	22.15	22.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Project Emissions (tons)																			

Black Rock Geothermal Project
BRGP Construction Emissions
Table 5. Construction Equipment Emissions
April 2023

Construction Equipment PM _{2.5} Emissions from BRGP Construction																			
Onsite Equipment	Equipment Location	PM _{2.5} Emissions (lb/month) ^{a, b}																	
		2024												2025					
		January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Excavator	Onsite	0.00	0.00	0.00	0.00	0.00	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Backhoe	Onsite	0.00	0.00	0.00	0.63	0.63	0.63	0.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10 Wheel Dump Truck	Onsite	0.00	0.00	0.00	11.81	23.62	23.62	23.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dozer	Onsite	0.00	0.00	0.00	1.49	1.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Front End Loader	Onsite	0.00	0.00	0.00	0.00	0.00	0.55	0.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
150 Ton Hydraulic Crane	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
75 Ton Hydraulic Crane	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.24	3.24	3.24	3.24	3.24	3.24	3.24	3.24
35 Ton Hydraulic Crane	Onsite	0.00	0.00	0.00	0.00	0.00	3.24	3.24	3.24	3.24	3.24	6.48	6.48	6.48	6.48	6.48	6.48	6.48	6.48
Pile Driver	Onsite	0.00	0.00	0.00	1.05	1.40	1.40	1.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fork Lift	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.17	0.17	0.17	0.17	0.50	0.50	0.50	0.50	0.50	0.50
Grader	Onsite	0.00	0.00	0.00	0.62	0.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drill Rigs	Offsite	0.00	0.00	0.00	0.00	0.00	0.42	0.42	0.42	0.42	0.42	0.84	0.84	0.84	0.84	0.42	0.42	0.42	0.42
Drilling Diesel Generator (Kenai)	Offsite	0.00	0.00	0.00	0.00	0.00	497.32	497.32	497.32	497.32	497.32	497.32	497.32	497.32	497.32	497.32	497.32	497.32	497.32
Drilling Rental Generator	Offsite	0.00	0.00	0.00	0.00	0.00	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40
Drilling Pump	Offsite	0.00	0.00	0.00	0.00	0.00	5.28	5.28	5.28	5.28	5.28	5.28	5.28	5.28	5.28	5.28	5.28	5.28	5.28
Drilling Forklift	Offsite	0.00	0.00	0.00	0.00	0.00	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.95
Drilling Manlift	Offsite	0.00	0.00	0.00	0.00	0.00	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
Drilling Backhoe	Offsite	0.00	0.00	0.00	0.00	0.00	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32
Drilling Light Tower	Offsite	0.00	0.00	0.00	0.00	0.00	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
Pavers	Onsite and Offsite ^c	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.34	0.34	0.00	0.00
Paving Equipment	Onsite and Offsite ^c	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.32	0.32	0.00	0.00
Paving Rollers	Onsite and Offsite ^c	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.42	0.42	0.00	0.00
Paving Tractor/Loader/Backhoe	Onsite and Offsite ^c	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.63	0.63	0.00	0.00
Electrical Generators	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	5.22	5.22	5.22	5.22	5.22	5.22	10.44	10.44	10.44	10.44	10.44	10.44
Concrete Pump Trucks	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	5.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	35.43	0.00	0.00	0.00
Diesel Welders	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.84	0.84	0.84	0.84	0.84	2.10	2.10	2.10	2.10	2.10	2.10
Compactor	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	1.56	1.56	1.56	1.56	1.56	1.56	1.56	1.56	1.56	1.56	1.56	1.56
Stake Truck	Onsite	0.00	0.00	0.00	5.91	5.91	5.91	5.91	5.91	5.91	5.91	5.91	5.91	5.91	5.91	5.91	5.91	5.91	5.91
Water Truck (shared between 3 projects)	Onsite	0.00	0.00	0.00	5.91	5.91	5.91	5.91	5.91	5.91	5.91	5.91	5.91	5.91	5.91	5.91	5.91	5.91	5.91
Air Compressor	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
Light Towers	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heavy Lift Lattice boom Main Crane	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heavy Lift Lattice boom Tail Crane	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heavy lift Gantry Crane	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Monthly Onsite Emissions (lb/month)		0.00	0.00	0.00	27.40	39.56	41.39	53.93	21.99	22.83	23.01	29.49	29.49	36.30	36.30	72.45	37.01	36.30	36.30
Total Monthly Offsite Emissions (lb/month)		0.00	0.00	0.00	0.00	0.00	509.44	509.44	509.44	509.44	509.44	509.86	509.86	509.86	509.86	510.44	510.44	509.44	509.44
Total Daily Onsite Emissions (lb/day) ^b		0.00	0.00	0.00	1.19	1.72	1.80	2.34	0.96	0.99	1.00	1.28	1.28	1.58	1.58	3.15	1.61	1.58	1.58
Total Daily Offsite Emissions (lb/day) ^b		0.00	0.00	0.00	0.00	0.00	22.15	22.15	22.15	22.15	22.15	22.17	22.17	22.17	22.17	22.19	22.19	22.15	22.15
Total Project Emissions (tons)		5.77																	

Black Rock Geothermal Project
BRGP Construction Emissions
Table 5. Construction Equipment Emissions
April 2023

Construction Equipment PM_{2.5} Emissions from BRGP Construction

Onsite Equipment	Equipment Location	2026																	
		July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
Excavator	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Backhoe	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10 Wheel Dump Truck	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dozer	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Front End Loader	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
150 Ton Hydraulic Crane	Onsite	0.00	1.08	1.08	1.08	1.08	1.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
75 Ton Hydraulic Crane	Onsite	3.24	3.24	3.24	3.24	3.24	3.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
35 Ton Hydraulic Crane	Onsite	6.48	6.48	6.48	6.48	6.48	6.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pile Driver	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fork Lift	Onsite	0.50	0.50	0.50	0.50	0.50	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grader	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drill Rigs	Offsite	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drilling Diesel Generator (Kenai)	Offsite	497.32	497.32	497.32	497.32	497.32	497.32	497.32	497.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drilling Rental Generator	Offsite	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drilling Pump	Offsite	5.28	5.28	5.28	5.28	5.28	5.28	5.28	5.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drilling Forklift	Offsite	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drilling Manlift	Offsite	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drilling Backhoe	Offsite	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drilling Light Tower	Offsite	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pavers	Onsite and Offsite ^c	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Equipment	Onsite and Offsite ^c	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Rollers	Onsite and Offsite ^c	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Tractor/Loader/Backhoe	Onsite and Offsite ^c	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electrical Generators	Onsite	10.44	10.44	10.44	10.44	10.44	10.44	5.22	5.22	5.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Concrete Pump Trucks	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Diesel Welders	Onsite	2.10	2.10	2.10	2.10	2.10	2.10	0.63	0.42	0.42	0.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Compactor	Onsite	1.56	1.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stake Truck	Onsite	5.91	5.91	5.91	5.91	5.91	5.91	5.91	5.91	5.91	5.91	5.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water Truck (shared between 3 projects)	Onsite	5.91	5.91	5.91	5.91	5.91	5.91	5.91	5.91	5.91	5.91	5.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Air Compressor	Onsite	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Light Towers	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heavy Lift Lattice boom Main Crane	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heavy Lift Lattice boom Tail Crane	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heavy lift Gantry Crane	Onsite	1.08	1.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Monthly Onsite Emissions (lb/month)		37.38	38.46	35.82	35.82	35.82	35.82	17.84	17.63	17.45	12.23	11.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Monthly Offsite Emissions (lb/month)		509.44	509.44	509.44	509.44	509.44	509.44	509.44	509.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Daily Onsite Emissions (lb/day) ^b		1.63	1.67	1.56	1.56	1.56	1.56	0.78	0.77	0.76	0.53	0.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Daily Offsite Emissions (lb/day) ^b		22.15	22.15	22.15	22.15	22.15	22.15	22.15	22.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Project Emissions (tons)																			

Black Rock Geothermal Project
BRGP Construction Emissions
Table 5. Construction Equipment Emissions
April 2023

Construction Equipment CO ₂ Emissions from BRGP Construction																			
Onsite Equipment	Equipment Location	CO ₂ Emissions (metric tons/month) ^{a, b}																	
		2024												2025					
		January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Excavator	Onsite	0.00	0.00	0.00	0.00	0.00	3.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Backhoe	Onsite	0.00	0.00	0.00	15.15	15.15	15.15	15.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10 Wheel Dump Truck	Onsite	0.00	0.00	0.00	69.37	138.75	138.75	138.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dozer	Onsite	0.00	0.00	0.00	35.94	35.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Front End Loader	Onsite	0.00	0.00	0.00	0.00	0.00	13.07	13.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
150 Ton Hydraulic Crane	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
75 Ton Hydraulic Crane	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	77.48	77.48	77.48	77.48	77.48	77.48	77.48	77.48
35 Ton Hydraulic Crane	Onsite	0.00	0.00	0.00	0.00	0.00	77.48	77.48	77.48	77.48	77.48	154.96	154.96	154.96	154.96	154.96	154.96	154.96	154.96
Pile Driver	Onsite	0.00	0.00	0.00	25.12	33.49	33.49	33.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fork Lift	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.98	3.98	3.98	3.98	3.98	11.93	11.93	11.93	11.93	11.93	11.93
Grader	Onsite	0.00	0.00	0.00	14.80	14.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drill Rigs	Offsite	0.00	0.00	0.00	0.00	0.00	9.95	9.95	9.95	9.95	9.95	19.91	19.91	19.91	19.91	9.95	9.95	9.95	9.95
Drilling Diesel Generator (Kenai)	Offsite	0.00	0.00	0.00	0.00	0.00	860.12	860.12	860.12	860.12	860.12	860.12	860.12	860.12	860.12	860.12	860.12	860.12	860.12
Drilling Rental Generator	Offsite	0.00	0.00	0.00	0.00	0.00	60.75	60.75	60.75	60.75	60.75	60.75	60.75	60.75	60.75	60.75	60.75	60.75	60.75
Drilling Pump	Offsite	0.00	0.00	0.00	0.00	0.00	14.32	14.32	14.32	14.32	14.32	14.32	14.32	14.32	14.32	14.32	14.32	14.32	14.32
Drilling Forklift	Offsite	0.00	0.00	0.00	0.00	0.00	46.68	46.68	46.68	46.68	46.68	46.68	46.68	46.68	46.68	46.68	46.68	46.68	46.68
Drilling Manlift	Offsite	0.00	0.00	0.00	0.00	0.00	3.85	3.85	3.85	3.85	3.85	3.85	3.85	3.85	3.85	3.85	3.85	3.85	3.85
Drilling Backhoe	Offsite	0.00	0.00	0.00	0.00	0.00	7.58	7.58	7.58	7.58	7.58	7.58	7.58	7.58	7.58	7.58	7.58	7.58	7.58
Drilling Light Tower	Offsite	0.00	0.00	0.00	0.00	0.00	16.10	16.10	16.10	16.10	16.10	16.10	16.10	16.10	16.10	16.10	16.10	16.10	16.10
Pavers	Onsite and Offsite ^c	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.24	8.24	0.00	0.00
Paving Equipment	Onsite and Offsite ^c	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.78	7.78	0.00	0.00
Paving Rollers	Onsite and Offsite ^c	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.08	11.08	0.00	0.00
Paving Tractor/Loader/Backhoe	Onsite and Offsite ^c	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.15	15.15	0.00	0.00
Electrical Generators	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	8.13	8.13	8.13	8.13	8.13	8.13	16.25	16.25	16.25	16.25	16.25	16.25
Concrete Pump Trucks	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	34.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	208.12	0.00	0.00	0.00
Diesel Welders	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	21.65	21.65	21.65	21.65	54.11	54.11	54.11	54.11	54.11	54.11
Compactor	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70
Stake Truck	Onsite	0.00	0.00	0.00	34.69	34.69	34.69	34.69	34.69	34.69	34.69	34.69	34.69	34.69	34.69	34.69	34.69	34.69	34.69
Water Truck (shared between 3 projects)	Onsite	0.00	0.00	0.00	34.69	34.69	34.69	34.69	34.69	34.69	34.69	34.69	34.69	34.69	34.69	34.69	34.69	34.69	34.69
Air Compressor	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.64	4.64	4.64	4.64	4.64	4.64	4.64	4.64	4.64
Light Towers	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heavy Lift Lattice boom Main Crane	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heavy Lift Lattice boom Tail Crane	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heavy lift Gantry Crane	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Monthly Onsite Emissions (metric tons/month)		0.00	0.00	0.00	229.75	307.50	351.01	392.83	161.65	183.30	187.94	342.90	342.90	391.45	391.45	617.11	408.99	391.45	391.45
Total Monthly Offsite Emissions (metric tons/month)		0.00	0.00	0.00	0.00	0.00	1,019.33	1,019.33	1,019.33	1,019.33	1,019.33	1,029.29	1,029.29	1,029.29	1,029.29	1,044.05	1,044.05	1,019.33	1,019.33
Total Daily Onsite Emissions (metric tons/day) ^b		0.00	0.00	0.00	9.99	13.37	15.26	17.08	7.03	7.97	8.17	14.91	14.91	17.02	17.02	26.83	17.78	17.02	17.02
Total Daily Offsite Emissions (metric tons/day) ^b		0.00	0.00	0.00	0.00	0.00	44.32	44.32	44.32	44.32	44.32	44.75	44.75	44.75	44.75	45.39	45.39	44.32	44.32
Total Project Emissions (metric tons)		29,534.87																	

Black Rock Geothermal Project
BRGP Construction Emissions
Table 5. Construction Equipment Emissions
April 2023

Construction Equipment CO₂ Emissions from BRGP Construction

Onsite Equipment	Equipment Location																		
								2026											
		July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
Excavator	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Backhoe	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10 Wheel Dump Truck	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dozer	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Front End Loader	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
150 Ton Hydraulic Crane	Onsite	0.00	25.83	25.83	25.83	25.83	25.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
75 Ton Hydraulic Crane	Onsite	77.48	77.48	77.48	77.48	77.48	77.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
35 Ton Hydraulic Crane	Onsite	154.96	154.96	154.96	154.96	154.96	154.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pile Driver	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fork Lift	Onsite	11.93	11.93	11.93	11.93	11.93	11.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grader	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drill Rigs	Offsite	9.95	9.95	9.95	9.95	9.95	9.95	9.95	9.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drilling Diesel Generator (Kenai)	Offsite	860.12	860.12	860.12	860.12	860.12	860.12	860.12	860.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drilling Rental Generator	Offsite	60.75	60.75	60.75	60.75	60.75	60.75	60.75	60.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drilling Pump	Offsite	14.32	14.32	14.32	14.32	14.32	14.32	14.32	14.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drilling Forklift	Offsite	46.68	46.68	46.68	46.68	46.68	46.68	46.68	46.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drilling Manlift	Offsite	3.85	3.85	3.85	3.85	3.85	3.85	3.85	3.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drilling Backhoe	Offsite	7.58	7.58	7.58	7.58	7.58	7.58	7.58	7.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drilling Light Tower	Offsite	16.10	16.10	16.10	16.10	16.10	16.10	16.10	16.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pavers	Onsite and Offsite ^c	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Equipment	Onsite and Offsite ^c	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Rollers	Onsite and Offsite ^c	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Tractor/Loader/Backhoe	Onsite and Offsite ^c	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electrical Generators	Onsite	16.25	16.25	16.25	16.25	16.25	16.25	8.13	8.13	8.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Concrete Pump Trucks	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Diesel Welders	Onsite	54.11	54.11	54.11	54.11	54.11	54.11	16.23	10.82	10.82	10.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Compactor	Onsite	2.70	2.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stake Truck	Onsite	34.69	34.69	34.69	34.69	34.69	34.69	34.69	34.69	34.69	34.69	34.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water Truck (shared between 3 projects)	Onsite	34.69	34.69	34.69	34.69	34.69	34.69	34.69	34.69	34.69	34.69	34.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Air Compressor	Onsite	4.64	4.64	4.64	4.64	4.64	4.64	4.64	4.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Light Towers	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heavy Lift Lattice boom Main Crane	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heavy Lift Lattice boom Tail Crane	Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heavy lift Gantry Crane	Onsite	25.83	25.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Monthly Onsite Emissions (metric tons/month)		417.27	443.10	414.58	414.58	414.58	414.58	98.38	92.97	88.32	80.20	69.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Monthly Offsite Emissions (metric tons/month)		1,019.33	1,019.33	1,019.33	1,019.33	1,019.33	1,019.33	1,019.33	1,019.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Daily Onsite Emissions (metric tons/day) ^b		18.14	19.27	18.03	18.03	18.03	18.03	4.28	4.04	3.84	3.49	3.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Daily Offsite Emissions (metric tons/day) ^b		44.32	44.32	44.32	44.32	44.32	44.32	44.32	44.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Project Emissions (metric tons)																			

Black Rock Geothermal Project
BRGP Construction Emissions
Table 5. Construction Equipment Emissions
April 2023

Construction Equipment N ₂ O Emissions from BRGP Construction																			
Onsite Equipment	Equipment Location	N ₂ O Emissions (metric tons/month) ^{a, b}																	
		2024												2025					
		January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Excavator	Onsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.00E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Backhoe	Onsite	0.00E+00	0.00E+00	0.00E+00	1.23E-04	1.23E-04	1.23E-04	1.23E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
10 Wheel Dump Truck	Onsite	0.00E+00	0.00E+00	0.00E+00	5.63E-04	1.13E-03	1.13E-03	1.13E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Dozer	Onsite	0.00E+00	0.00E+00	0.00E+00	2.92E-04	2.92E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Front End Loader	Onsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.06E-04	1.06E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
150 Ton Hydraulic Crane	Onsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
75 Ton Hydraulic Crane	Onsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.29E-04	6.29E-04	6.29E-04	6.29E-04	6.29E-04	6.29E-04	6.29E-04	6.29E-04
35 Ton Hydraulic Crane	Onsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.29E-04	6.29E-04	6.29E-04	6.29E-04	6.29E-04	1.26E-03	1.26E-03	1.26E-03	1.26E-03	1.26E-03	1.26E-03	1.26E-03	1.26E-03
Pile Driver	Onsite	0.00E+00	0.00E+00	0.00E+00	2.04E-04	2.72E-04	2.72E-04	2.72E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Fork Lift	Onsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.23E-05	3.23E-05	3.23E-05	3.23E-05	3.23E-05	9.68E-05	9.68E-05	9.68E-05	9.68E-05	9.68E-05	9.68E-05
Grader	Onsite	0.00E+00	0.00E+00	0.00E+00	1.20E-04	1.20E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Drill Rigs	Offsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.08E-05	8.08E-05	8.08E-05	8.08E-05	8.08E-05	1.62E-04	1.62E-04	1.62E-04	1.62E-04	8.08E-05	8.08E-05	8.08E-05	8.08E-05
Drilling Diesel Generator (Kenai)	Offsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.98E-03	6.98E-03	6.98E-03	6.98E-03	6.98E-03	6.98E-03	6.98E-03	6.98E-03	6.98E-03	6.98E-03	6.98E-03	6.98E-03	6.98E-03
Drilling Rental Generator	Offsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.93E-04	4.93E-04	4.93E-04	4.93E-04	4.93E-04	4.93E-04	4.93E-04	4.93E-04	4.93E-04	4.93E-04	4.93E-04	4.93E-04	4.93E-04
Drilling Pump	Offsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.16E-04	1.16E-04	1.16E-04	1.16E-04	1.16E-04	1.16E-04	1.16E-04	1.16E-04	1.16E-04	1.16E-04	1.16E-04	1.16E-04	1.16E-04
Drilling Forklift	Offsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.79E-04	3.79E-04	3.79E-04	3.79E-04	3.79E-04	3.79E-04	3.79E-04	3.79E-04	3.79E-04	3.79E-04	3.79E-04	3.79E-04	3.79E-04
Drilling Manlift	Offsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.12E-05	3.12E-05	3.12E-05	3.12E-05	3.12E-05	3.12E-05	3.12E-05	3.12E-05	3.12E-05	3.12E-05	3.12E-05	3.12E-05	3.12E-05
Drilling Backhoe	Offsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.15E-05	6.15E-05	6.15E-05	6.15E-05	6.15E-05	6.15E-05	6.15E-05	6.15E-05	6.15E-05	6.15E-05	6.15E-05	6.15E-05	6.15E-05
Drilling Light Tower	Offsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.31E-04	1.31E-04	1.31E-04	1.31E-04	1.31E-04	1.31E-04	1.31E-04	1.31E-04	1.31E-04	1.31E-04	1.31E-04	1.31E-04	1.31E-04
Pavers	Onsite and Offsite ^c	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.68E-05	6.68E-05	0.00E+00
Paving Equipment	Onsite and Offsite ^c	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.31E-05	6.31E-05	0.00E+00
Paving Rollers	Onsite and Offsite ^c	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.99E-05	8.99E-05	0.00E+00
Paving Tractor/Loader/Backhoe	Onsite and Offsite ^c	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.23E-04	1.23E-04	0.00E+00
Electrical Generators	Onsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.59E-05	6.59E-05	6.59E-05	6.59E-05	6.59E-05	6.59E-05	1.32E-04	1.32E-04	1.32E-04	1.32E-04	1.32E-04	1.32E-04
Concrete Pump Trucks	Onsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.81E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.69E-03	0.00E+00	0.00E+00	0.00E+00
Diesel Welders	Onsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.76E-04	1.76E-04	1.76E-04	1.76E-04	4.39E-04	4.39E-04	4.39E-04	4.39E-04	4.39E-04	4.39E-04
Compactor	Onsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.19E-05	2.19E-05	2.19E-05	2.19E-05	2.19E-05	2.19E-05	2.19E-05	2.19E-05	2.19E-05	2.19E-05	2.19E-05	2.19E-05
Stake Truck	Onsite	0.00E+00	0.00E+00	0.00E+00	2.81E-04	2.81E-04	2.81E-04	2.81E-04	2.81E-04	2.81E-04	2.81E-04	2.81E-04	2.81E-04	2.81E-04	2.81E-04	2.81E-04	2.81E-04	2.81E-04	2.81E-04
Water Truck (shared between 3 projects)	Onsite	0.00E+00	0.00E+00	0.00E+00	2.81E-04	2.81E-04	2.81E-04	2.81E-04	2.81E-04	2.81E-04	2.81E-04	2.81E-04	2.81E-04	2.81E-04	2.81E-04	2.81E-04	2.81E-04	2.81E-04	2.81E-04
Air Compressor	Onsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.77E-05	3.77E-05	3.77E-05	3.77E-05	3.77E-05	3.77E-05	3.77E-05	3.77E-05	3.77E-05
Light Towers	Onsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Heavy Lift Lattice boom Main Crane	Onsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Heavy Lift Lattice boom Tail Crane	Onsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Heavy lift Gantry Crane	Onsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total Monthly Onsite Emissions (metric tons/month)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Total Monthly Offsite Emissions (metric tons/month)		0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Total Daily Onsite Emissions (metric tons/day) ^b		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Daily Offsite Emissions (metric tons/day) ^b		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Project Emissions (metric tons)		0.24																	

Black Rock Geothermal Project

BRGP Construction Emissions

Table 5. Construction Equipment Emissions

April 2023

Construction Equipment N₂O Emissions from BRGP Construction

Onsite Equipment	Equipment Location	2026																	
		July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
Excavator	Onsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Backhoe	Onsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
10 Wheel Dump Truck	Onsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Dozer	Onsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Front End Loader	Onsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
150 Ton Hydraulic Crane	Onsite	0.00E+00	2.10E-04	2.10E-04	2.10E-04	2.10E-04	2.10E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
75 Ton Hydraulic Crane	Onsite	6.29E-04	6.29E-04	6.29E-04	6.29E-04	6.29E-04	6.29E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
35 Ton Hydraulic Crane	Onsite	1.26E-03	1.26E-03	1.26E-03	1.26E-03	1.26E-03	1.26E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Pile Driver	Onsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Fork Lift	Onsite	9.68E-05	9.68E-05	9.68E-05	9.68E-05	9.68E-05	9.68E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Grader	Onsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Drill Rigs	Offsite	8.08E-05	8.08E-05	8.08E-05	8.08E-05	8.08E-05	8.08E-05	8.08E-05	8.08E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Drilling Diesel Generator (Kenai)	Offsite	6.98E-03	6.98E-03	6.98E-03	6.98E-03	6.98E-03	6.98E-03	6.98E-03	6.98E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Drilling Rental Generator	Offsite	4.93E-04	4.93E-04	4.93E-04	4.93E-04	4.93E-04	4.93E-04	4.93E-04	4.93E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Drilling Pump	Offsite	1.16E-04	1.16E-04	1.16E-04	1.16E-04	1.16E-04	1.16E-04	1.16E-04	1.16E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Drilling Forklift	Offsite	3.79E-04	3.79E-04	3.79E-04	3.79E-04	3.79E-04	3.79E-04	3.79E-04	3.79E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Drilling Manlift	Offsite	3.12E-05	3.12E-05	3.12E-05	3.12E-05	3.12E-05	3.12E-05	3.12E-05	3.12E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Drilling Backhoe	Offsite	6.15E-05	6.15E-05	6.15E-05	6.15E-05	6.15E-05	6.15E-05	6.15E-05	6.15E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Drilling Light Tower	Offsite	1.31E-04	1.31E-04	1.31E-04	1.31E-04	1.31E-04	1.31E-04	1.31E-04	1.31E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Pavers	Onsite and Offsite ^c	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Paving Equipment	Onsite and Offsite ^c	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Paving Rollers	Onsite and Offsite ^c	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Paving Tractor/Loader/Backhoe	Onsite and Offsite ^c	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Electrical Generators	Onsite	1.32E-04	1.32E-04	1.32E-04	1.32E-04	1.32E-04	1.32E-04	6.59E-05	6.59E-05	6.59E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Concrete Pump Trucks	Onsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Diesel Welders	Onsite	4.39E-04	4.39E-04	4.39E-04	4.39E-04	4.39E-04	4.39E-04	1.32E-04	8.78E-05	8.78E-05	8.78E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Compactor	Onsite	2.19E-05	2.19E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Stake Truck	Onsite	2.81E-04	2.81E-04	2.81E-04	2.81E-04	2.81E-04	2.81E-04	2.81E-04	2.81E-04	2.81E-04	2.81E-04	2.81E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Water Truck (shared between 3 projects)	Onsite	2.81E-04	2.81E-04	2.81E-04	2.81E-04	2.81E-04	2.81E-04	2.81E-04	2.81E-04	2.81E-04	2.81E-04	2.81E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Air Compressor	Onsite	3.77E-05	3.77E-05	3.77E-05	3.77E-05	3.77E-05	3.77E-05	3.77E-05	3.77E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Light Towers	Onsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Heavy Lift Lattice boom Main Crane	Onsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Heavy Lift Lattice boom Tail Crane	Onsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Heavy lift Gantry Crane	Onsite	2.10E-04	2.10E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total Monthly Onsite Emissions (metric tons/month)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Monthly Offsite Emissions (metric tons/month)		0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Daily Onsite Emissions (metric tons/day) ^b		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Daily Offsite Emissions (metric tons/day) ^b		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Project Emissions (metric tons)																			

Black Rock Geothermal Project
BRGP Construction Emissions
Table 5. Construction Equipment Emissions
April 2023

Construction Equipment CH ₄ Emissions from BRGP Construction																			
Onsite Equipment	Equipment Location	CH ₄ Emissions (metric tons/month) ^{a, b}																	
		2024												2025					
		January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Excavator	Onsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.50E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Backhoe	Onsite	0.00E+00	0.00E+00	0.00E+00	6.15E-04	6.15E-04	6.15E-04	6.15E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
10 Wheel Dump Truck	Onsite	0.00E+00	0.00E+00	0.00E+00	2.81E-03	5.63E-03	5.63E-03	5.63E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Dozer	Onsite	0.00E+00	0.00E+00	0.00E+00	1.46E-03	1.46E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Front End Loader	Onsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.30E-04	5.30E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
150 Ton Hydraulic Crane	Onsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
75 Ton Hydraulic Crane	Onsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.14E-03	3.14E-03	3.14E-03	3.14E-03	3.14E-03	3.14E-03	3.14E-03	3.14E-03
35 Ton Hydraulic Crane	Onsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.14E-03	3.14E-03	3.14E-03	3.14E-03	3.14E-03	6.29E-03	6.29E-03	6.29E-03	6.29E-03	6.29E-03	6.29E-03	6.29E-03	6.29E-03
Pile Driver	Onsite	0.00E+00	0.00E+00	0.00E+00	1.02E-03	1.36E-03	1.36E-03	1.36E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Fork Lift	Onsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.61E-04	1.61E-04	1.61E-04	1.61E-04	1.61E-04	4.84E-04	4.84E-04	4.84E-04	4.84E-04	4.84E-04	4.84E-04
Grader	Onsite	0.00E+00	0.00E+00	0.00E+00	6.00E-04	6.00E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Drill Rigs	Offsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.04E-04	4.04E-04	4.04E-04	4.04E-04	4.04E-04	8.08E-04	8.08E-04	8.08E-04	8.08E-04	4.04E-04	4.04E-04	4.04E-04	4.04E-04
Drilling Diesel Generator (Kenai)	Offsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.49E-02	3.49E-02	3.49E-02	3.49E-02	3.49E-02	3.49E-02	3.49E-02	3.49E-02	3.49E-02	3.49E-02	3.49E-02	3.49E-02	3.49E-02
Drilling Rental Generator	Offsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.46E-03	2.46E-03	2.46E-03	2.46E-03	2.46E-03	2.46E-03	2.46E-03	2.46E-03	2.46E-03	2.46E-03	2.46E-03	2.46E-03	2.46E-03
Drilling Pump	Offsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.81E-04	5.81E-04	5.81E-04	5.81E-04	5.81E-04	5.81E-04	5.81E-04	5.81E-04	5.81E-04	5.81E-04	5.81E-04	5.81E-04	5.81E-04
Drilling Forklift	Offsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.89E-03	1.89E-03	1.89E-03	1.89E-03	1.89E-03	1.89E-03	1.89E-03	1.89E-03	1.89E-03	1.89E-03	1.89E-03	1.89E-03	1.89E-03
Drilling Manlift	Offsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.56E-04	1.56E-04	1.56E-04	1.56E-04	1.56E-04	1.56E-04	1.56E-04	1.56E-04	1.56E-04	1.56E-04	1.56E-04	1.56E-04	1.56E-04
Drilling Backhoe	Offsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.07E-04	3.07E-04	3.07E-04	3.07E-04	3.07E-04	3.07E-04	3.07E-04	3.07E-04	3.07E-04	3.07E-04	3.07E-04	3.07E-04	3.07E-04
Drilling Light Tower	Offsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.53E-04	6.53E-04	6.53E-04	6.53E-04	6.53E-04	6.53E-04	6.53E-04	6.53E-04	6.53E-04	6.53E-04	6.53E-04	6.53E-04	6.53E-04
Pavers	Onsite and Offsite ^c	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.34E-04	3.34E-04	0.00E+00
Paving Equipment	Onsite and Offsite ^c	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.16E-04	3.16E-04	0.00E+00
Paving Rollers	Onsite and Offsite ^c	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.49E-04	4.49E-04	0.00E+00
Paving Tractor/Loader/Backhoe	Onsite and Offsite ^c	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.15E-04	6.15E-04	0.00E+00
Electrical Generators	Onsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.30E-04	3.30E-04	3.30E-04	3.30E-04	3.30E-04	3.30E-04	6.59E-04	6.59E-04	6.59E-04	6.59E-04	6.59E-04	6.59E-04
Concrete Pump Trucks	Onsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.41E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.44E-03	0.00E+00	0.00E+00	0.00E+00
Diesel Welders	Onsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.78E-04	8.78E-04	8.78E-04	8.78E-04	2.20E-03	2.20E-03	2.20E-03	2.20E-03	2.20E-03	2.20E-03
Compactor	Onsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.09E-04	1.09E-04	1.09E-04	1.09E-04	1.09E-04	1.09E-04	1.09E-04	1.09E-04	1.09E-04	1.09E-04	1.09E-04	1.09E-04
Stake Truck	Onsite	0.00E+00	0.00E+00	0.00E+00	1.41E-03	1.41E-03	1.41E-03	1.41E-03	1.41E-03	1.41E-03	1.41E-03	1.41E-03	1.41E-03	1.41E-03	1.41E-03	1.41E-03	1.41E-03	1.41E-03	1.41E-03
Water Truck (shared between 3 projects)	Onsite	0.00E+00	0.00E+00	0.00E+00	1.41E-03	1.41E-03	1.41E-03	1.41E-03	1.41E-03	1.41E-03	1.41E-03	1.41E-03	1.41E-03	1.41E-03	1.41E-03	1.41E-03	1.41E-03	1.41E-03	1.41E-03
Air Compressor	Onsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.88E-04	1.88E-04	1.88E-04	1.88E-04	1.88E-04	1.88E-04	1.88E-04	1.88E-04
Light Towers	Onsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Heavy Lift Lattice boom Main Crane	Onsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Heavy Lift Lattice boom Tail Crane	Onsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Heavy lift Gantry Crane	Onsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total Monthly Onsite Emissions (metric tons/month)		0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.03	0.02	0.02	0.02
Total Monthly Offsite Emissions (metric tons/month)		0.00	0.00	0.00	0.00	0.00	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Total Daily Onsite Emissions (metric tons/day) ^b		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Daily Offsite Emissions (metric tons/day) ^b		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Project Emissions (metric tons)		1.20																	

Notes:

^a Per information provided by the Applicant's engineering contractor, work hours per day are as follows:

20

^b Per information provided by the Applicant's engineering contractor, work days per month are as follows:

23

^c Paving emissions will occur both onsite and offsite. Daily and monthly emissions are apportioned based upon the amount of paved area onsite and offsite, respectively.

Black Rock Geothermal Project
BRGP Construction Emissions
Table 5. Construction Equipment Emissions
April 2023

Construction Equipment CH₄ Emissions from BRGP Construction

Onsite Equipment	Equipment Location	2026																	
		July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
Excavator	Onsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Backhoe	Onsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
10 Wheel Dump Truck	Onsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Dozer	Onsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Front End Loader	Onsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
150 Ton Hydraulic Crane	Onsite	0.00E+00	1.05E-03	1.05E-03	1.05E-03	1.05E-03	1.05E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
75 Ton Hydraulic Crane	Onsite	3.14E-03	3.14E-03	3.14E-03	3.14E-03	3.14E-03	3.14E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
35 Ton Hydraulic Crane	Onsite	6.29E-03	6.29E-03	6.29E-03	6.29E-03	6.29E-03	6.29E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Pile Driver	Onsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Fork Lift	Onsite	4.84E-04	4.84E-04	4.84E-04	4.84E-04	4.84E-04	4.84E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Grader	Onsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Drill Rigs	Offsite	4.04E-04	4.04E-04	4.04E-04	4.04E-04	4.04E-04	4.04E-04	4.04E-04	4.04E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Drilling Diesel Generator (Kenai)	Offsite	3.49E-02	3.49E-02	3.49E-02	3.49E-02	3.49E-02	3.49E-02	3.49E-02	3.49E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Drilling Rental Generator	Offsite	2.46E-03	2.46E-03	2.46E-03	2.46E-03	2.46E-03	2.46E-03	2.46E-03	2.46E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Drilling Pump	Offsite	5.81E-04	5.81E-04	5.81E-04	5.81E-04	5.81E-04	5.81E-04	5.81E-04	5.81E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Drilling Forklift	Offsite	1.89E-03	1.89E-03	1.89E-03	1.89E-03	1.89E-03	1.89E-03	1.89E-03	1.89E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Drilling Manlift	Offsite	1.56E-04	1.56E-04	1.56E-04	1.56E-04	1.56E-04	1.56E-04	1.56E-04	1.56E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Drilling Backhoe	Offsite	3.07E-04	3.07E-04	3.07E-04	3.07E-04	3.07E-04	3.07E-04	3.07E-04	3.07E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Drilling Light Tower	Offsite	6.53E-04	6.53E-04	6.53E-04	6.53E-04	6.53E-04	6.53E-04	6.53E-04	6.53E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Pavers	Onsite and Offsite ^c	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Paving Equipment	Onsite and Offsite ^c	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Paving Rollers	Onsite and Offsite ^c	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Paving Tractor/Loader/Backhoe	Onsite and Offsite ^c	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Electrical Generators	Onsite	6.59E-04	6.59E-04	6.59E-04	6.59E-04	6.59E-04	6.59E-04	3.30E-04	3.30E-04	3.30E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Concrete Pump Trucks	Onsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Diesel Welders	Onsite	2.20E-03	2.20E-03	2.20E-03	2.20E-03	2.20E-03	2.20E-03	6.59E-04	4.39E-04	4.39E-04	4.39E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Compactor	Onsite	1.09E-04	1.09E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Stake Truck	Onsite	1.41E-03	1.41E-03	1.41E-03	1.41E-03	1.41E-03	1.41E-03	1.41E-03	1.41E-03	1.41E-03	1.41E-03	1.41E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Water Truck (shared between 3 projects)	Onsite	1.41E-03	1.41E-03	1.41E-03	1.41E-03	1.41E-03	1.41E-03	1.41E-03	1.41E-03	1.41E-03	1.41E-03	1.41E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Air Compressor	Onsite	1.88E-04	1.88E-04	1.88E-04	1.88E-04	1.88E-04	1.88E-04	1.88E-04	1.88E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Light Towers	Onsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Heavy Lift Lattice boom Main Crane	Onsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Heavy Lift Lattice boom Tail Crane	Onsite	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Heavy lift Gantry Crane	Onsite	1.05E-03	1.05E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total Monthly Onsite Emissions (metric tons/month)		0.02	0.02	0.02	0.02	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Monthly Offsite Emissions (metric tons/month)		0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Daily Onsite Emissions (metric tons/day) ^b		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Daily Offsite Emissions (metric tons/day) ^b		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Project Emissions (metric tons)																			

Notes:

^a Per information provided by the Applicant's engineering contractor, work hours per day are as follows:

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^b Per information provided by the Applicant's engineering contractor, work days per month are as follows:

23

^c Paving emissions will occur both onsite and offsite. Daily and monthly emissions are apportioned based upon the amount of paved area onsite and offsite, respectively.

April 2023

Vehicle Type		CO Emissions (lb/day) ^a																	
		2024												2025					
		January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Onsite Pickup Truck		0.0E+00	0.0E+00	0.0E+00	7.7E-02	7.7E-02	7.7E-02	7.7E-02	7.7E-02	7.7E-02	7.7E-02	7.7E-02	7.7E-02	7.7E-02	7.7E-02	7.7E-02	7.7E-02	7.7E-02	7.7E-02
Average Daily Onsite Emissions (lb/day) ^b		0.0E+00	0.0E+00	0.0E+00	7.7E-02	7.7E-02	7.7E-02	7.7E-02	7.7E-02	7.7E-02	7.7E-02	7.7E-02	7.7E-02	7.7E-02	7.7E-02	7.7E-02	7.7E-02	7.7E-02	7.7E-02
Vehicle Type		CO Emissions (lb/month) ^c																	
		2024												2025					
		January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Onsite Pickup Truck		0.0E+00	0.0E+00	0.0E+00	1.8E+00	1.8E+00	1.8E+00	1.8E+00	1.8E+00	1.8E+00	1.8E+00	1.8E+00	1.8E+00	1.8E+00	1.8E+00	1.8E+00	1.8E+00	1.8E+00	1.8E+00
Total Monthly Onsite Emissions (lb/month)		0.0E+00	0.0E+00	0.0E+00	1.8E+00	1.8E+00	1.8E+00	1.8E+00	1.8E+00	1.8E+00	1.8E+00	1.8E+00	1.8E+00	1.8E+00	1.8E+00	1.8E+00	1.8E+00	1.8E+00	1.8E+00
Total Project Emissions (tons)		2.3E-02																	

Vehicle Type		VOC Emissions (lb/day) ^a																	
		2024												2025					
		January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Onsite Pickup Truck		0.0E+00	0.0E+00	0.0E+00	2.4E-03	2.4E-03	2.4E-03	2.4E-03	2.4E-03	2.4E-03	2.4E-03	2.4E-03	2.4E-03	2.4E-03	2.4E-03	2.4E-03	2.4E-03	2.4E-03	2.4E-03
Average Daily Onsite Emissions (lb/day) ^b		0.0E+00	0.0E+00	0.0E+00	2.4E-03	2.4E-03	2.4E-03	2.4E-03	2.4E-03	2.4E-03	2.4E-03	2.4E-03	2.4E-03	2.4E-03	2.4E-03	2.4E-03	2.4E-03	2.4E-03	2.4E-03
Vehicle Type		VOC Emissions (lb/month) ^c																	
		2024												2025					
		January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Onsite Pickup Truck		0.0E+00	0.0E+00	0.0E+00	5.5E-02	5.5E-02	5.5E-02	5.5E-02	5.5E-02	5.5E-02	5.5E-02	5.5E-02	5.5E-02	5.5E-02	5.5E-02	5.5E-02	5.5E-02	5.5E-02	5.5E-02
Total Monthly Onsite Emissions (lb/month)		0.0E+00	0.0E+00	0.0E+00	5.5E-02	5.5E-02	5.5E-02	5.5E-02	5.5E-02	5.5E-02	5.5E-02	5.5E-02	5.5E-02	5.5E-02	5.5E-02	5.5E-02	5.5E-02	5.5E-02	5.5E-02
Total Project Emissions (tons)		7.2E-04																	

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Black Rock Geothermal Project

BRGP Construction Emissions

Table 6. Onsite, Offroad Vehicle Exhaust Emissions

April 2023

Onsite Vehicle Exhaust and Vehicle Wear PM_{2.5} Emissions from BRGP Construction

Vehicle Type	PM _{2.5} Emissions (lb/day) ^{a, d}												2025					
	2024																	
	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Onsite Pickup Truck	0.0E+00	0.0E+00	0.0E+00	2.2E-04	2.2E-04	2.2E-04	2.2E-04	2.2E-04	2.2E-04	2.2E-04	2.2E-04	2.2E-04	2.2E-04	2.2E-04	2.2E-04	2.2E-04	2.2E-04	2.2E-04
Average Daily Onsite Emissions (lb/day) ^b	0.0E+00	0.0E+00	0.0E+00	2.2E-04	2.2E-04	2.2E-04	2.2E-04	2.2E-04	2.2E-04	2.2E-04	2.2E-04	2.2E-04	2.2E-04	2.2E-04	2.2E-04	2.2E-04	2.2E-04	2.2E-04
Vehicle Type	PM _{2.5} Emissions (lb/month) ^{c, d}												2025					
	2024																	
	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Onsite Pickup Truck	0.0E+00	0.0E+00	0.0E+00	5.1E-03	5.1E-03	5.1E-03	5.1E-03	5.1E-03	5.1E-03	5.1E-03	5.1E-03	5.1E-03	5.1E-03	5.1E-03	5.1E-03	5.1E-03	5.1E-03	5.1E-03
Total Monthly Onsite Emissions (lb/month)	0.0E+00	0.0E+00	0.0E+00	5.1E-03	5.1E-03	5.1E-03	5.1E-03	5.1E-03	5.1E-03	5.1E-03	5.1E-03	5.1E-03	5.1E-03	5.1E-03	5.1E-03	5.1E-03	5.1E-03	5.1E-03
Total Project Emissions (tons)	6.6E-05																	

Onsite Vehicle Exhaust CO₂ Emissions from BRGP Construction

Vehicle Type	CO ₂ Emissions (metric tons/day) ^a												2025					
	2024																	
	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Onsite Pickup Truck	0.0E+00	0.0E+00	0.0E+00	5.7E-03	5.7E-03	5.7E-03	5.7E-03	5.7E-03	5.7E-03	5.7E-03	5.7E-03	5.7E-03	5.7E-03	5.7E-03	5.7E-03	5.7E-03	5.7E-03	5.7E-03
Average Daily Onsite Emissions (metric tons/day) ^b	0.0E+00	0.0E+00	0.0E+00	5.7E-03	5.7E-03	5.7E-03	5.7E-03	5.7E-03	5.7E-03	5.7E-03	5.7E-03	5.7E-03	5.7E-03	5.7E-03	5.7E-03	5.7E-03	5.7E-03	5.7E-03
Vehicle Type	CO ₂ Emissions (metric tons/month) ^c												2025					
	2024																	
	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Onsite Pickup Truck	0.0E+00	0.0E+00	0.0E+00	1.3E-01	1.3E-01	1.3E-01	1.3E-01	1.3E-01	1.3E-01	1.3E-01	1.3E-01	1.3E-01	1.3E-01	1.3E-01	1.3E-01	1.3E-01	1.3E-01	1.3E-01
Total Monthly Onsite Emissions (metric tons/month)	0.0E+00	0.0E+00	0.0E+00	1.3E-01	1.3E-01	1.3E-01	1.3E-01	1.3E-01	1.3E-01	1.3E-01	1.3E-01	1.3E-01	1.3E-01	1.3E-01	1.3E-01	1.3E-01	1.3E-01	1.3E-01
Total Project Emissions (metric tons)	3.4E+00																	

Onsite Vehicle Exhaust N₂O Emissions from BRGP Construction

Vehicle Type	N ₂ O Emissions (metric tons/day) ^a												2025					
	2024																	
	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Onsite Pickup Truck	0.0E+00	0.0E+00	0.0E+00	1.1E-08	1.1E-08	1.1E-08	1.1E-08	1.1E-08	1.1E-08	1.1E-08	1.1E-08	1.1E-08	1.1E-08	1.1E-08	1.1E-08	1.1E-08	1.1E-08	1.1E-08
Average Daily Onsite Emissions (metric tons/day) ^b	0.0E+00	0.0E+00	0.0E+00	1.1E-08	1.1E-08	1.1E-08	1.1E-08	1.1E-08	1.1E-08	1.1E-08	1.1E-08	1.1E-08	1.1E-08	1.1E-08	1.1E-08	1.1E-08	1.1E-08	1.1E-08
Vehicle Type	N ₂ O Emissions (metric tons/month) ^c												2025					
	2024																	
	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Onsite Pickup Truck	0.0E+00	0.0E+00	0.0E+00	2.5E-07	2.5E-07	2.5E-07	2.5E-07	2.5E-07	2.5E-07	2.5E-07	2.5E-07	2.5E-07	2.5E-07	2.5E-07	2.5E-07	2.5E-07	2.5E-07	2.5E-07
Total Monthly Onsite Emissions (metric tons/month)	0.0E+00	0.0E+00	0.0E+00	2.5E-07	2.5E-07	2.5E-07	2.5E-07	2.5E-07	2.5E-07	2.5E-07	2.5E-07	2.5E-07	2.5E-07	2.5E-07	2.5E-07	2.5E-07	2.5E-07	2.5E-07
Total Project Emissions (metric tons)	6.4E-06																	

Onsite Vehicle Exhaust CH₄ Emissions from BRGP Construction

Vehicle Type	CH ₄ Emissions (metric tons/day) ^a												2025					
	2024																	
	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Onsite Pickup Truck	0.0E+00	0.0E+00	0.0E+00	2.4E-07	2.4E-07	2.4E-07	2.4E-07	2.4E-07	2.4E-07	2.4E-07	2.4E-07	2.4E-07	2.4E-07	2.4E-07	2.4E-07	2.4E-07	2.4E-07	2.4E-07
Average Daily Onsite Emissions (metric tons/day) ^b	0.0E+00	0.0E+00	0.0E+00	2.4E-07	2.4E-07	2.4E-07	2.4E-07	2.4E-07	2.4E-07	2.4E-07	2.4E-07	2.4E-07	2.4E-07	2.4E-07	2.4E-07	2.4E-07	2.4E-07	2.4E-07
Vehicle Type	CH ₄ Emissions (metric tons/month) ^c												2025					
	2024																	
	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Onsite Pickup Truck	0.0E+00	0.0E+00	0.0E+00	5.5E-06	5.5E-06	5.5E-06	5.5E-06	5.5E-06	5.5E-06	5.5E-06	5.5E-06	5.5E-06	5.5E-06	5.5E-06	5.5E-06	5.5E-06	5.5E-06	5.5E-06
Total Monthly Onsite Emissions (metric tons/month)	0.0E+00	0.0E+00	0.0E+00	5.5E-06	5.5E-06	5.5E-06	5.5E-06	5.5E-06	5.5E-06	5.5E-06	5.5E-06	5.5E-06	5.5E-06	5.5E-06	5.5E-06	5.5E-06	5.5E-06	5.5E-06
Total Project Emissions (metric tons)	1.4E-04																	

Notes:

^a Based on the dimensions of the project site and anticipated activity, daily onsite trip lengths were assumed to be

5 miles

^b Daily transportation emissions are presented as average daily emissions.

^c Per information provided by the Applicant's engineering contractor, work days per month are as follows:

23

^d PM₁₀ and PM_{2.5} Emissions include emissions from exhaust and tire and brake wear.

Black Rock Geothermal Project

BRGP Construction Emissions

Table 6. Onsite, Offroad Vehicle Exhaust Emissions

April 2023

Onsite Vehicle Exhaust and Vehicle Wear PM_{2.5} Emissions from BRGP Construction

Vehicle Type							2026											
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
Onsite Pickup Truck	2.2E-04	2.2E-04	2.2E-04	2.2E-04	2.2E-04	2.2E-04	2.2E-04	2.2E-04	2.2E-04	2.2E-04	2.2E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Average Daily Onsite Emissions (lb/day) ^b	2.2E-04	2.2E-04	2.2E-04	2.2E-04	2.2E-04	2.2E-04	2.2E-04	2.2E-04	2.2E-04	2.2E-04	2.2E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Vehicle Type							2026											
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
Onsite Pickup Truck	5.1E-03	5.1E-03	5.1E-03	5.1E-03	5.1E-03	5.1E-03	5.1E-03	5.1E-03	5.1E-03	5.1E-03	5.1E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Total Monthly Onsite Emissions (lb/month)	5.1E-03	5.1E-03	5.1E-03	5.1E-03	5.1E-03	5.1E-03	5.1E-03	5.1E-03	5.1E-03	5.1E-03	5.1E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Total Project Emissions (tons)																		

Onsite Vehicle Exhaust CO₂ Emissions from BRGP Construction

Vehicle Type							2026											
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
Onsite Pickup Truck	5.7E-03	5.7E-03	5.7E-03	5.7E-03	5.7E-03	5.7E-03	5.7E-03	5.7E-03	5.7E-03	5.7E-03	5.7E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Average Daily Onsite Emissions (metric tons/day) ^b	5.7E-03	5.7E-03	5.7E-03	5.7E-03	5.7E-03	5.7E-03	5.7E-03	5.7E-03	5.7E-03	5.7E-03	5.7E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Vehicle Type							2026											
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
Onsite Pickup Truck	1.3E-01	1.3E-01	1.3E-01	1.3E-01	1.3E-01	1.3E-01	1.3E-01	1.3E-01	1.3E-01	1.3E-01	1.3E-01	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Total Monthly Onsite Emissions (metric tons/month)	1.3E-01	1.3E-01	1.3E-01	1.3E-01	1.3E-01	1.3E-01	1.3E-01	1.3E-01	1.3E-01	1.3E-01	1.3E-01	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Total Project Emissions (metric tons)																		

Onsite Vehicle Exhaust N₂O Emissions from BRGP Construction

Vehicle Type							2026											
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
Onsite Pickup Truck	1.1E-08	1.1E-08	1.1E-08	1.1E-08	1.1E-08	1.1E-08	1.1E-08	1.1E-08	1.1E-08	1.1E-08	1.1E-08	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Average Daily Onsite Emissions (metric tons/day) ^b	1.1E-08	1.1E-08	1.1E-08	1.1E-08	1.1E-08	1.1E-08	1.1E-08	1.1E-08	1.1E-08	1.1E-08	1.1E-08	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Vehicle Type							2026											
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
Onsite Pickup Truck	2.5E-07	2.5E-07	2.5E-07	2.5E-07	2.5E-07	2.5E-07	2.5E-07	2.5E-07	2.5E-07	2.5E-07	2.5E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Total Monthly Onsite Emissions (metric tons/month)	2.5E-07	2.5E-07	2.5E-07	2.5E-07	2.5E-07	2.5E-07	2.5E-07	2.5E-07	2.5E-07	2.5E-07	2.5E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Total Project Emissions (metric tons)																		

Onsite Vehicle Exhaust CH₄ Emissions from BRGP Construction

Vehicle Type							2026											
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
Onsite Pickup Truck	2.4E-07	2.4E-07	2.4E-07	2.4E-07	2.4E-07	2.4E-07	2.4E-07	2.4E-07	2.4E-07	2.4E-07	2.4E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Average Daily Onsite Emissions (metric tons/day) ^b	2.4E-07	2.4E-07	2.4E-07	2.4E-07	2.4E-07	2.4E-07	2.4E-07	2.4E-07	2.4E-07	2.4E-07	2.4E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Vehicle Type							2026											
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
Onsite Pickup Truck	5.5E-06	5.5E-06	5.5E-06	5.5E-06	5.5E-06	5.5E-06	5.5E-06	5.5E-06	5.5E-06	5.5E-06	5.5E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Total Monthly Onsite Emissions (metric tons/month)	5.5E-06	5.5E-06	5.5E-06	5.5E-06	5.5E-06	5.5E-06	5.5E-06	5.5E-06	5.5E-06	5.5E-06	5.5E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Total Project Emissions (metric tons)																		

Notes:

^a Based on the dimensions of the project site and anticipated activity

^b Daily transportation emissions are presented as average daily emissions

^c Per information provided by the Applicant's engineering contract

^d PM₁₀ and PM_{2.5} Emissions include emissions from exhaust and idling

Black Rock Geothermal Project
BRGP Construction Emissions
Table 7. Emissions from Fugitive Dust and Other Offroad Activities
April 2023

Grading and Truck Dumping/Loading Activity Levels for BRGP

Source	Monthly Activity Levels																	
	2024												2025					
	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Graded Area (acres) ^a	0	0	0	56	56	0	0	0	0	0	0	0	0	0	0	0	0	0
Soil Imported/Exported (cubic yards) ^b	0	0	0	34,651	34,651	34,651	34,651	0	0	0	0	0	0	0	0	0	0	0

Notes:
^a Graded area provided by the Applicant's engineering contractor. This disturbance was distributed amongst the months in which graders are utilized and also based on the number of graders
^b Soil Imported/Exported provided by the Applicant's engineering contractor. Assumed the imports/exports and associated loading/dumping activity are equally distributed amongst the months in which front end loaders, excavators, and backhoes are utilized either onsite or offsite.

Soil activities during Demolition and Construction

	Area (acres)	Imported/Exported Soil (cubic yards)
Demolition		
Total Disturbed Area for Grading	45.34	--
Cut/Export Material	--	100
Import/Fill Material	--	100
Construction		
Total Disturbed Area for Grading	65.89	--
Cut/Export Material	--	124,452
Import/Fill Material	--	13,952

Onsite Vehicle Fugitive PM₁₀ Emissions from Unpaved Roads During BRGP Construction

Vehicle Type	Fugitive PM ₁₀ Emissions (lb/day) ^a																	
	2024												2025					
	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Onsite Pickup Truck ^b	0.00	0.00	0.00	3.78	3.78	3.78	3.78	3.78	3.78	3.78	3.78	3.78	3.78	3.78	3.78	3.78	3.78	3.78
Total Daily Onsite Emissions (lb/day)	0.00	0.00	0.00	3.78	3.78	3.78	3.78	3.78	3.78	3.78	3.78	3.78	3.78	3.78	3.78	3.78	3.78	3.78
Vehicle Type	Fugitive PM ₁₀ Emissions (lb/month) ^a																	
	2024												2025					
	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Onsite Pickup Truck ^{b, c}	0.00	0.00	0.00	86.86	86.86	86.86	86.86	86.86	86.86	86.86	86.86	86.86	86.86	86.86	86.86	86.86	86.86	86.86
Total Monthly Onsite Emissions (lb/month)	0.00	0.00	0.00	86.86	86.86	86.86	86.86	86.86	86.86	86.86	86.86	86.86	86.86	86.86	86.86	86.86	86.86	86.86
Total Onsite Project Emissions (tons)	1.13																	

Notes:
^a It is assumed that all onsite driving is on unpaved roads, to be conservative. Emissions based on the controlled unpaved road emission factor for PM₁₀.
^b Based on the dimensions of the project site and anticipated activity, daily onsite trip lengths were assumed to be: 5 miles
^c Per information provided by the Applicant's engineering contractor, work days per month are as follows: 23 days

Onsite Vehicle Fugitive PM_{2.5} Emissions from Unpaved Roads During BRGP Construction

Vehicle Type	Fugitive PM _{2.5} Emissions (lb/day) ^a																	
	2024												2025					
	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Onsite Pickup Truck ^b	0.00	0.00	0.00	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38
Total Daily Onsite Emissions (lb/day)	0.00	0.00	0.00	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38
Vehicle Type	Fugitive PM _{2.5} Emissions (lb/month) ^a																	
	2024												2025					
	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Onsite Pickup Truck ^{b, c}	0.00	0.00	0.00	8.65	8.65	8.65	8.65	8.65	8.65	8.65	8.65	8.65	8.65	8.65	8.65	8.65	8.65	8.65
Total Monthly Onsite Emissions (lb/month)	0.00	0.00	0.00	8.65	8.65	8.65	8.65	8.65	8.65	8.65	8.65	8.65	8.65	8.65	8.65	8.65	8.65	8.65
Total Onsite Project Emissions (tons)	0.11																	

Notes:
^a It is assumed that all onsite driving is on unpaved roads, to be conservative. Emissions based on the controlled unpaved road emission factor for PM_{2.5}.
^b Based on the dimensions of the project site and anticipated activity, daily onsite trip lengths were assumed to be: 5 miles
^c Per information provided by the Applicant's engineering contractor, work days per month are as follows: 23 days

Black Rock Geothermal Project
BRGP Construction Emissions
Table 7. Emissions from Fugitive Dust and Other Offroad Activities
April 2023

Grading and Truck Dumping/Loading Activity Levels for BRGP

Source	2026																	
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
Graded Area (acres) ^a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Soil Imported/Exported (cubic yards) ^b	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Notes:
^a Graded area provided by the Applicant's engineering contractor. This dis
^b Soil Imported/Exported provided by the Applicant's engineering contract

Soil activities during Demolition and Construction

Demolition
Total Disturbed Area for Grading
Cut/Export Material
Import/Fill Material
Construction
Total Disturbed Area for Grading
Cut/Export Material
Import/Fill Material

Onsite Vehicle Fugitive PM₁₀ Emissions from Unpaved Roads During

Vehicle Type	2026																	
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
Onsite Pickup Truck ^b	3.78	3.78	3.78	3.78	3.78	3.78	3.78	3.78	3.78	3.78	3.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Daily Onsite Emissions (lb/day)	3.78	3.78	3.78	3.78	3.78	3.78	3.78	3.78	3.78	3.78	3.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vehicle Type	2026																	
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
Onsite Pickup Truck ^{b, c}	86.86	86.86	86.86	86.86	86.86	86.86	86.86	86.86	86.86	86.86	86.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Monthly Onsite Emissions (lb/month)	86.86	86.86	86.86	86.86	86.86	86.86	86.86	86.86	86.86	86.86	86.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Onsite Project Emissions (tons)																		

Notes:
^a It is assumed that all onsite driving is on unpaved roads, to be conservat
^b Based on the dimensions of the project site and anticipated activity, dail
^c Per information provided by the Applicant's engineering contractor, work

Onsite Vehicle Fugitive PM_{2.5} Emissions from Unpaved Roads During

Vehicle Type	2026																	
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
Onsite Pickup Truck ^b	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Daily Onsite Emissions (lb/day)	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vehicle Type	2026																	
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
Onsite Pickup Truck ^{b, c}	8.65	8.65	8.65	8.65	8.65	8.65	8.65	8.65	8.65	8.65	8.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Monthly Onsite Emissions (lb/month)	8.65	8.65	8.65	8.65	8.65	8.65	8.65	8.65	8.65	8.65	8.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Onsite Project Emissions (tons)																		

Notes:
^a It is assumed that all onsite driving is on unpaved roads, to be conservat
^b Based on the dimensions of the project site and anticipated activity, dail
^c Per information provided by the Applicant's engineering contractor, work

Black Rock Geothermal Project
BRGP Construction Emissions
Table 7. Emissions from Fugitive Dust and Other Offroad Activities
April 2023

Grading and Truck Dumping/Loading Fugitive PM₁₀ Emissions from BRGP Construction

Construction Activity	Fugitive PM ₁₀ Emissions (lb/day) ^a															
	2024												2025			
	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April
Grading ^{b, c}	0.00	0.00	0.00	0.67	0.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck Dumping/Loading ^{d, e}	0.00	0.00	0.00	0.30	0.30	0.30	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Daily Onsite Emissions (lb/day)	0.00	0.00	0.00	0.97	0.97	0.30	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Construction Activity	Fugitive PM ₁₀ Emissions (lb/month) ^a															
	2024												2025			
	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April
Grading	0.00	0.00	0.00	15.33	15.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck Dumping/Loading	0.00	0.00	0.00	6.89	6.89	6.89	6.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Monthly Onsite Emissions (lb/month)	0.00	0.00	0.00	22.22	22.22	6.89	6.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Project Emissions (tons)	0.03															

Notes:

^a Per information provided by the Applicant's engineering contractor, work days per month are as follows: 23 days

^b Grading emissions based on the controlled emission factor for PM₁₀.

^c Per Section 4.4.1 of Appendix C of the *CalEEMod User's Guide* (ICF 2022), the following blade width was assumed for grading equipment: 12 ft

^d Assume that soil is dumped from or loaded to the truck the same month it is imported or exported, respectively.

^e Per Section 4.4.3 of Appendix C of the *CalEEMod User's Guide* (ICF 2022), the following conversion factor was used: 1.26 tons/cubic yard

Grading and Truck Dumping/Loading Fugitive PM_{2.5} Emissions from BRGP Construction

Construction Activity	Fugitive PM _{2.5} Emissions (lb/day) ^a															
	2024												2025			
	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April
Grading ^{b, c}	0.00	0.00	0.00	0.07	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck Dumping/Loading ^{d, e}	0.00	0.00	0.00	0.05	0.05	0.05	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Daily Onsite Emissions (lb/day)	0.00	0.00	0.00	0.12	0.12	0.05	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Construction Activity	Fugitive PM _{2.5} Emissions (lb/month) ^a															
	2024												2025			
	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April
Grading	0.00	0.00	0.00	1.66	1.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck Dumping/Loading	0.00	0.00	0.00	1.04	1.04	1.04	1.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Monthly Onsite Emissions (lb/month)	0.00	0.00	0.00	2.70	2.70	1.04	1.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Project Emissions (tons)	0.00															

Notes:

^a Per information provided by the Applicant's engineering contractor, work days per month are as follows: 23 days

^b Grading emissions based on the controlled emission factor for PM_{2.5}.

^c Per Section 4.4.1 of Appendix C of the *CalEEMod User's Guide* (ICF 2022), the following blade width was assumed for grading equipment: 12 ft

^d Assume that soil is dumped from or loaded to the truck the same month it is imported or exported, respectively.

^e Per Section 4.4.3 of Appendix C of the *CalEEMod User's Guide* (ICF 2022), the following conversion factor was used: 1.26 tons/cubic yard

Black Rock Geothermal Project
BRGP Construction Emissions
Table 7. Emissions from Fugitive Dust and Other Offroad Activities
April 2023

Grading and Truck Dumping/Loading Fugitive PM₁₀ Emissions from E

Construction Activity																		
							2026											
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
Grading ^{b, c}	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck Dumping/Loading ^{d, e}	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Daily Onsite Emissions (lb/day)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Construction Activity																		
							2026											
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
Grading	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck Dumping/Loading	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Monthly Onsite Emissions (lb/month)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Project Emissions (tons)																		

Notes:
^a Per information provided by the Applicant's engineering contractor, work
^b Grading emissions based on the controlled emission factor for PM₁₀.
^c Per Section 4.4.1 of Appendix C of the *CalEEMod User's Guide* (ICF 20.
^d Assume that soil is dumped from or loaded to the truck the same month
^e Per Section 4.4.3 of Appendix C of the *CalEEMod User's Guide* (ICF 20.

Grading and Truck Dumping/Loading Fugitive PM_{2.5} Emissions from I

Construction Activity																		
							2026											
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
Grading ^{b, c}	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck Dumping/Loading ^{d, e}	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Daily Onsite Emissions (lb/day)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Construction Activity																		
							2026											
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
Grading	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck Dumping/Loading	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Monthly Onsite Emissions (lb/month)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Project Emissions (tons)																		

Notes:
^a Per information provided by the Applicant's engineering contractor, work
^b Grading emissions based on the controlled emission factor for PM_{2.5}.
^c Per Section 4.4.1 of Appendix C of the *CalEEMod User's Guide* (ICF 20.
^d Assume that soil is dumped from or loaded to the truck the same month
^e Per Section 4.4.3 of Appendix C of the *CalEEMod User's Guide* (ICF 20.

Black Rock Geothermal Project

BRGP Construction Emissions

Table 7. Emissions from Fugitive Dust and Other Offroad Activities

April 2023

Fugitive Dust Emission Factors for Unpaved Roads

Vehicles on Unpaved Surfaces at Industrial Sites

Parameter	PM ₁₀	PM _{2.5}
k - Particle Size Multiplier (lb/VMT) ^a	1.80	0.18
s - Silt Content (%) ^a	8.5	8.5
M - Surface Material Moisture Content (%) ^a	0.5	0.5
S - Mean Vehicle Speed (mph) ^a	40	40
C - Emission Factor for Exhaust, Brake Wear and Tire Wear (lb/VMT) ^b	0.00047	0.00036
P - Days per Year With at Least 0.01" of Precipitation ^c	5	5
Emission Factor (Uncontrolled, lb/mile) ^d	1.4524	0.1447
Reduction from Watering Every 2.1 Hours ^e	74%	74%
Emission Factor (Controlled, lb/mile)	0.3776	0.038

Notes:

^a k, s, M, and S are taken as the CalEEMod default values from Section 5.1.4 of Appendix C of the *CalEEMod User's Guide* (ICF 2022). k was converted from g to lbs.

^b C taken as the default values from Table 13.2.2-4 of *AP-42* (EPA 2006), per Section 5.1.4 of Appendix C of the *CalEEMod User's Guide* (ICF 2022).

^c P taken as the CalEEMod default value for the Imperial County Airport from Table G-2 of Appendix G of the *CalEEMod User's Guide* (ICF 2022).

^d Emission factor calculated per Section 5.1.4 of Appendix C of the *CalEEMod User's Guide* (ICF 2022):

$$EF_{unpaved}(lb/mile) = \left(\frac{k(s/12)^1(S/30)^{0.5}}{(M/0.5)^{0.2}} - C \right) \times \left(1 - \frac{P}{365} \right)$$

^e Control efficiency of watering disturbed areas three times per 8-hour shift (every 2.1 hours) taken from Section 4.4.4 of Appendix C of the *CalEEMod User's Guide* (ICF 2022) and assumes the same control as indicated for grading, bulldozing, and truck loading.

Fugitive Dust Emission Factors for Truck Dumping/Loading

Truck Dumping on a Pile or Loading to a Truck from a Pile

Parameter	PM ₁₀	PM _{2.5}
k ^a	0.35	0.053
U ^b	7.6	7.6
M ^a	12.0	12.0
Emission Factor (lb/ton) ^c	0.00016	0.000024

Notes:

^a k and M taken from Section 4.4.3 of Appendix C of the *CalEEMod User's Guide* (ICF 2022).

^b U taken as the average annual wind speed measured at the Imperial Airport, as presented in Table G-1 of Appendix G of the *CalEEMod User's Guide* (ICF 2022). Original value of 3.4 m/s has been converted to mph.

^c Emission factor calculated using the following equation from Section 4.4.3 of Appendix C of the *CalEEMod User's Guide* (ICF 2022):

$$\text{Emission Factor (lb/ton)} = k \times 0.0032 \times [U \text{ (mph)} / 5]^{1.3} / [M \text{ (\%)} / 2]^{1.4}$$

Fugitive Dust Emission Factors for Grading

Grading Equipment Passes

Parameter	PM ₁₀	PM _{2.5}
S ^a	7.1	7.1
F ^a	0.6	0.031
Emission Factor (lb/VMT) ^b	1.543	0.167
Reduction from Watering Every 2.1 Hours ^c	74%	74%
Emission Factor (Controlled, lb/VMT)	0.401	0.043

Notes:

^a S and F taken from Section 4.4.1 of Appendix C of the *CalEEMod User's Guide* (ICF 2022).

^b Emission factors calculated using the following equations from Section 4.4.1 of Appendix C of the *CalEEMod User's Guide* (ICF 2022):

$$\text{PM}_{10} \text{ Emission Factor (lb/VMT)} = 0.051 \times [S \text{ (mph)}]^{2.0} \times F_{\text{PM}10}$$

$$\text{PM}_{2.5} \text{ Emission Factor (lb/VMT)} = 0.04 \times [S \text{ (mph)}]^{2.5} \times F_{\text{PM}2.5}$$

^c Control efficiency of watering disturbed areas three times per 8-hour shift (every 2.1 hours) taken from Section 4.4.4 of Appendix C of the *CalEEMod User's Guide* (ICF 2022).

Black Rock Geothermal Project

BRGP Construction Emissions

Table 7. Emissions from Fugitive Dust and Other Offroad Activities

April 2023

Parameter
k - Particle Size Multiplier (lb/VMT) ^a
s - Silt Content (%) ^a
M - Surface Material Moisture Content (%) ^a
S - Mean Vehicle Speed (mph) ^a
C - Emission Factor for Exhaust, Brake Wear and Tire Wear (lb/VMT) ^b
P - Days per Year With at Least 0.01" of Precipitation ^c
Emission Factor (Uncontrolled, lb/mile) ^d
Reduction from Watering Every 2.1 Hours ^e
Emission Factor (Controlled, lb/mile)

Notes:

^a k, s, M, and S are taken as the CalEEMod default values from Section 5

^b C taken as the default values from Table 13.2.2-4 of *AP-42* (EPA 2006),

^c P taken as the CalEEMod default value for the Imperial County Airport fr

^d Emission factor calculated per Section 5.1.4 of Appendix C of the *CalEE*

$$EF_{unpaved}(lb/mile) = \left(\frac{k(s/12)^1(S/30)^{0.5}}{(M/0.5)^{0.2}} - C \right) \times \left(1 - \frac{P}{365} \right)$$

^e Control efficiency of watering disturbed areas three times per 8-hour shif

Parameter
k ^a
U ^b
M ^a
Emission Factor (lb/ton) ^c

Notes:

^a k and M taken from Section 4.4.3 of Appendix C of the *CalEEMod User's*

^b U taken as the average annual wind speed measured at the Imperial Air

^c Emission factor calculated using the following equation from Section 4.4.

Emission Factor (lb/ton) = k x 0.0032 x [U (mph) / 5]^{1.3} / [M (%) / 2]^{1.4}

Parameter
S ^a
F ^a
Emission Factor (lb/VMT) ^b
Reduction from Watering Every 2.1 Hours ^c
Emission Factor (Controlled, lb/VMT)

Notes:

^a S and F taken from Section 4.4.1 of Appendix C of the *CalEEMod User's*

^b Emission factors calculated using the following equations from Section 4

PM₁₀ Emission Factor (lb/VMT) = 0.051 x [S (mph)]^{2.0} x F_{PM10}

PM_{2.5} Emission Factor (lb/VMT) = 0.04 x [S (mph)]^{2.5} x F_{PM2.5}

^c Control efficiency of watering disturbed areas three times per 8-hour shif

Black Rock Geothermal Project
BRGP Construction Emissions
Table 8. Paving Emissions
April 2023

Onsite Paving VOC Emissions from BRGP Construction

Paving Area	VOC Emissions (lb/day) ^{a,b}													2025				
	2024													2025				
	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Onsite Paved Areas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.68	0.68	0.00	0.00
Total Daily Onsite Emissions (lb/day)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.68	0.68	0.00	0.00
Paving Area	VOC Emissions (lb/month) ^{a,b}													2025				
	2024													2025				
	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Onsite Paved Areas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.72	15.72	0.00	0.00
Total Monthly Onsite Emissions (lb/month)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.72	15.72	0.00	0.00
Total Project Emissions (tons)	0.02																	

Notes:
^a Assumed paving activities occur during only the months where a compactor was in use, for a total of: 2 months
^b The total amount of paving was assumed to occur evenly during the months of paving operations.

Offsite Paving VOC Emissions from BRGP Construction

Paving Area	VOC Emissions (lb/day) ^{a,b}													2025				
	2024													2025				
	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Offsite Paved Areas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.96	0.96	0.00	0.00
Total Daily Offsite Emissions (lb/day)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.96	0.96	0.00	0.00
Paving Area	VOC Emissions (lb/month) ^{a,b}													2025				
	2024													2025				
	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Offsite Paved Areas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	22.15	22.15	0.00	0.00
Total Monthly Offsite Emissions (lb/month)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	22.15	22.15	0.00	0.00
Total Project Emissions (tons)	0.02																	

Notes:
^a Assumed paving activities occur during only the months where a compactor was in use, for a total of: 2 months
^b The total amount of paving was assumed to occur evenly during the months of paving operations.

Paving Emission Variables

Parameter	Value	Percent of Total Area
Onsite Paved Area (acres) ^a	12.0	42%
Offsite Paved Area (acres) ^b	16.9	58%
Working Days per Month ^c	23	
Emission Factor (lb/acre) ^d	2.62	

Notes:
^a Onsite paved area estimated to include plant area and roads and was provided by the Applicant's engineering contractor.
^b Offsite paved area estimated to include well pads and roads and was provided by the Applicant's engineering contractor. Paved road width was assumed to be 30 feet.
^c Working days per month were provided by the Applicant's engineering contractor.
^d Emission factor is per Section 4.9 of Appendix C of the *CalEEMod User's Guide* (ICF 2022).

Black Rock Geothermal Project
BRGP Construction Emissions
Table 8. Paving Emissions
April 2023

Onsite Paving VOC Emissions from BRGP Constructi

Paving Area							2026											
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Daily Onsite Emissions (lb/day)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Area							2026											
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Monthly Onsite Emissions (lb/month)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Project Emissions (tons)																		

Notes:
^a Assumed paving activities occur during only the months
^b The total amount of paving was assumed to occur evenl

Offsite Paving VOC Emissions from BRGP Constructi

Paving Area							2026											
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Daily Offsite Emissions (lb/day)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Area							2026											
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Monthly Offsite Emissions (lb/month)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Project Emissions (tons)																		

Notes:
^a Assumed paving activities occur during only the months
^b The total amount of paving was assumed to occur evenl

Paving Emission Variables

Parameter
Onsite Paved Area (acres) ^a
Offsite Paved Area (acres) ^b
Working Days per Month ^c
Emission Factor (lb/acre) ^d

Notes:
^a Onsite paved area estimated to include plant area and r
^b Offsite paved area estimated to include well pads and rc
^c Working days per month were provided by the Applicant
^d Emission factor is per Section 4.9 of Appendix C of the C

Black Rock Geothermal Project
BRGP Construction Emissions
Table 9. Offsite, Onroad Vehicle Exhaust Emissions
April 2023

Offsite, Onroad Vehicle Exhaust CO Emissions from BRGP Construction																		
Vehicle Type	CO Emissions (lb/day)																	
	2024												2025					
	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Onroad Delivery Trucks ^a	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.03
Material Hauling Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.01	0.01	0.00
Construction Worker Commute ^b	0.00	0.00	0.00	1.10	1.65	4.49	9.44	9.62	11.91	12.28	16.50	17.23	22.73	24.56	23.83	24.93	25.48	29.14
Average Daily Offsite, Onroad Emissions (lb/day)	0.00	0.00	0.00	1.11	1.66	4.50	9.45	9.64	11.93	12.30	16.52	17.26	22.76	24.61	23.87	24.97	25.51	29.17
Vehicle Type	CO Emissions (lb/month) ^c																	
	2024												2025					
	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Onroad Delivery Trucks	0.02	0.04	0.08	0.13	0.22	0.22	0.24	0.33	0.39	0.39	0.50	0.56	0.65	0.59	0.59	0.63	0.63	0.58
Material Hauling Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.19	0.50	0.48	0.31	0.19	0.00
Construction Worker Commute	0.00	0.00	0.00	25.29	37.94	103.28	217.09	221.31	274.00	282.43	379.39	396.25	522.71	564.87	548.01	573.30	585.94	670.25
Total Monthly Offsite, Onroad Emissions (lb/month)	0.02	0.04	0.08	25.42	38.16	103.50	217.33	221.64	274.39	282.82	379.88	396.90	523.55	565.95	549.07	574.23	586.76	670.83
Total Project Offsite, Onroad Emissions (tons)	5.97																	

Offsite, Onroad Vehicle Exhaust VOC Emissions from BRGP Construction																		
Vehicle Type	VOC Emissions (lb/day)																	
	2024												2025					
	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Onroad Delivery Trucks ^a	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Material Hauling Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Construction Worker Commute ^b	0.00	0.00	0.00	0.02	0.02	0.07	0.14	0.15	0.18	0.19	0.25	0.26	0.34	0.37	0.36	0.38	0.38	0.44
Average Daily Offsite, Onroad Emissions (lb/day)	0.00	0.00	0.00	0.02	0.03	0.07	0.14	0.15	0.18	0.19	0.25	0.26	0.35	0.38	0.37	0.38	0.39	0.44
Vehicle Type	VOC Emissions (lb/month) ^c																	
	2024												2025					
	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Onroad Delivery Trucks	0.00	0.01	0.01	0.02	0.03	0.03	0.04	0.05	0.06	0.06	0.08	0.08	0.10	0.09	0.09	0.10	0.10	0.09
Material Hauling Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.05	0.05	0.03	0.02	0.00
Construction Worker Commute	0.00	0.00	0.00	0.38	0.57	1.56	3.28	3.34	4.14	4.27	5.73	5.98	7.89	8.53	8.28	8.66	8.85	10.12
Total Monthly Offsite, Onroad Emissions (lb/month)	0.00	0.01	0.01	0.40	0.61	1.59	3.32	3.39	4.20	4.32	5.81	6.08	8.01	8.67	8.42	8.79	8.97	10.21
Total Project Offsite, Onroad Emissions (tons)	0.09																	

Offsite, Onroad Vehicle Exhaust SO _x Emissions from BRGP Construction																		
Vehicle Type	SO _x Emissions (lb/day)																	
	2024												2025					
	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Onroad Delivery Trucks ^a	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Material Hauling Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Construction Worker Commute ^b	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.03	0.04	0.03	0.04	0.04	0.04
Average Daily Offsite, Onroad Emissions (lb/day)	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.02	0.03	0.03	0.04	0.04	0.04	0.04	0.04	0.05
Vehicle Type	SO _x Emissions (lb/month) ^c																	
	2024												2025					
	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Onroad Delivery Trucks	0.00	0.00	0.01	0.02	0.03	0.03	0.03	0.04	0.05	0.05	0.06	0.07	0.08	0.08	0.08	0.08	0.08	0.08
Material Hauling Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.03	0.07	0.07	0.04	0.03	0.00
Construction Worker Commute	0.00	0.00	0.00	0.04	0.05	0.15	0.31	0.32	0.40	0.41	0.55	0.57	0.75	0.81	0.79	0.83	0.85	0.97
Total Monthly Offsite, Onroad Emissions (lb/month)	0.00	0.00	0.01	0.05	0.08	0.18	0.34	0.36	0.45	0.46	0.61	0.66	0.87	0.96	0.94	0.95	0.96	1.04
Total Project Offsite, Onroad Emissions (tons)	0.01																	

Black Rock Geothermal Project
BRGP Construction Emissions
Table 9. Offsite, Onroad Vehicle Exhaust Emissions
April 2023

Offsite, Onroad Vehicle Exhaust CO Emissions from BRGP Construc

Vehicle Type	2026																	
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
Onroad Delivery Trucks ^a	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01
Material Hauling Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Construction Worker Commute ^b	30.61	37.76	39.04	37.39	34.27	33.36	24.19	22.36	8.98	5.32	3.12	2.75	2.38	1.83	0.00	0.00	0.00	0.00
Average Daily Offsite, Onroad Emissions (lb/day)	30.63	37.78	39.06	37.41	34.28	33.36	24.20	22.37	8.99	5.32	3.12	2.75	2.40	1.85	0.01	0.01	0.01	0.01
Vehicle Type	2026																	
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
Onroad Delivery Trucks	0.52	0.52	0.49	0.49	0.23	0.17	0.17	0.17	0.17	0.05	0.05	0.05	0.30	0.30	0.28	0.28	0.22	0.22
Material Hauling Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Construction Worker Commute	703.98	868.38	897.89	859.95	788.28	767.21	556.44	514.28	206.56	122.25	71.66	63.23	54.80	42.15	0.00	0.00	0.00	0.00
Total Monthly Offsite, Onroad Emissions (lb/month)	704.50	868.90	898.38	860.44	788.51	767.37	556.60	514.45	206.72	122.29	71.71	63.28	55.10	42.45	0.28	0.28	0.22	0.22
Total Project Offsite, Onroad Emissions (tons)																		

Offsite, Onroad Vehicle Exhaust VOC Emissions from BRGP Construc

Vehicle Type	2026																	
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
Onroad Delivery Trucks ^a	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Material Hauling Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Construction Worker Commute ^b	0.46	0.57	0.59	0.56	0.52	0.50	0.37	0.34	0.14	0.08	0.05	0.04	0.04	0.03	0.00	0.00	0.00	0.00
Average Daily Offsite, Onroad Emissions (lb/day)	0.47	0.57	0.59	0.57	0.52	0.50	0.37	0.34	0.14	0.08	0.05	0.04	0.04	0.03	0.00	0.00	0.00	0.00
Vehicle Type	2026																	
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
Onroad Delivery Trucks	0.08	0.08	0.07	0.07	0.03	0.03	0.03	0.03	0.03	0.01	0.01	0.01	0.05	0.05	0.04	0.04	0.03	0.03
Material Hauling Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Construction Worker Commute	10.63	13.12	13.56	12.99	11.91	11.59	8.40	7.77	3.12	1.85	1.08	0.95	0.83	0.64	0.00	0.00	0.00	0.00
Total Monthly Offsite, Onroad Emissions (lb/month)	10.71	13.19	13.64	13.06	11.94	11.61	8.43	7.79	3.14	1.85	1.09	0.96	0.87	0.68	0.04	0.04	0.03	0.03
Total Project Offsite, Onroad Emissions (tons)																		

Offsite, Onroad Vehicle Exhaust SO_x Emissions from BRGP Construc

Vehicle Type	2026																	
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
Onroad Delivery Trucks ^a	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Material Hauling Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Construction Worker Commute ^b	0.04	0.05	0.06	0.05	0.05	0.05	0.03	0.03	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily Offsite, Onroad Emissions (lb/day)	0.05	0.06	0.06	0.06	0.05	0.05	0.04	0.03	0.01	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00
Vehicle Type	2026																	
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
Onroad Delivery Trucks	0.07	0.07	0.06	0.06	0.03	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.04	0.04	0.04	0.04	0.03	0.03
Material Hauling Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Construction Worker Commute	1.02	1.25	1.30	1.24	1.14	1.11	0.80	0.74	0.30	0.18	0.10	0.09	0.08	0.06	0.00	0.00	0.00	0.00
Total Monthly Offsite, Onroad Emissions (lb/month)	1.08	1.32	1.36	1.30	1.17	1.13	0.82	0.76	0.32	0.18	0.11	0.10	0.12	0.10	0.04	0.04	0.03	0.03
Total Project Offsite, Onroad Emissions (tons)																		

Black Rock Geothermal Project
BRGP Construction Emissions
Table 9. Offsite, Onroad Vehicle Exhaust Emissions
April 2023

Offsite, Onroad Vehicle Exhaust NO_x Emissions from BRGP Construction

Vehicle Type	NO _x Emissions (lb/day)													2025				
	2024													2025				
	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Onroad Delivery Trucks ^a	0.01	0.02	0.05	0.07	0.12	0.12	0.13	0.18	0.22	0.22	0.28	0.31	0.36	0.33	0.33	0.35	0.35	0.33
Material Hauling Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.11	0.28	0.27	0.17	0.11	0.00
Construction Worker Commute ^b	0.00	0.00	0.00	0.07	0.10	0.27	0.57	0.58	0.72	0.74	1.00	1.04	1.38	1.49	1.44	1.51	1.54	1.77
Average Daily Offsite, Onroad Emissions (lb/day)	0.01	0.02	0.05	0.14	0.22	0.39	0.71	0.77	0.94	0.96	1.28	1.41	1.85	2.10	2.05	2.04	2.01	2.09
Vehicle Type	NO _x Emissions (lb/month) ^c													2025				
	2024													2025				
	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Onroad Delivery Trucks	0.31	0.48	1.06	1.64	2.80	2.80	3.09	4.25	5.03	5.03	6.38	7.15	8.31	7.54	7.54	8.12	8.12	7.50
Material Hauling Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.26	2.51	6.53	6.28	4.02	2.51	0.00
Construction Worker Commute	0.00	0.00	0.00	1.53	2.30	6.26	13.16	13.42	16.61	17.12	23.00	24.02	31.69	34.24	33.22	34.75	35.52	40.63
Total Monthly Offsite, Onroad Emissions (lb/month)	0.31	0.48	1.06	3.18	5.10	9.06	16.25	17.67	21.64	22.15	29.38	32.43	42.51	48.31	47.04	46.89	46.15	48.13
Total Project Offsite, Onroad Emissions (tons)	0.45																	

Offsite, Onroad Vehicle Exhaust, Vehicle Wear, and Fugitive Dust PM₁₀ Emissions from BRGP Construction

Vehicle Type	PM ₁₀ Emissions (lb/day) ^d													2025				
	2024													2025				
	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Onroad Delivery Trucks ^a	0.00	0.01	0.02	0.02	0.04	0.04	0.05	0.06	0.07	0.07	0.09	0.10	0.12	0.11	0.11	0.12	0.12	0.11
Material Hauling Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.04	0.09	0.09	0.06	0.04	0.00
Construction Worker Commute ^b	0.00	0.00	0.00	0.16	0.24	0.66	1.39	1.41	1.75	1.80	2.42	2.53	3.34	3.61	3.50	3.66	3.74	4.28
Average Daily Offsite, Onroad Emissions (lb/day)	0.00	0.01	0.02	0.19	0.28	0.70	1.43	1.47	1.82	1.88	2.51	2.65	3.49	3.81	3.70	3.83	3.89	4.39
Vehicle Type	PM ₁₀ Emissions (lb/month) ^{c, d}													2025				
	2024													2025				
	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Onroad Delivery Trucks	0.10	0.16	0.36	0.55	0.94	0.94	1.04	1.43	1.69	1.69	2.14	2.40	2.79	2.53	2.53	2.73	2.73	2.52
Material Hauling Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.41	0.82	2.13	2.05	1.31	0.82	0.00
Construction Worker Commute	0.00	0.00	0.00	3.71	5.57	15.16	31.87	32.49	40.23	41.46	55.70	58.17	76.74	82.93	80.45	84.16	86.02	98.40
Total Monthly Offsite, Onroad Emissions (lb/month)	0.10	0.16	0.36	4.26	6.51	16.10	32.91	33.92	41.91	43.15	57.84	60.98	80.35	87.59	85.03	88.20	89.57	100.92
Total Project Offsite, Onroad Emissions (tons)	0.90																	

Offsite, Onroad Vehicle Exhaust, Vehicle Wear, and Fugitive Dust PM_{2.5} Emissions from BRGP Construction

Vehicle Type	PM _{2.5} Emissions (lb/day) ^d													2025				
	2024													2025				
	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Onroad Delivery Trucks ^a	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Material Hauling Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.03	0.02	0.01	0.00
Construction Worker Commute ^b	0.00	0.00	0.00	0.04	0.06	0.17	0.36	0.36	0.45	0.47	0.62	0.65	0.86	0.93	0.90	0.94	0.96	1.10
Average Daily Offsite, Onroad Emissions (lb/day)	0.00	0.00	0.00	0.05	0.07	0.18	0.37	0.38	0.47	0.49	0.65	0.69	0.91	0.99	0.96	0.99	1.01	1.14
Vehicle Type	PM _{2.5} Emissions (lb/month) ^{c, d}													2025				
	2024													2025				
	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Onroad Delivery Trucks	0.03	0.05	0.10	0.16	0.27	0.27	0.30	0.41	0.48	0.48	0.61	0.69	0.80	0.73	0.73	0.78	0.78	0.72
Material Hauling Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.24	0.62	0.60	0.38	0.24	0.00
Construction Worker Commute	0.00	0.00	0.00	0.96	1.44	3.91	8.22	8.38	10.38	10.70	14.37	15.01	19.80	21.39	20.76	21.71	22.19	25.39
Total Monthly Offsite, Onroad Emissions (lb/month)	0.03	0.05	0.10	1.12	1.71	4.18	8.52	8.79	10.86	11.18	14.98	15.82	20.84	22.74	22.08	22.88	23.21	26.11
Total Project Offsite, Onroad Emissions (tons)	0.23																	

Black Rock Geothermal Project
BRGP Construction Emissions
Table 9. Offsite, Onroad Vehicle Exhaust Emissions
April 2023

Offsite, Onroad Vehicle Exhaust NO_x Emissions from BRGP Construi

Vehicle Type	2026																	
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
Onroad Delivery Trucks ^a	0.29	0.29	0.28	0.28	0.13	0.09	0.09	0.09	0.09	0.03	0.03	0.03	0.17	0.17	0.16	0.16	0.12	0.12
Material Hauling Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Construction Worker Commute ^b	1.86	2.29	2.37	2.27	2.08	2.02	1.47	1.36	0.54	0.32	0.19	0.17	0.14	0.11	0.00	0.00	0.00	0.00
Average Daily Offsite, Onroad Emissions (lb/day)	2.15	2.58	2.64	2.54	2.20	2.11	1.56	1.45	0.64	0.35	0.21	0.19	0.31	0.28	0.16	0.16	0.12	0.12
Vehicle Type	2026																	
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
Onroad Delivery Trucks	6.73	6.73	6.34	6.34	2.90	2.13	2.13	2.13	2.13	0.58	0.58	0.58	3.87	3.87	3.63	3.63	2.86	2.86
Material Hauling Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Construction Worker Commute	42.67	52.64	54.43	52.13	47.78	46.51	33.73	31.17	12.52	7.41	4.34	3.83	3.32	2.56	0.00	0.00	0.00	0.00
Total Monthly Offsite, Onroad Emissions (lb/month)	49.40	59.37	60.77	58.47	50.68	48.63	35.86	33.30	14.65	7.99	4.92	4.41	7.19	6.42	3.63	3.63	2.86	2.86
Total Project Offsite, Onroad Emissions (tons)																		

Offsite, Onroad Vehicle Exhaust, Vehicle Wear, and Fugitive Dust PM

Vehicle Type	2026																	
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
	Onroad Delivery Trucks ^a	0.10	0.10	0.09	0.09	0.04	0.03	0.03	0.03	0.01	0.01	0.01	0.06	0.06	0.05	0.05	0.04	0.04
Material Hauling Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Construction Worker Commute ^b	4.49	5.54	5.73	5.49	5.03	4.90	3.55	3.28	1.32	0.78	0.46	0.40	0.35	0.27	0.00	0.00	0.00	0.00
Average Daily Offsite, Onroad Emissions (lb/day)	4.59	5.64	5.82	5.58	5.07	4.93	3.58	3.31	1.35	0.79	0.47	0.41	0.41	0.33	0.05	0.05	0.04	0.04
Vehicle Type	2026																	
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
	Onroad Delivery Trucks	2.26	2.26	2.13	2.13	0.97	0.71	0.71	0.71	0.19	0.19	0.19	1.30	1.30	1.22	1.22	0.96	0.96
Material Hauling Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Construction Worker Commute	103.35	127.48	131.82	126.25	115.72	112.63	81.69	75.50	30.32	17.95	10.52	9.28	8.05	6.19	0.00	0.00	0.00	0.00
Total Monthly Offsite, Onroad Emissions (lb/month)	105.61	129.74	133.94	128.37	116.70	113.34	82.40	76.21	31.04	18.14	10.72	9.48	9.34	7.49	1.22	1.22	0.96	0.96
Total Project Offsite, Onroad Emissions (tons)																		

Offsite, Onroad Vehicle Exhaust, Vehicle Wear, and Fugitive Dust PM

Vehicle Type	2026																	
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
Onroad Delivery Trucks ^a	0.03	0.03	0.03	0.03	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.01	0.01
Material Hauling Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Construction Worker Commute ^b	1.16	1.43	1.48	1.42	1.30	1.26	0.92	0.85	0.34	0.20	0.12	0.10	0.09	0.07	0.00	0.00	0.00	0.00
Average Daily Offsite, Onroad Emissions (lb/day)	1.19	1.46	1.51	1.44	1.31	1.27	0.93	0.86	0.35	0.20	0.12	0.11	0.11	0.09	0.02	0.02	0.01	0.01
Vehicle Type	2026																	
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
Onroad Delivery Trucks	0.65	0.65	0.61	0.61	0.28	0.20	0.20	0.20	0.20	0.06	0.06	0.06	0.37	0.37	0.35	0.35	0.28	0.28
Material Hauling Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Construction Worker Commute	26.66	32.89	34.01	32.57	29.86	29.06	21.08	19.48	7.82	4.63	2.71	2.39	2.08	1.60	0.00	0.00	0.00	0.00
Total Monthly Offsite, Onroad Emissions (lb/month)	27.31	33.54	34.62	33.18	30.14	29.26	21.28	19.68	8.03	4.69	2.77	2.45	2.45	1.97	0.35	0.35	0.28	0.28
Total Project Offsite, Onroad Emissions (tons)																		

Black Rock Geothermal Project
BRGP Construction Emissions
Table 9. Offsite, Onroad Vehicle Exhaust Emissions
April 2023

Offsite, Onroad Vehicle Exhaust CO ₂ Emissions from BRGP Construction																		
Vehicle Type	CO ₂ Emissions (metric tons/day)																	
	2024												2025					
	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Onroad Delivery Trucks ^a	0.01	0.01	0.02	0.03	0.06	0.06	0.07	0.09	0.11	0.11	0.13	0.15	0.17	0.16	0.16	0.17	0.17	0.16
Material Hauling Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.06	0.15	0.14	0.09	0.06	0.00
Construction Worker Commute ^b	0.00	0.00	0.00	0.00	0.11	0.29	0.61	0.62	0.77	0.80	1.07	1.12	1.47	1.59	1.54	1.62	1.65	1.89
Average Daily Offsite, Onroad Emissions (metric tons/day)	0.01	0.01	0.02	0.11	0.17	0.35	0.68	0.71	0.88	0.90	1.20	1.30	1.71	1.90	1.85	1.88	1.88	2.05
Vehicle Type	CO ₂ Emissions (metric tons/month) ^c																	
	2024												2025					
	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Onroad Delivery Trucks	0.15	0.23	0.51	0.80	1.36	1.36	1.50	2.06	2.43	2.43	3.09	3.46	4.02	3.65	3.65	3.93	3.93	3.63
Material Hauling Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.66	1.32	3.43	3.30	2.11	1.32	0.00
Construction Worker Commute	0.00	0.00	0.00	1.64	2.46	6.69	14.07	14.35	17.76	18.31	24.59	25.69	33.88	36.62	35.52	37.16	37.98	43.45
Total Monthly Offsite, Onroad Emissions (metric tons/month)	0.15	0.23	0.51	2.43	3.82	8.05	15.57	16.40	20.19	20.74	27.68	29.81	39.23	43.70	42.47	43.20	43.23	47.08
Total Project Offsite, Onroad Emissions (metric tons)	855.98																	

Offsite, Onroad Vehicle Exhaust N ₂ O Emissions from BRGP Construction																		
Vehicle Type	N ₂ O Emissions (metric tons/day)																	
	2024												2025					
	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Onroad Delivery Trucks ^a	1.02E-08	1.59E-08	3.49E-08	5.40E-08	9.21E-08	9.21E-08	1.02E-07	1.40E-07	1.65E-07	1.65E-07	2.10E-07	2.35E-07	2.73E-07	2.48E-07	2.48E-07	2.67E-07	2.67E-07	2.46E-07
Material Hauling Trucks	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.28E-08	1.26E-07	3.26E-07	3.14E-07	2.01E-07	1.26E-07	0.00E+00
Construction Worker Commute ^b	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.84E-07	4.25E-07	1.16E-06	2.43E-06	2.48E-06	3.07E-06	3.17E-06	4.25E-06	4.44E-06	5.86E-06	6.33E-06	6.14E-06	6.43E-06	6.57E-06
Average Daily Offsite, Onroad Emissions (metric tons/day)	1.02E-08	1.59E-08	3.49E-08	3.37E-07	5.17E-07	1.25E-06	2.53E-06	2.62E-06	3.24E-06	3.33E-06	4.46E-06	4.74E-06	6.26E-06	6.91E-06	6.70E-06	6.89E-06	6.96E-06	7.76E-06
Vehicle Type	N ₂ O Emissions (metric tons/month) ^c																	
	2024												2025					
	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Onroad Delivery Trucks	2.34E-07	3.65E-07	8.03E-07	1.24E-06	2.12E-06	2.12E-06	2.34E-06	3.21E-06	3.80E-06	3.80E-06	4.82E-06	5.40E-06	6.28E-06	5.69E-06	5.69E-06	6.13E-06	6.13E-06	5.67E-06
Material Hauling Trucks	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.44E-06	2.89E-06	7.51E-06	7.22E-06	4.62E-06	2.89E-06	0.00E+00
Construction Worker Commute	0.00E+00	0.00E+00	0.00E+00	6.52E-06	9.78E-06	2.66E-05	5.60E-05	5.71E-05	7.06E-05	7.28E-05	9.78E-05	1.02E-04	1.35E-04	1.46E-04	1.41E-04	1.48E-04	1.51E-04	1.73E-04
Total Monthly Offsite, Onroad Emissions (metric tons/month)	2.34E-07	3.65E-07	8.03E-07	7.76E-06	1.19E-05	2.87E-05	5.83E-05	6.03E-05	7.44E-05	7.66E-05	1.03E-04	1.09E-04	1.44E-04	1.59E-04	1.54E-04	1.59E-04	1.60E-04	1.78E-04
Total Project Offsite, Onroad Emissions (metric tons)	3.21E-03																	

Offsite, Onroad Vehicle Exhaust CH ₄ Emissions from BRGP Construction																		
Vehicle Type	CH ₄ Emissions (metric tons/day)																	
	2024												2025					
	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Onroad Delivery Trucks ^a	3.34E-09	5.21E-09	1.15E-08	1.77E-08	3.02E-08	3.02E-08	3.34E-08	4.59E-08	5.42E-08	5.42E-08	6.88E-08	7.72E-08	8.97E-08	8.13E-08	8.13E-08	8.76E-08	8.76E-08	8.09E-08
Material Hauling Trucks	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.40E-09	1.88E-08	4.89E-08	4.70E-08	3.01E-08	1.88E-08	0.00E+00
Construction Worker Commute ^b	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.94E-06	2.91E-06	7.92E-06	1.66E-05	1.70E-05	2.10E-05	2.17E-05	2.91E-05	3.04E-05	4.01E-05	4.33E-05	4.20E-05	4.39E-05	5.14E-05
Average Daily Offsite, Onroad Emissions (metric tons/day)	3.34E-09	5.21E-09	1.15E-08	1.96E-06	2.94E-06	7.95E-06	1.67E-05	1.70E-05	2.11E-05	2.17E-05	2.92E-05	3.05E-05	4.02E-05	4.34E-05	4.21E-05	4.41E-05	4.50E-05	5.15E-05
Vehicle Type	CH ₄ Emissions (metric tons/month) ^c																	
	2024												2025					
	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Onroad Delivery Trucks	7.67E-08	1.20E-07	2.64E-07	4.08E-07	6.95E-07	6.95E-07	7.67E-07	1.06E-06	1.25E-06	1.25E-06	1.58E-06	1.77E-06	2.06E-06	1.87E-06	1.87E-06	2.01E-06	2.01E-06	1.86E-06
Material Hauling Trucks	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.16E-07	4.33E-07	1.12E-06	1.08E-06	6.92E-07	4.33E-07	0.00E+00
Construction Worker Commute	0.00E+00	0.00E+00	0.00E+00	4.46E-05	6.69E-05	1.82E-04	3.83E-04	3.90E-04	4.83E-04	4.98E-04	6.69E-04	6.99E-04	9.22E-04	9.96E-04	9.66E-04	1.01E-03	1.03E-03	1.18E-03
Total Monthly Offsite, Onroad Emissions (metric tons/month)	7.67E-08	1.20E-07	2.64E-07	4.50E-05	6.76E-05	1.83E-04	3.84E-04	3.91E-04	4.84E-04	4.99E-04	6.70E-04	7.01E-04	9.24E-04	9.99E-04	9.69E-04	1.01E-03	1.04E-03	1.18E-03
Total Project Offsite, Onroad Emissions (metric tons)	2.11E-02																	

Notes:
^a Onroad Delivery Trucks include information provided by the Applicant's engineering contractor, and exclude material haul trucks separately reported.
^b Assumed 1 commute per 1 worker; number of workers traveling to both onsite and offsite locations provided by the Applicant's engineering contractor as Total Staffing each month.
^c Working days per month were provided by the Applicant's engineering contractor.
^d PM₁₀ and PM_{2.5} Emissions include emissions from exhaust, paved roads, and tire and brake wear.

Onroad Construction Vehicle Activity for BRGP Construction		
Vehicle Type	Roundtrip Miles/Day	Working Days per Month ^a
Onroad Delivery Trucks ^b	13.54	23
Material Hauling Trucks ^c	40	23
Construction Worker Commute ^d	19.36	23

Notes:
^a Number of work days per month provided by the Applicant's engineering contractor.
^b Delivery trucks assumed to be "Vendor Trucks" per Section 4.6.2 of Appendix C of the *CalEEMod User's Guide* . Therefore, roundtrip miles/day for Delivery Trucks are taken from Table G-15 for Imperial County Work-Other Trips of Appendix G of the *CalEEMod User's Guide* (ICF 2022).
^c Roundtrip miles/day for Material Hauling Trucks taken from Section 4.6.2 of Appendix C of the *CalEEMod User's Guide* (ICF 2022).
^d Roundtrip miles/day for Construction Worker Commute taken from Table G-15 for Imperial County Home-Work Trips of Appendix G of the *CalEEMod User's Guide* (ICF 2022).

Black Rock Geothermal Project
BRGP Construction Emissions
Table 9. Offsite, Onroad Vehicle Exhaust Emissions
April 2023

Offsite, Onroad Vehicle Exhaust CO₂ Emissions from BRGP Construc

Vehicle Type	2026																	
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
Onroad Delivery Trucks ^a	0.14	0.14	0.13	0.13	0.06	0.04	0.04	0.04	0.04	0.01	0.01	0.01	0.08	0.08	0.08	0.08	0.06	0.06
Material Hauling Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Construction Worker Commute ^b	1.98	2.45	2.53	2.42	2.22	2.16	1.57	1.45	0.58	0.34	0.20	0.18	0.15	0.12	0.00	0.00	0.00	0.00
Average Daily Offsite, Onroad Emissions (metric tons/day)	2.13	2.59	2.66	2.56	2.28	2.21	1.61	1.49	0.63	0.36	0.21	0.19	0.24	0.20	0.08	0.08	0.06	0.06
Vehicle Type	2026																	
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
Onroad Delivery Trucks	3.26	3.26	3.07	3.07	1.40	1.03	1.03	1.03	1.03	0.28	0.28	0.28	1.87	1.87	1.76	1.76	1.38	1.38
Material Hauling Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Construction Worker Commute	45.63	56.29	58.20	55.74	51.10	49.73	36.07	33.34	13.39	7.92	4.65	4.10	3.55	2.73	0.00	0.00	0.00	0.00
Total Monthly Offsite, Onroad Emissions (metric tons/month)	48.89	59.55	61.27	58.81	52.50	50.76	37.10	34.37	14.42	8.20	4.93	4.38	5.42	4.60	1.76	1.76	1.38	1.38
Total Project Offsite, Onroad Emissions (metric tons)																		

Offsite, Onroad Vehicle Exhaust N₂O Emissions from BRGP Construc

Vehicle Type	2026																	
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
Onroad Delivery Trucks ^a	2.21E-07	2.21E-07	2.08E-07	2.08E-07	9.52E-08	6.98E-08	6.98E-08	6.98E-08	6.98E-08	1.90E-08	1.90E-08	1.90E-08	1.27E-07	1.27E-07	1.19E-07	1.19E-07	9.40E-08	9.40E-08
Material Hauling Trucks	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Construction Worker Commute ^b	7.89E-06	9.73E-06	1.01E-05	9.64E-06	8.84E-06	8.60E-06	6.24E-06	5.76E-06	2.32E-06	1.37E-06	8.03E-07	7.09E-07	6.14E-07	4.73E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Average Daily Offsite, Onroad Emissions (metric tons/day)	8.11E-06	9.95E-06	1.03E-05	9.85E-06	8.93E-06	8.67E-06	6.31E-06	5.83E-06	2.39E-06	1.39E-06	8.22E-07	7.28E-07	7.41E-07	5.99E-07	1.19E-07	1.19E-07	9.40E-08	9.40E-08
Vehicle Type	2026																	
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
Onroad Delivery Trucks	5.08E-06	5.08E-06	4.79E-06	4.79E-06	2.19E-06	1.61E-06	1.61E-06	1.61E-06	1.61E-06	4.38E-07	4.38E-07	4.38E-07	2.92E-06	2.92E-06	2.75E-06	2.75E-06	2.16E-06	2.16E-06
Material Hauling Trucks	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Construction Worker Commute	1.81E-04	2.24E-04	2.31E-04	2.22E-04	2.03E-04	1.98E-04	1.43E-04	1.33E-04	5.33E-05	3.15E-05	1.85E-05	1.63E-05	1.41E-05	1.09E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total Monthly Offsite, Onroad Emissions (metric tons/month)	1.87E-04	2.29E-04	2.36E-04	2.26E-04	2.05E-04	1.99E-04	1.45E-04	1.34E-04	5.49E-05	3.20E-05	1.89E-05	1.67E-05	1.70E-05	1.38E-05	2.75E-06	2.75E-06	2.16E-06	2.16E-06
Total Project Offsite, Onroad Emissions (metric tons)																		

Offsite, Onroad Vehicle Exhaust CH₄ Emissions from BRGP Construc

Vehicle Type	2026																	
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
Onroad Delivery Trucks ^a	7.26E-08	7.26E-08	6.84E-08	6.84E-08	3.13E-08	2.29E-08	2.29E-08	2.29E-08	2.29E-08	6.26E-09	6.26E-09	6.26E-09	4.17E-08	4.17E-08	3.92E-08	3.92E-08	3.09E-08	3.09E-08
Material Hauling Trucks	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Construction Worker Commute ^b	5.40E-05	6.66E-05	6.88E-05	6.59E-05	6.04E-05	5.88E-05	4.27E-05	3.94E-05	1.58E-05	9.37E-06	5.49E-06	4.85E-06	4.20E-06	3.23E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Average Daily Offsite, Onroad Emissions (metric tons/day)	5.40E-05	6.66E-05	6.89E-05	6.60E-05	6.05E-05	5.88E-05	4.27E-05	3.94E-05	1.59E-05	9.38E-06	5.50E-06	4.85E-06	4.24E-06	3.27E-06	3.92E-08	3.92E-08	3.09E-08	3.09E-08
Vehicle Type	2026																	
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
Onroad Delivery Trucks	1.67E-06	1.67E-06	1.57E-06	1.57E-06	7.19E-07	5.28E-07	5.28E-07	5.28E-07	5.28E-07	1.44E-07	1.44E-07	1.44E-07	9.59E-07	9.59E-07	9.02E-07	9.02E-07	7.10E-07	7.10E-07
Material Hauling Trucks	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Construction Worker Commute	1.24E-03	1.53E-03	1.58E-03	1.52E-03	1.39E-03	1.35E-03	9.81E-04	9.07E-04	3.64E-04	2.16E-04	1.26E-04	1.11E-04	9.66E-05	7.43E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total Monthly Offsite, Onroad Emissions (metric tons/month)	1.24E-03	1.53E-03	1.58E-03	1.52E-03	1.39E-03	1.35E-03	9.82E-04	9.07E-04	3.65E-04	2.16E-04	1.26E-04	1.12E-04	9.76E-05	7.53E-05	9.02E-07	9.02E-07	7.10E-07	7.10E-07
Total Project Offsite, Onroad Emissions (metric tons)																		

Notes:
^a Onroad Delivery Trucks include information provided by the Applicant's e
^b Assumed 1 commute per 1 worker; number of workers traveling to both c
^c Working days per month were provided by the Applicant's engineering c
^d PM₁₀ and PM_{2.5} Emissions include emissions from exhaust, paved roads

Onroad Construction Vehicle Activity for BRGP Construction

Vehicle Type
Onroad Delivery Trucks ^b
Material Hauling Trucks ^c
Construction Worker Commute ^d

Notes:
^a Number of work days per month provided by the Applicant's engineering
^b Delivery trucks assumed to be "Vendor Trucks" per Section 4.6.2 of App
^c Roundtrip miles/day for Material Hauling Trucks taken from Section 4.6.2
^d Roundtrip miles/day for Construction Worker Commute taken from Table

Black Rock Geothermal Project
BRGP Construction Emissions
Table 10. Onsite, Onroad Vehicle Idling Emissions
April 2023

Onsite, Onroad Vehicle Idling CO Emissions from BRGP Construction

Vehicle Type	CO Emissions (lb/day)																		
	2024													2025					
	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June	
Delivery Trucks ^a	1.6E-03	2.6E-03	5.7E-03	8.7E-03	1.5E-02	1.5E-02	1.6E-02	2.3E-02	2.7E-02	2.7E-02	3.4E-02	3.8E-02	4.4E-02	4.0E-02	4.0E-02	4.3E-02	4.3E-02	4.0E-02	
Material Hauling Trucks ^a	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.2E-03	6.4E-03	1.7E-02	1.6E-02	1.0E-02	6.4E-03	0.0E+00	
Total Daily Onsite, Onroad Emissions (lb/day)	1.6E-03	2.6E-03	5.7E-03	8.7E-03	1.5E-02	1.5E-02	1.6E-02	2.3E-02	2.7E-02	2.7E-02	3.4E-02	4.1E-02	5.1E-02	5.7E-02	5.6E-02	5.3E-02	5.0E-02	4.0E-02	
Vehicle Type	CO Emissions (lb/month) ^b																		
	2024													2025					
	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June	
Delivery Trucks ^a	3.8E-02	5.9E-02	1.3E-01	2.0E-01	3.4E-01	3.4E-01	3.8E-01	5.2E-01	6.2E-01	6.2E-01	7.8E-01	8.8E-01	1.0E+00	9.2E-01	9.2E-01	9.9E-01	9.9E-01	9.2E-01	
Material Hauling Trucks ^a	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.3E-02	1.5E-01	3.8E-01	3.7E-01	2.4E-01	1.5E-01	0.0E+00	
Total Monthly Oniste, Onroad Emissions (lb/month)	3.8E-02	5.9E-02	1.3E-01	2.0E-01	3.4E-01	3.4E-01	3.8E-01	5.2E-01	6.2E-01	6.2E-01	7.8E-01	9.5E-01	1.2E+00	1.3E+00	1.3E+00	1.2E+00	1.1E+00	9.2E-01	
Total Project Onsite, Onroad Emissions (tons)	9.7E-03																		

Onsite, Onroad Vehicle Idling VOC Emissions from BRGP Construction

Vehicle Type	VOC Emissions (lb/day)																		
	2024													2025					
	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June	
Delivery Trucks ^a	1.0E-04	1.6E-04	3.5E-04	5.3E-04	9.1E-04	9.1E-04	1.0E-03	1.4E-03	1.6E-03	1.6E-03	2.1E-03	2.3E-03	2.7E-03	2.5E-03	2.5E-03	2.6E-03	2.6E-03	2.4E-03	
Material Hauling Trucks ^a	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.2E-04	4.4E-04	1.1E-03	1.1E-03	7.0E-04	4.4E-04	0.0E+00	
Total Daily Onsite, Onroad Emissions (lb/day)	1.0E-04	1.6E-04	3.5E-04	5.3E-04	9.1E-04	9.1E-04	1.0E-03	1.4E-03	1.6E-03	1.6E-03	2.1E-03	2.5E-03	3.1E-03	3.6E-03	3.5E-03	3.3E-03	3.1E-03	2.4E-03	
Vehicle Type	VOC Emissions (lb/month) ^b																		
	2024													2025					
	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June	
Delivery Trucks ^a	2.3E-03	3.6E-03	8.0E-03	1.2E-02	2.1E-02	2.1E-02	2.3E-02	3.2E-02	3.8E-02	3.8E-02	4.8E-02	5.4E-02	6.2E-02	5.6E-02	5.6E-02	6.1E-02	6.1E-02	5.6E-02	
Material Hauling Trucks ^a	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.0E-03	1.0E-02	2.6E-02	2.5E-02	1.6E-02	1.0E-02	0.0E+00	
Total Monthly Oniste, Onroad Emissions (lb/month)	2.3E-03	3.6E-03	8.0E-03	1.2E-02	2.1E-02	2.1E-02	2.3E-02	3.2E-02	3.8E-02	3.8E-02	4.8E-02	5.9E-02	7.2E-02	8.2E-02	8.1E-02	7.7E-02	7.1E-02	5.6E-02	
Total Project Onsite, Onroad Emissions (tons)	6.0E-04																		

Onsite, Onroad Vehicle Idling SO_x Emissions from BRGP Construction

Vehicle Type	SO _x Emissions (lb/day)																		
	2024													2025					
	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June	
Delivery Trucks ^a	3.0E-06	4.7E-06	1.0E-05	1.6E-05	2.7E-05	2.7E-05	3.0E-05	4.1E-05	4.9E-05	4.9E-05	6.2E-05	7.0E-05	8.1E-05	7.3E-05	7.3E-05	7.9E-05	7.9E-05	7.3E-05	
Material Hauling Trucks ^a	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.8E-06	9.5E-06	2.5E-05	2.4E-05	1.5E-05	9.5E-06	0.0E+00	
Total Daily Onsite, Onroad Emissions (lb/day)	3.0E-06	4.7E-06	1.0E-05	1.6E-05	2.7E-05	2.7E-05	3.0E-05	4.1E-05	4.9E-05	4.9E-05	6.2E-05	7.4E-05	9.0E-05	9.8E-05	9.7E-05	9.4E-05	8.8E-05	7.3E-05	
Vehicle Type	SO _x Emissions (lb/month) ^b																		
	2024													2025					
	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June	
Delivery Trucks ^a	6.9E-05	1.1E-04	2.4E-04	3.7E-04	6.3E-04	6.3E-04	6.9E-04	9.5E-04	1.1E-03	1.1E-03	1.4E-03	1.6E-03	1.9E-03	1.7E-03	1.7E-03	1.8E-03	1.8E-03	1.7E-03	
Material Hauling Trucks ^a	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-04	2.2E-04	5.7E-04	5.5E-04	3.5E-04	2.2E-04	0.0E+00	
Total Monthly Oniste, Onroad Emissions (lb/month)	6.9E-05	1.1E-04	2.4E-04	3.7E-04	6.3E-04	6.3E-04	6.9E-04	9.5E-04	1.1E-03	1.1E-03	1.4E-03	1.7E-03	2.1E-03	2.3E-03	2.2E-03	2.2E-03	2.0E-03	1.7E-03	
Total Project Onsite, Onroad Emissions (tons)	1.7E-05																		

Black Rock Geothermal Project
BRGP Construction Emissions
Table 10. Onsite, Onroad Vehicle Idling Emissions
April 2023

Onsite, Onroad Vehicle Idling CO Emissions from BRGP Constructio

Vehicle Type	2026																	
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
Delivery Trucks ^a	3.6E-02	3.6E-02	3.4E-02	3.4E-02	1.5E-02	1.1E-02	1.1E-02	1.1E-02	1.1E-02	3.1E-03	3.1E-03	3.1E-03	2.1E-02	2.1E-02	1.9E-02	1.9E-02	1.5E-02	1.5E-02
Material Hauling Trucks ^a	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Total Daily Onsite, Onroad Emissions (lb/day)	3.6E-02	3.6E-02	3.4E-02	3.4E-02	1.5E-02	1.1E-02	1.1E-02	1.1E-02	1.1E-02	3.1E-03	3.1E-03	3.1E-03	2.1E-02	2.1E-02	1.9E-02	1.9E-02	1.5E-02	1.5E-02
Vehicle Type	2026																	
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
Delivery Trucks ^a	8.2E-01	8.2E-01	7.8E-01	7.8E-01	3.5E-01	2.6E-01	2.6E-01	2.6E-01	2.6E-01	7.1E-02	7.1E-02	7.1E-02	4.7E-01	4.7E-01	4.4E-01	4.4E-01	3.5E-01	3.5E-01
Material Hauling Trucks ^a	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Total Monthly Oniste, Onroad Emissions (lb/month)	8.2E-01	8.2E-01	7.8E-01	7.8E-01	3.5E-01	2.6E-01	2.6E-01	2.6E-01	2.6E-01	7.1E-02	7.1E-02	7.1E-02	4.7E-01	4.7E-01	4.4E-01	4.4E-01	3.5E-01	3.5E-01
Total Project Onsite, Onroad Emissions (tons)																		

Onsite, Onroad Vehicle Idling VOC Emissions from BRGP Construct

Vehicle Type	2026																	
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
Delivery Trucks ^a	2.2E-03	2.2E-03	2.1E-03	2.1E-03	9.4E-04	6.9E-04	6.9E-04	6.9E-04	6.9E-04	1.9E-04	1.9E-04	1.9E-04	1.3E-03	1.3E-03	1.2E-03	1.2E-03	9.3E-04	9.3E-04
Material Hauling Trucks ^a	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Total Daily Onsite, Onroad Emissions (lb/day)	2.2E-03	2.2E-03	2.1E-03	2.1E-03	9.4E-04	6.9E-04	6.9E-04	6.9E-04	6.9E-04	1.9E-04	1.9E-04	1.9E-04	1.3E-03	1.3E-03	1.2E-03	1.2E-03	9.3E-04	9.3E-04
Vehicle Type	2026																	
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
Delivery Trucks ^a	5.0E-02	5.0E-02	4.7E-02	4.7E-02	2.2E-02	1.6E-02	1.6E-02	1.6E-02	1.6E-02	4.3E-03	4.3E-03	4.3E-03	2.9E-02	2.9E-02	2.7E-02	2.7E-02	2.1E-02	2.1E-02
Material Hauling Trucks ^a	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Total Monthly Oniste, Onroad Emissions (lb/month)	5.0E-02	5.0E-02	4.7E-02	4.7E-02	2.2E-02	1.6E-02	1.6E-02	1.6E-02	1.6E-02	4.3E-03	4.3E-03	4.3E-03	2.9E-02	2.9E-02	2.7E-02	2.7E-02	2.1E-02	2.1E-02
Total Project Onsite, Onroad Emissions (tons)																		

Onsite, Onroad Vehicle Idling SO_x Emissions from BRGP Constructi

Vehicle Type	2026																	
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
Delivery Trucks ^a	6.5E-05	6.5E-05	6.2E-05	6.2E-05	2.8E-05	2.1E-05	2.1E-05	2.1E-05	2.1E-05	5.6E-06	5.6E-06	5.6E-06	3.8E-05	3.8E-05	3.5E-05	3.5E-05	2.8E-05	2.8E-05
Material Hauling Trucks ^a	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Total Daily Onsite, Onroad Emissions (lb/day)	6.5E-05	6.5E-05	6.2E-05	6.2E-05	2.8E-05	2.1E-05	2.1E-05	2.1E-05	2.1E-05	5.6E-06	5.6E-06	5.6E-06	3.8E-05	3.8E-05	3.5E-05	3.5E-05	2.8E-05	2.8E-05
Vehicle Type	2026																	
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
Delivery Trucks ^a	1.5E-03	1.5E-03	1.4E-03	1.4E-03	6.5E-04	4.8E-04	4.8E-04	4.8E-04	4.8E-04	1.3E-04	1.3E-04	1.3E-04	8.6E-04	8.6E-04	8.1E-04	8.1E-04	6.4E-04	6.4E-04
Material Hauling Trucks ^a	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Total Monthly Oniste, Onroad Emissions (lb/month)	1.5E-03	1.5E-03	1.4E-03	1.4E-03	6.5E-04	4.8E-04	4.8E-04	4.8E-04	4.8E-04	1.3E-04	1.3E-04	1.3E-04	8.6E-04	8.6E-04	8.1E-04	8.1E-04	6.4E-04	6.4E-04
Total Project Onsite, Onroad Emissions (tons)																		

Black Rock Geothermal Project

BRGP Construction Emissions

Table 10. Onsite, Onroad Vehicle Idling Emissions

April 2023

Onsite, Onroad Vehicle Idling NO_x Emissions from BRGP Construction

Vehicle Type	NO _x Emissions (lb/day)																	
	2024												2025					
	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Delivery Trucks ^a	1.8E-03	2.8E-03	6.2E-03	9.6E-03	1.6E-02	1.6E-02	1.8E-02	2.5E-02	2.9E-02	2.9E-02	3.7E-02	4.2E-02	4.9E-02	4.4E-02	4.4E-02	4.8E-02	4.8E-02	4.4E-02
Material Hauling Trucks ^a	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.6E-03	5.2E-03	1.3E-02	1.3E-02	8.3E-03	5.2E-03	0.0E+00
Total Daily Onsite, Onroad Emissions (lb/day)	1.8E-03	2.8E-03	6.2E-03	9.6E-03	1.6E-02	1.6E-02	1.8E-02	2.5E-02	2.9E-02	2.9E-02	3.7E-02	4.4E-02	5.4E-02	5.8E-02	5.7E-02	5.6E-02	5.3E-02	4.4E-02
Vehicle Type	NO _x Emissions (lb/month) ^b																	
	2024												2025					
	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Delivery Trucks ^a	4.2E-02	6.5E-02	1.4E-01	2.2E-01	3.8E-01	3.8E-01	4.2E-01	5.7E-01	6.8E-01	6.8E-01	8.6E-01	9.6E-01	1.1E+00	1.0E+00	1.0E+00	1.1E+00	1.1E+00	1.0E+00
Material Hauling Trucks ^a	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.9E-02	1.2E-01	3.1E-01	3.0E-01	1.9E-01	1.2E-01	0.0E+00
Total Monthly Oniste, Onroad Emissions (lb/month)	4.2E-02	6.5E-02	1.4E-01	2.2E-01	3.8E-01	3.8E-01	4.2E-01	5.7E-01	6.8E-01	6.8E-01	8.6E-01	1.0E+00	1.2E+00	1.3E+00	1.3E+00	1.3E+00	1.2E+00	1.0E+00
Total Project Onsite, Onroad Emissions (tons)	1.0E-02																	

Onsite, Onroad Vehicle Idling PM₁₀ Emissions from BRGP Construction

Vehicle Type	PM ₁₀ Emissions (lb/day)																	
	2024												2025					
	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Delivery Trucks ^a	2.4E-06	3.8E-06	8.3E-06	1.3E-05	2.2E-05	2.2E-05	2.4E-05	3.3E-05	3.9E-05	3.9E-05	5.0E-05	5.6E-05	6.5E-05	5.9E-05	5.9E-05	6.4E-05	6.4E-05	5.9E-05
Material Hauling Trucks ^a	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-06	2.2E-06	5.7E-06	5.5E-06	3.5E-06	2.2E-06	0.0E+00
Total Daily Onsite, Onroad Emissions (lb/day)	2.4E-06	3.8E-06	8.3E-06	1.3E-05	2.2E-05	2.2E-05	2.4E-05	3.3E-05	3.9E-05	3.9E-05	5.0E-05	5.7E-05	6.7E-05	6.5E-05	6.5E-05	6.7E-05	6.6E-05	5.9E-05
Vehicle Type	PM ₁₀ Emissions (lb/month) ^b																	
	2024												2025					
	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Delivery Trucks ^a	5.6E-05	8.7E-05	1.9E-04	3.0E-04	5.1E-04	5.1E-04	5.6E-04	7.7E-04	9.1E-04	9.1E-04	1.2E-03	1.3E-03	1.5E-03	1.4E-03	1.4E-03	1.5E-03	1.5E-03	1.4E-03
Material Hauling Trucks ^a	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.5E-05	5.0E-05	1.3E-04	1.3E-04	8.1E-05	5.0E-05	0.0E+00
Total Monthly Oniste, Onroad Emissions (lb/month)	5.6E-05	8.7E-05	1.9E-04	3.0E-04	5.1E-04	5.1E-04	5.6E-04	7.7E-04	9.1E-04	9.1E-04	1.2E-03	1.3E-03	1.5E-03	1.5E-03	1.5E-03	1.5E-03	1.5E-03	1.4E-03
Total Project Onsite, Onroad Emissions (tons)	1.4E-05																	

Onsite, Onroad Vehicle Idling PM_{2.5} Emissions from BRGP Construction

Vehicle Type	PM _{2.5} Emissions (lb/day)																	
	2024												2025					
	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Delivery Trucks ^a	2.3E-06	3.6E-06	8.0E-06	1.2E-05	2.1E-05	2.1E-05	2.3E-05	3.2E-05	3.8E-05	3.8E-05	4.8E-05	5.4E-05	6.2E-05	5.7E-05	5.7E-05	6.1E-05	6.1E-05	5.6E-05
Material Hauling Trucks ^a	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.0E-06	2.1E-06	5.5E-06	5.2E-06	3.4E-06	2.1E-06	0.0E+00
Total Daily Onsite, Onroad Emissions (lb/day)	2.3E-06	3.6E-06	8.0E-06	1.2E-05	2.1E-05	2.1E-05	2.3E-05	3.2E-05	3.8E-05	3.8E-05	4.8E-05	5.5E-05	6.4E-05	6.2E-05	6.2E-05	6.4E-05	6.3E-05	5.6E-05
Vehicle Type	PM _{2.5} Emissions (lb/month) ^b																	
	2024												2025					
	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Delivery Trucks ^a	5.3E-05	8.3E-05	1.8E-04	2.8E-04	4.8E-04	4.8E-04	5.3E-04	7.3E-04	8.7E-04	8.7E-04	1.1E-03	1.2E-03	1.4E-03	1.3E-03	1.3E-03	1.4E-03	1.4E-03	1.3E-03
Material Hauling Trucks ^a	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.4E-05	4.8E-05	1.3E-04	1.2E-04	7.7E-05	4.8E-05	0.0E+00
Total Monthly Oniste, Onroad Emissions (lb/month)	5.3E-05	8.3E-05	1.8E-04	2.8E-04	4.8E-04	4.8E-04	5.3E-04	7.3E-04	8.7E-04	8.7E-04	1.1E-03	1.3E-03	1.5E-03	1.4E-03	1.4E-03	1.5E-03	1.4E-03	1.3E-03
Total Project Onsite, Onroad Emissions (tons)	1.3E-05																	

Black Rock Geothermal Project
BRGP Construction Emissions
Table 10. Onsite, Onroad Vehicle Idling Emissions
April 2023

Onsite, Onroad Vehicle Idling NO_x Emissions from BRGP Constructi

Vehicle Type	2026																	
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
Delivery Trucks ^a	3.9E-02	3.9E-02	3.7E-02	3.7E-02	1.7E-02	1.2E-02	1.2E-02	1.2E-02	1.2E-02	3.4E-03	3.4E-03	3.4E-03	2.3E-02	2.3E-02	2.1E-02	2.1E-02	1.7E-02	1.7E-02
Material Hauling Trucks ^a	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Total Daily Onsite, Onroad Emissions (lb/day)	3.9E-02	3.9E-02	3.7E-02	3.7E-02	1.7E-02	1.2E-02	1.2E-02	1.2E-02	1.2E-02	3.4E-03	3.4E-03	3.4E-03	2.3E-02	2.3E-02	2.1E-02	2.1E-02	1.7E-02	1.7E-02
Vehicle Type	2026																	
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
Delivery Trucks ^a	9.1E-01	9.1E-01	8.5E-01	8.5E-01	3.9E-01	2.9E-01	2.9E-01	2.9E-01	2.9E-01	7.8E-02	7.8E-02	7.8E-02	5.2E-01	5.2E-01	4.9E-01	4.9E-01	3.9E-01	3.9E-01
Material Hauling Trucks ^a	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Total Monthly Oniste, Onroad Emissions (lb/month)	9.1E-01	9.1E-01	8.5E-01	8.5E-01	3.9E-01	2.9E-01	2.9E-01	2.9E-01	2.9E-01	7.8E-02	7.8E-02	7.8E-02	5.2E-01	5.2E-01	4.9E-01	4.9E-01	3.9E-01	3.9E-01
Total Project Onsite, Onroad Emissions (tons)																		

Onsite, Onroad Vehicle Idling PM₁₀ Emissions from BRGP Construct

Vehicle Type	2026																	
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
Delivery Trucks ^a	5.3E-05	5.3E-05	5.0E-05	5.0E-05	2.3E-05	1.7E-05	1.7E-05	1.7E-05	1.7E-05	4.5E-06	4.5E-06	4.5E-06	3.0E-05	3.0E-05	2.8E-05	2.8E-05	2.2E-05	2.2E-05
Material Hauling Trucks ^a	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Total Daily Onsite, Onroad Emissions (lb/day)	5.3E-05	5.3E-05	5.0E-05	5.0E-05	2.3E-05	1.7E-05	1.7E-05	1.7E-05	1.7E-05	4.5E-06	4.5E-06	4.5E-06	3.0E-05	3.0E-05	2.8E-05	2.8E-05	2.2E-05	2.2E-05
Vehicle Type	2026																	
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
Delivery Trucks ^a	1.2E-03	1.2E-03	1.1E-03	1.1E-03	5.2E-04	3.8E-04	3.8E-04	3.8E-04	3.8E-04	1.0E-04	1.0E-04	1.0E-04	7.0E-04	7.0E-04	6.6E-04	6.6E-04	5.2E-04	5.2E-04
Material Hauling Trucks ^a	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Total Monthly Oniste, Onroad Emissions (lb/month)	1.2E-03	1.2E-03	1.1E-03	1.1E-03	5.2E-04	3.8E-04	3.8E-04	3.8E-04	3.8E-04	1.0E-04	1.0E-04	1.0E-04	7.0E-04	7.0E-04	6.6E-04	6.6E-04	5.2E-04	5.2E-04
Total Project Onsite, Onroad Emissions (tons)																		

Onsite, Onroad Vehicle Idling PM_{2.5} Emissions from BRGP Construc

Vehicle Type	2026																	
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
Delivery Trucks ^a	5.0E-05	5.0E-05	4.8E-05	4.8E-05	2.2E-05	1.6E-05	1.6E-05	1.6E-05	1.6E-05	4.4E-06	4.4E-06	4.4E-06	2.9E-05	2.9E-05	2.7E-05	2.7E-05	2.1E-05	2.1E-05
Material Hauling Trucks ^a	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Total Daily Onsite, Onroad Emissions (lb/day)	5.0E-05	5.0E-05	4.8E-05	4.8E-05	2.2E-05	1.6E-05	1.6E-05	1.6E-05	1.6E-05	4.4E-06	4.4E-06	4.4E-06	2.9E-05	2.9E-05	2.7E-05	2.7E-05	2.1E-05	2.1E-05
Vehicle Type	2026																	
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
Delivery Trucks ^a	1.2E-03	1.2E-03	1.1E-03	1.1E-03	5.0E-04	3.7E-04	3.7E-04	3.7E-04	3.7E-04	1.0E-04	1.0E-04	1.0E-04	6.7E-04	6.7E-04	6.3E-04	6.3E-04	4.9E-04	4.9E-04
Material Hauling Trucks ^a	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Total Monthly Oniste, Onroad Emissions (lb/month)	1.2E-03	1.2E-03	1.1E-03	1.1E-03	5.0E-04	3.7E-04	3.7E-04	3.7E-04	3.7E-04	1.0E-04	1.0E-04	1.0E-04	6.7E-04	6.7E-04	6.3E-04	6.3E-04	4.9E-04	4.9E-04
Total Project Onsite, Onroad Emissions (tons)																		

Black Rock Geothermal Project
BRGP Construction Emissions
Table 10. Onsite, Onroad Vehicle Idling Emissions
April 2023

Onsite, Onroad Vehicle Idling CO₂ Emissions from BRGP Construction

Vehicle Type	CO ₂ Emissions (metric tons/day)												2025					
	2024												2025					
	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Delivery Trucks ^a	1.4E-04	2.2E-04	4.9E-04	7.6E-04	1.3E-03	1.3E-03	1.4E-03	2.0E-03	2.3E-03	2.3E-03	2.9E-03	3.3E-03	3.8E-03	3.5E-03	3.5E-03	3.8E-03	3.8E-03	3.5E-03
Material Hauling Trucks ^a	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.3E-04	4.5E-04	1.2E-03	1.1E-03	7.2E-04	4.5E-04	0.0E+00
Total Daily Onsite, Onroad Emissions (metric tons/day)	1.4E-04	2.2E-04	4.9E-04	7.6E-04	1.3E-03	1.3E-03	1.4E-03	2.0E-03	2.3E-03	2.3E-03	2.9E-03	3.5E-03	4.3E-03	4.7E-03	4.6E-03	4.5E-03	4.2E-03	3.5E-03
Vehicle Type	CO ₂ Emissions (metric tons/month) ^b												2025					
	2024												2025					
	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Delivery Trucks ^a	3.3E-03	5.1E-03	1.1E-02	1.7E-02	3.0E-02	3.0E-02	3.3E-02	4.5E-02	5.3E-02	5.3E-02	6.8E-02	7.6E-02	8.8E-02	8.0E-02	8.0E-02	8.6E-02	8.6E-02	8.0E-02
Material Hauling Trucks ^a	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.2E-03	1.0E-02	2.7E-02	2.6E-02	1.7E-02	1.0E-02	0.0E+00
Total Monthly Onsite, Onroad Emissions (metric tons/month)	3.3E-03	5.1E-03	1.1E-02	1.7E-02	3.0E-02	3.0E-02	3.3E-02	4.5E-02	5.3E-02	5.3E-02	6.8E-02	8.1E-02	9.9E-02	1.1E-01	1.1E-01	1.0E-01	9.7E-02	8.0E-02
Total Project Oniste, Onroad Emissions (metric tons)	1.66																	

Onsite, Onroad Vehicle Idling CH₄ Emissions from BRGP Construction

Vehicle Type	CH ₄ Emissions (metric tons/day)												2025					
	2024												2025					
	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Delivery Trucks ^a	2.1E-09	3.3E-09	7.3E-09	1.1E-08	1.9E-08	1.9E-08	2.1E-08	2.9E-08	3.4E-08	3.4E-08	4.4E-08	4.9E-08	5.7E-08	5.2E-08	5.2E-08	5.6E-08	5.6E-08	5.1E-08
Material Hauling Trucks ^a	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.6E-09	9.2E-09	2.4E-08	2.3E-08	1.5E-08	9.2E-09	0.0E+00
Total Daily Onsite, Onroad Emissions (metric tons/day)	2.1E-09	3.3E-09	7.3E-09	1.1E-08	1.9E-08	1.9E-08	2.1E-08	2.9E-08	3.4E-08	3.4E-08	4.4E-08	5.4E-08	6.6E-08	7.6E-08	7.5E-08	7.0E-08	6.5E-08	5.1E-08
Vehicle Type	CH ₄ Emissions (metric tons/month) ^b												2025					
	2024												2025					
	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Delivery Trucks ^a	4.9E-08	7.6E-08	1.7E-07	2.6E-07	4.4E-07	4.4E-07	4.9E-07	6.7E-07	7.9E-07	7.9E-07	1.0E-06	1.1E-06	1.3E-06	1.2E-06	1.2E-06	1.3E-06	1.3E-06	1.2E-06
Material Hauling Trucks ^a	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-07	2.1E-07	5.5E-07	5.3E-07	3.4E-07	2.1E-07	0.0E+00
Total Monthly Onsite, Onroad Emissions (metric tons/month)	4.9E-08	7.6E-08	1.7E-07	2.6E-07	4.4E-07	4.4E-07	4.9E-07	6.7E-07	7.9E-07	7.9E-07	1.0E-06	1.2E-06	1.5E-06	1.7E-06	1.7E-06	1.6E-06	1.5E-06	1.2E-06
Total Project Oniste, Onroad Emissions (metric tons)	2.5E-05																	

Onsite, Onroad Vehicle Idling N₂O Emissions from BRGP Construction

Vehicle Type	N ₂ O Emissions (metric tons/day)												2025					
	2024												2025					
	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Delivery Trucks ^a	2.9E-10	4.6E-10	1.0E-09	1.6E-09	2.7E-09	2.7E-09	2.9E-09	4.0E-09	4.8E-09	4.8E-09	6.0E-09	6.8E-09	7.9E-09	7.1E-09	7.1E-09	7.7E-09	7.7E-09	7.1E-09
Material Hauling Trucks ^a	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.1E-10	1.4E-09	3.7E-09	3.5E-09	2.3E-09	1.4E-09	0.0E+00
Total Daily Onsite, Onroad Emissions (metric tons/day)	2.9E-10	4.6E-10	1.0E-09	1.6E-09	2.7E-09	2.7E-09	2.9E-09	4.0E-09	4.8E-09	4.8E-09	6.0E-09	7.5E-09	9.3E-09	1.1E-08	1.1E-08	9.9E-09	9.1E-09	7.1E-09
Vehicle Type	N ₂ O Emissions (metric tons/month) ^b												2025					
	2024												2025					
	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Delivery Trucks ^a	6.7E-09	1.1E-08	2.3E-08	3.6E-08	6.1E-08	6.1E-08	6.7E-08	9.3E-08	1.1E-07	1.1E-07	1.4E-07	1.6E-07	1.8E-07	1.6E-07	1.6E-07	1.8E-07	1.8E-07	1.6E-07
Material Hauling Trucks ^a	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.6E-08	3.3E-08	8.5E-08	8.1E-08	5.2E-08	3.3E-08	0.0E+00
Total Monthly Onsite, Onroad Emissions (metric tons/month)	6.7E-09	1.1E-08	2.3E-08	3.6E-08	6.1E-08	6.1E-08	6.7E-08	9.3E-08	1.1E-07	1.1E-07	1.4E-07	1.7E-07	2.1E-07	2.5E-07	2.5E-07	2.3E-07	2.1E-07	1.6E-07
Total Project Oniste, Onroad Emissions (metric tons)	3.5E-06																	

Notes:
^a It is assumed that, upon traveling to the site, haul trucks and delivery trucks can idle up to 5 minutes for loading/unloading before leaving the site. This equates to: 0.083 idle-hrs/day.
^b Per information provided by the Applicant's engineering contractor, it is assumed that there are 23 working days per month.

Black Rock Geothermal Project
BRGP Construction Emissions
Table 10. Onsite, Onroad Vehicle Idling Emissions
April 2023

Onsite, Onroad Vehicle Idling CO₂ Emissions from BRGP Constructi

Vehicle Type	2026																	
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
	3.1E-03	3.1E-03	2.9E-03	2.9E-03	1.3E-03	9.8E-04	9.8E-04	9.8E-04	9.8E-04	2.7E-04	2.7E-04	2.7E-04	1.8E-03	1.8E-03	1.7E-03	1.7E-03	1.3E-03	1.3E-03
Delivery Trucks ^a	3.1E-03	3.1E-03	2.9E-03	2.9E-03	1.3E-03	9.8E-04	9.8E-04	9.8E-04	9.8E-04	2.7E-04	2.7E-04	2.7E-04	1.8E-03	1.8E-03	1.7E-03	1.7E-03	1.3E-03	1.3E-03
Material Hauling Trucks ^a	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Total Daily Onsite, Onroad Emissions (metric tons/day)	3.1E-03	3.1E-03	2.9E-03	2.9E-03	1.3E-03	9.8E-04	9.8E-04	9.8E-04	9.8E-04	2.7E-04	2.7E-04	2.7E-04	1.8E-03	1.8E-03	1.7E-03	1.7E-03	1.3E-03	1.3E-03
Vehicle Type	2026																	
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
	7.2E-02	7.2E-02	6.7E-02	6.7E-02	3.1E-02	2.3E-02	2.3E-02	2.3E-02	2.3E-02	6.2E-03	6.2E-03	6.2E-03	4.1E-02	4.1E-02	3.9E-02	3.9E-02	3.0E-02	3.0E-02
Delivery Trucks ^a	7.2E-02	7.2E-02	6.7E-02	6.7E-02	3.1E-02	2.3E-02	2.3E-02	2.3E-02	2.3E-02	6.2E-03	6.2E-03	6.2E-03	4.1E-02	4.1E-02	3.9E-02	3.9E-02	3.0E-02	3.0E-02
Material Hauling Trucks ^a	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Total Monthly Onsite, Onroad Emissions (metric tons/month)	7.2E-02	7.2E-02	6.7E-02	6.7E-02	3.1E-02	2.3E-02	2.3E-02	2.3E-02	2.3E-02	6.2E-03	6.2E-03	6.2E-03	4.1E-02	4.1E-02	3.9E-02	3.9E-02	3.0E-02	3.0E-02
Total Project Oniste, Onroad Emissions (metric tons)																		

Onsite, Onroad Vehicle Idling CH₄ Emissions from BRGP Constructi

Vehicle Type	2026																	
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
	4.6E-08	4.6E-08	4.3E-08	4.3E-08	2.0E-08	1.5E-08	1.5E-08	1.5E-08	1.5E-08	4.0E-09	4.0E-09	4.0E-09	2.7E-08	2.7E-08	2.5E-08	2.5E-08	2.0E-08	2.0E-08
Delivery Trucks ^a	4.6E-08	4.6E-08	4.3E-08	4.3E-08	2.0E-08	1.5E-08	1.5E-08	1.5E-08	1.5E-08	4.0E-09	4.0E-09	4.0E-09	2.7E-08	2.7E-08	2.5E-08	2.5E-08	2.0E-08	2.0E-08
Material Hauling Trucks ^a	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Total Daily Onsite, Onroad Emissions (metric tons/day)	4.6E-08	4.6E-08	4.3E-08	4.3E-08	2.0E-08	1.5E-08	1.5E-08	1.5E-08	1.5E-08	4.0E-09	4.0E-09	4.0E-09	2.7E-08	2.7E-08	2.5E-08	2.5E-08	2.0E-08	2.0E-08
Vehicle Type	2026																	
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
	1.1E-06	1.1E-06	1.0E-06	1.0E-06	4.6E-07	3.4E-07	3.4E-07	3.4E-07	3.4E-07	9.1E-08	9.1E-08	9.1E-08	6.1E-07	6.1E-07	5.7E-07	5.7E-07	4.5E-07	4.5E-07
Delivery Trucks ^a	1.1E-06	1.1E-06	1.0E-06	1.0E-06	4.6E-07	3.4E-07	3.4E-07	3.4E-07	3.4E-07	9.1E-08	9.1E-08	9.1E-08	6.1E-07	6.1E-07	5.7E-07	5.7E-07	4.5E-07	4.5E-07
Material Hauling Trucks ^a	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Total Monthly Onsite, Onroad Emissions (metric tons/month)	1.1E-06	1.1E-06	1.0E-06	1.0E-06	4.6E-07	3.4E-07	3.4E-07	3.4E-07	3.4E-07	9.1E-08	9.1E-08	9.1E-08	6.1E-07	6.1E-07	5.7E-07	5.7E-07	4.5E-07	4.5E-07
Total Project Oniste, Onroad Emissions (metric tons)																		

Onsite, Onroad Vehicle Idling N₂O Emissions from BRGP Constructi

Vehicle Type	2026																	
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
	6.4E-09	6.4E-09	6.0E-09	6.0E-09	2.7E-09	2.0E-09	2.0E-09	2.0E-09	2.0E-09	5.5E-10	5.5E-10	5.5E-10	3.7E-09	3.7E-09	3.4E-09	3.4E-09	2.7E-09	2.7E-09
Delivery Trucks ^a	6.4E-09	6.4E-09	6.0E-09	6.0E-09	2.7E-09	2.0E-09	2.0E-09	2.0E-09	2.0E-09	5.5E-10	5.5E-10	5.5E-10	3.7E-09	3.7E-09	3.4E-09	3.4E-09	2.7E-09	2.7E-09
Material Hauling Trucks ^a	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Total Daily Onsite, Onroad Emissions (metric tons/day)	6.4E-09	6.4E-09	6.0E-09	6.0E-09	2.7E-09	2.0E-09	2.0E-09	2.0E-09	2.0E-09	5.5E-10	5.5E-10	5.5E-10	3.7E-09	3.7E-09	3.4E-09	3.4E-09	2.7E-09	2.7E-09
Vehicle Type	2026																	
	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
	1.5E-07	1.5E-07	1.4E-07	1.4E-07	6.3E-08	4.6E-08	4.6E-08	4.6E-08	4.6E-08	1.3E-08	1.3E-08	1.3E-08	8.4E-08	8.4E-08	7.9E-08	7.9E-08	6.2E-08	6.2E-08
Delivery Trucks ^a	1.5E-07	1.5E-07	1.4E-07	1.4E-07	6.3E-08	4.6E-08	4.6E-08	4.6E-08	4.6E-08	1.3E-08	1.3E-08	1.3E-08	8.4E-08	8.4E-08	7.9E-08	7.9E-08	6.2E-08	6.2E-08
Material Hauling Trucks ^a	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Total Monthly Onsite, Onroad Emissions (metric tons/month)	1.5E-07	1.5E-07	1.4E-07	1.4E-07	6.3E-08	4.6E-08	4.6E-08	4.6E-08	4.6E-08	1.3E-08	1.3E-08	1.3E-08	8.4E-08	8.4E-08	7.9E-08	7.9E-08	6.2E-08	6.2E-08
Total Project Oniste, Onroad Emissions (metric tons)																		

Notes:
^a It is assumed that, upon traveling to the site, haul trucks and delivery trucks will be idling.
^b Per information provided by the Applicant's engineering contractor, it is assumed that the idling emissions for the haul trucks and delivery trucks are negligible.

BRGP Construction Emissions

April 2023

Emission Source	Pollutants	Equations	Variables
Construction Equipment Exhaust	CO, VOC, NO _x , SO _x , PM ₁₀ , and PM _{2.5}	$E_m = EF \times N \times Hp \times L \times H / 453.6$	E_m = Monthly Emissions (lb/month) EF = Emission factor (g/bhp-hr) N = Number of pieces of equipment Hp = Average horsepower L = Average load factor H = Hours per month 453.6 = Conversion from g to lb
		$E_d = E_m / D$	E_d = Daily Emissions (lb/day) E_m = Monthly Emissions (lb/month) D = Number of construction days per month
		$E_t = \Sigma E_m / 2,000$	E_t = Total Project Emissions (tons) E_m = Monthly Emissions (lb/month) 2,000 = Conversion from lb to tons
	CO ₂ , CH ₄ and N ₂ O	$E_m = EF \times N \times Hp \times L \times H / 1000 \times 0.001$	E_m = Monthly Emissions (metric tons/month) EF = Emission factor (g/bhp-hr) N = Number of pieces of equipment Hp = Average horsepower L = Average load factor H = Hours per month 1,000 = Conversion from g to kg 0.001 = Conversion from kg to metric tons
		$E_d = E_m / D$	E_d = Daily Emissions (metric tons/day) E_m = Emissions (metric tons/month) D = Number of construction days per month
		$E_t = \Sigma E_m$	E_m = Emissions (metric tons/month) E_t = Total Project Emissions (metric tons)
Vehicle Exhaust and Paved/Unpaved Fugitive PM ₁₀ and PM _{2.5}	CO, VOC, NO _x , SO _x , PM ₁₀ , and PM _{2.5}	$E_d = N \times VMT \times EF / 453.6$	E_d = Daily Emissions (lb/day) N = Number of vehicles VMT = Vehicle miles traveled per day (miles/day) EF = EMFAC2021 emission factor (g/mile). Paved and unpaved road fugitive PM ₁₀ and PM _{2.5} emission factors calculated per Section 5.1.4 of Appendix C of the CalEEMod User's Guide (ICF 2022). 453.6 = Conversion from g to lb
		$E_m = E_d \times D$	E_m = Monthly Emissions (lb/month) E_d = Daily Emissions (lb/day) D = Number of construction days per month
		$E_t = \Sigma E_m / 2,000$	E_t = Total Project Emissions (tons) E_m = Monthly Emissions (lb/month) 2,000 = Conversion from lb to tons
	CO ₂ , CH ₄ , and N ₂ O	$E_d = N \times VMT \times EF / 1000 \times 0.001$	E_d = Daily Emissions (metric tons/day) N = Number of vehicles VMT = Vehicle miles traveled per day (miles/day) EF = EMFAC2021 emission factor (g/mile). 1,000 = Conversion from g to kg 0.001 = Conversion from kg to metric tons
		$E_m = E_d \times D$	E_m = Monthly Emissions (metric tons/month) E_d = Daily Emissions (metric tons/day) D = Number of construction days per month
		$E_t = \Sigma E_m / 2,000$	E_t = Total Project Emissions (metric tons) E_m = Monthly Emissions (metric tons/month)
Vehicle Idling	CO, VOC, NO _x , SO _x , PM ₁₀ , and PM _{2.5}	$E_d = N \times I \times EF / 453.6$	E_d = Daily Emissions (lb/day) N = Number of vehicles I = Idle time per vehicle per day (idle-hr/day) EF = EMFAC2021 emission factor (g/idle-hr) 453.6 = Conversion from g to lb
		$E_m = E_d \times D$	E_m = Monthly Emissions (lb/month) E_d = Daily Emissions (lb/day) D = Number of construction days per month
		$E_t = \Sigma E_m / 2,000$	E_t = Total Project Emissions (tons) E_m = Monthly Emissions (lb/month) 2,000 = Conversion from lb to tons
	N ₂ O, CO ₂ and CH ₄	$E_d = N \times I \times EF / 1,000 \times 0.001$	E_d = Daily Emissions (metric tons/day) N = Number of vehicles I = Idle time per vehicle per day (idle-hr/day) EF = EMFAC2021 emission factor (g/idle-hr) 1,000 = Conversion from g to kg 0.001 = Conversion from kg to metric tons
		$E_m = E_d \times D$	E_m = Monthly Emissions (metric tons/month) E_d = Daily Emissions (metric tons/day) D = Number of construction days per month
		$E_t = \Sigma E_m$	E_t = Total Project Emissions (metric tons) E_m = Monthly Emissions (metric tons/month)

Black Rock Geothermal Project

BRGP Construction Emissions

Table 11. Equations Used to Calculate Criteria Pollutant and GHG Emissions

April 2023

Equations Used to Calculate Emissions from BRGP Construction

Emission Source	Pollutants	Equations	Variables
Fugitive PM ₁₀ and PM _{2.5} from Truck Dumping/Loading	PM ₁₀ and PM _{2.5}	$E_d = V \times 1.2641662 \times EF / D$	E_d = Daily Emissions (lb/day)
			V = Volume of material dumped (cubic yards/month)
			1.2641662 = Conversion from cubic yards to tons
		$E_m = E_d \times D$	EF = Fugitive PM ₁₀ and PM _{2.5} emission factors (lb/ton), calculated per Section 4.4.2 of Appendix C of the <i>CalEEMod User's Guide</i> (ICF 2022).
			D = Number of construction days per month
			E_m = Monthly Emissions (lb/month)
		$E_t = \Sigma E_m / 2,000$	E_d = Daily Emissions (lb/day)
			D = Number of construction days per month
			E_m = Monthly Emissions (lb/month)
Fugitive PM ₁₀ and PM _{2.5} from Grading	PM ₁₀ and PM _{2.5}	$E_d = EF \times A / W \times 43,560 / 5,280 / D$	E_t = Total Project Emissions (tons)
			2,000 = Conversion from lb to tons
			E_d = Daily Emissions (lb/day)
		$E_m = E_d \times D$	EF = Fugitive PM ₁₀ and PM _{2.5} emission factors (lb/mile), calculated per Section 4.4.1 of Appendix C of the <i>CalEEMod User's Guide</i> (ICF 2022).
			A = Graded area (acres/month)
			W = Grading equipment blade width (ft)
		$E_t = \Sigma E_m / 2,000$	43,560 = Conversion factor from square feet to acres
			5,280 = Conversion factor from feet to miles
			D = Number of construction days per month
Paving	VOC	$E_d = A / M / D \times EF$	E_m = Monthly Emissions (lb/month)
			E_d = Daily Emissions (lb/day)
			D = Number of construction days per month
		$E_m = E_d \times D$	M = Number of paving construction months
			E_m = Monthly Emissions (lb/month)
			E_d = Daily Emissions (lb/day)
		$E_t = \Sigma E_m / 2,000$	D = Number of construction days per month
			E_t = Total Project Emissions (tons)
			E_m = Monthly Emissions (lb/month)

Black Rock Geothermal Project
BRGP Construction Emissions
Table 12. Vehicle Criteria Pollutant Emission Factors
April 2023

Vehicle Exhaust Emission Factors for BRGP Construction

Vehicle Type	Location of Vehicle Operation	Vehicle Class ^a	2024 Exhaust Emission Factors (g/mile) ^{b, c, d}									Paved Road Emission Factors (g/mile) ^e	
			CO	ROG	SO _x	NO _x	PM ₁₀	PM _{2.5}	CO ₂	CH ₄	N ₂ O	PM ₁₀	PM _{2.5}
Delivery Truck	Onroad, Offsite	Heavy/Medium-duty Diesel	0.087	0.013	0.011	1.126	0.078	0.033	1201.756	0.001	0.002	0.300	0.075
Pickup Truck	Onsite, Offroad	Light-duty truck	3.494	0.109	0.006	0.211	0.019	0.010	569.125	0.024	0.001	N/A	N/A
Haul Trucks	Onroad, Offsite	Heavy-duty Diesel	0.094	0.010	0.014	1.239	0.104	0.043	1434.237	0.000	0.003	0.300	0.075
Construction Worker Commute	Onroad	Light-duty Auto/Truck	2.147	0.032	0.003	0.130	0.015	0.006	306.828	0.008	0.001	0.300	0.075

Vehicle Idling Emission Factors for BRGP Construction

Vehicle Type	Location of Vehicle Operation	Vehicle Class ^a	2024 Idle Emission Factors (g/idle-hour) ^{b, c, d}								
			CO	ROG	SO _x	NO _x	PM ₁₀	PM _{2.5}	CO ₂	CH ₄	N ₂ O
Delivery Truck	Onroad, Offsite	Heavy/Medium-duty Diesel	22.402	1.369	0.041	24.638	0.033	0.032	4289.736	0.064	0.009
Haul Truck	Onroad, Offsite	Heavy-duty Diesel	34.770	2.368	0.052	28.143	0.012	0.011	5422.300	0.110	0.017

Notes:

- ^a The vehicle classes are represented as follows:
Light-duty Truck: Assumed to be 50% LDT1 Gas and 50% LDT2 Gas values, based on an understanding of the vehicle type.
Heavy-duty Diesel: Assumed to be 100% HHDT DSL values, per Section 4.6.4 of Appendix C of the *CalEEMod User's Guide* (ICF 2022).
Heavy/Medium-duty Diesel: Assumed to be 50% HHDT DSL and 50% MHDT DSL values, per Section 4.6.4 of Appendix C of the *CalEEMod User's Guide* (ICF 2022).
Light-duty Auto/Truck: Assumed to be 25% LDA Gas, 50% LDT1 Gas, and 25% LDT2 Gas values, per Section 4.6.4 of Appendix C of the *CalEEMod User's Guide* (ICF 2022) and assuming workers typically drive gasoline-fueled vehicles.

^b Exhaust and idling emission factors from EMFAC2021 for Imperial County, calendar year 2024. A speed of 40 mph was assumed for all delivery trucks, haul trucks, and worker commutes. A speed of 15 mph was assumed for onsite pickup trucks. An average temperature of 78°F and humidity of 40% were used per Table B-1 of *CT-EMFAC: A Computer Model to Estimate Transportation Project Emissions* (UC Davis 2007).

^c Although construction will occur bewteen 2024 and 2026, 2024 emission factors were used, as appropriate, to provide a more conservative emissions estimate.

^d ROG and VOC are assumed to be equivalent.

^e Paved road emission factors calculated using CalEEMod methodology, as described below.

Derivation of Paved Road Emission Factors
Vehicles on Paved Roads

Parameter	PM ₁₀	PM _{2.5}
Average Weight ^a	2.4	2.4
k ^a	1.0	0.25
sL ^a	0.1	0.1
Emission Factor (g/mile) ^b	0.300	0.075

Notes:

^a Average Weight, sL, and k taken as the CalEEMod statewide defaults from Section 5.1.4 of Appendix C of the *CalEEMod User's Guide* (ICF 2022).

^b Emission factor calculated using the following equation from Section 5.1.4 of Appendix C of the *CalEEMod User's Guide* (ICF 2022):
Emission Factor (g/mile) = k (g/mile) x [sL (g/m²)]^{0.91} x [Average Weight (tons)]^{1.02}
Precipitation days were not accounted for in the calculations to be conservative.

Black Rock Geothermal Project

BRGP Construction Emissions

Table 13. Construction Equipment Criteria Pollutant Emission Factors

April 2023

Construction Equipment Emission Factors for BRGP Construction

Equipment ^a	Equipment Type	Fuel	Year	Hours per Month ^b	Horsepower ^c	Load Factor ^c	2024 Emission Factors (g/bhp-hr) ^{d, e}								
							CO	VOC	NO _x	SO ₂	PM ₁₀	PM _{2.5}	CO ₂	CH ₄	N ₂ O
Onsite															
Excavator	Excavators	Diesel	2024	460	36	0.38	4.100	0.090	2.750	0.005	0.010	0.010	587.317	0.024	0.005
Backhoe	Tractors/Loaders/Backhoes	Diesel	2024	460	84	0.37	3.700	0.050	0.260	0.005	0.010	0.010	529.933	0.021	0.004
10 Wheel Dump Truck ^f	Off-Highway Trucks	Diesel	2024	460	376	0.38	1.195	0.183	1.236	0.005	0.044	0.041	527.763	0.021	0.004
Dozer	Rubber Tired Dozers	Diesel	2024	460	367	0.40	2.600	0.050	0.260	0.005	0.010	0.010	532.203	0.022	0.004
Front End Loader	Rubber Tired Loaders	Diesel	2024	460	150	0.36	3.700	0.050	0.260	0.005	0.010	0.010	526.332	0.021	0.004
150 Ton Hydraulic Crane	Cranes	Diesel	2024	460	367	0.29	2.600	0.050	0.260	0.005	0.010	0.010	527.532	0.021	0.004
75 Ton Hydraulic Crane	Cranes	Diesel	2024	460	367	0.29	2.600	0.050	0.260	0.005	0.010	0.010	527.532	0.021	0.004
35 Ton Hydraulic Crane	Cranes	Diesel	2024	460	367	0.29	2.600	0.050	0.260	0.005	0.010	0.010	527.532	0.021	0.004
Pile Driver	Other Construction Equipment	Diesel	2024	460	82	0.42	3.700	0.050	0.260	0.005	0.010	0.010	528.454	0.021	0.004
Fork Lift	Forklifts	Diesel	2024	460	82	0.20	3.700	0.050	0.260	0.005	0.010	0.010	527.040	0.021	0.004
Grader	Graders	Diesel	2024	460	148	0.41	3.700	0.050	0.260	0.005	0.010	0.010	530.170	0.022	0.004
Drill Rigs	Bore/Drill Rigs	Diesel	2024	460	83	0.50	3.700	0.050	0.260	0.005	0.010	0.010	521.434	0.021	0.004
Drilling Diesel Generator (Kenai)	Generator Sets	Diesel	2024	230	1482	0.74	2.610	0.382	0.500	0.007	0.149	0.149	568.327	0.023	0.005
Drilling Rental Generator	Generator Sets	Diesel	2024	230	314	0.74	2.610	0.298	0.298	0.007	0.014	0.014	568.327	0.023	0.005
Drilling Pump	Pumps	Diesel	2024	230	74	0.74	3.729	0.280	3.224	0.007	0.095	0.095	568.309	0.023	0.005
Drilling Forklift	Rough Terrain Forklifts	Diesel	2024	230	96	0.40	3.700	0.050	0.260	0.005	0.010	0.010	528.511	0.021	0.004
Drilling Manlift	Aerial Lifts	Diesel	2024	230	46	0.31	4.100	0.090	2.750	0.005	0.010	0.010	586.903	0.024	0.005
Drilling Backhoe	Tractors/Loaders/Backhoes	Diesel	2024	230	84	0.37	3.700	0.050	0.260	0.005	0.010	0.010	529.933	0.021	0.004
Drilling Light Tower	Other General Industrial Equipment	Diesel	2024	230	35	0.34	4.100	0.090	2.750	0.005	0.010	0.010	588.151	0.024	0.005
Pavers	Pavers	Diesel	2024	230	81	0.42	3.700	0.050	0.260	0.005	0.010	0.010	526.332	0.021	0.004
Paving Equipment	Paving Equipment	Diesel	2024	230	89	0.36	3.700	0.050	0.260	0.005	0.010	0.010	528.115	0.021	0.004
Paving Rollers	Rollers	Diesel	2024	230	36	0.38	4.100	0.090	2.750	0.005	0.010	0.010	586.798	0.024	0.005
Paving Tractor/Loader/Backhoe	Tractors/Loaders/Backhoes	Diesel	2024	230	84	0.37	3.700	0.050	0.260	0.005	0.010	0.010	529.933	0.021	0.004
Electrical Generators	Generator Sets	Diesel	2024	460	14	0.74	2.881	0.546	4.373	0.008	0.180	0.166	568.315	0.023	0.005
Concrete Pump Trucks ^f	Off-Highway Trucks	Diesel	2024	460	376	0.38	1.195	0.183	1.236	0.005	0.044	0.041	527.763	0.021	0.004
Diesel Welders	Welders	Diesel	2024	460	46	0.45	4.100	0.090	2.750	0.007	0.010	0.010	568.290	0.023	0.005
Compactor	Plate Compactors	Diesel	2024	460	8	0.43	3.470	0.547	4.143	0.009	0.162	0.149	568.353	0.023	0.005
Stake Truck ^f	Off-Highway Trucks	Diesel	2024	460	376	0.38	1.195	0.183	1.236	0.005	0.044	0.041	527.763	0.021	0.004
Water Truck (shared between 3 projects) ^f	Off-Highway Trucks	Diesel	2024	460	376	0.38	1.195	0.183	1.236	0.005	0.044	0.041	527.763	0.021	0.004
Air Compressor	Air Compressors	Diesel	2024	460	37	0.48	4.100	0.090	2.750	0.007	0.010	0.010	568.361	0.023	0.005
Light Towers	Other General Industrial Equipment	Diesel	2024	460	35	0.34	4.100	0.090	2.750	0.005	0.010	0.010	588.151	0.024	0.005
Heavy Lift Lattice boom Main Crane	Cranes	Diesel	2024	460	367	0.29	2.600	0.050	0.260	0.005	0.010	0.010	527.532	0.021	0.004
Heavy Lift Lattice boom Tail Crane	Cranes	Diesel	2024	460	367	0.29	2.600	0.050	0.260	0.005	0.010	0.010	527.532	0.021	0.004
Heavy lift Gantry Crane	Cranes	Diesel	2024	460	367	0.29	2.600	0.050	0.260	0.005	0.010	0.010	527.532	0.021	0.004

Notes:

^a Assumed all equipment is fired with diesel fuel.

^b Hours per month calculated based on the following schedule:

Work hours per day: 20

Work days per month: 23

^c Unless color coded as being provided by the Applicant's engineering contractor, construction equipment horsepowers and load factors taken from Table G-12 of Appendix G of the *CalEEMod User's Guide* (ICF 2022).

^d Unless color coded as being provided by the Applicant's engineering contractor or Tier 4-compliant, construction equipment emission factors taken from Table G-11 of Appendix G of the *CalEEMod User's Guide* (ICF 2022). Construction equipment emission factors for Tier 4-compliant equipment taken from Table G-13 of Appendix G of the *CalEEMod User's Guide* (ICF 2022).

^e Although construction will occur bewteen 2024 and 2026, 2024 emission factors were used for all calculations to provide a more conservative emissions estimate.

^f Horsepower, load factor, and emission factors for Off-Highway Trucks were assumed representative of Water, Stake, Dump, and Concrete Trucks.

Default CalEEMOD value for highest available horsepower bin (Table G-11).

Data supplied by the Applicant's engineering contractor.

Equipment emissions factors assumed to be Tier 4 final (Table G-13).

Black Rock Geothermal Project
BRGP Construction Air Quality Impacts Analysis
Table 14. Point Source Parameters
April 2023

BRGP Construction Modeled Point Source Parameters

Source ID	Source Type	Stack Release Type	Source Description	Easting (X)	Northing (Y)	Base Elevation	Stack Height	Temperature	Exit Velocity	Stack Diameter
				(m)	(m)	(m)	(m)	(K)	(m/s)	(m)
POINT_1	POINT	HORIZONTAL	Construction Point Source 1	628,110.00	3,670,890.00	-70.11	4.60	533.00	18.00	0.13
POINT_2	POINT	HORIZONTAL	Construction Point Source 2	628,135.00	3,670,890.00	-70.12	4.60	533.00	18.00	0.13
POINT_3	POINT	HORIZONTAL	Construction Point Source 3	628,160.00	3,670,890.00	-70.09	4.60	533.00	18.00	0.13
POINT_4	POINT	HORIZONTAL	Construction Point Source 4	628,185.00	3,670,890.00	-70.11	4.60	533.00	18.00	0.13
POINT_5	POINT	HORIZONTAL	Construction Point Source 5	628,210.00	3,670,890.00	-70.06	4.60	533.00	18.00	0.13
POINT_6	POINT	HORIZONTAL	Construction Point Source 6	628,235.00	3,670,890.00	-70.03	4.60	533.00	18.00	0.13
POINT_7	POINT	HORIZONTAL	Construction Point Source 7	628,260.00	3,670,890.00	-70.01	4.60	533.00	18.00	0.13
POINT_8	POINT	HORIZONTAL	Construction Point Source 8	628,285.00	3,670,890.00	-69.98	4.60	533.00	18.00	0.13
POINT_9	POINT	HORIZONTAL	Construction Point Source 9	628,310.00	3,670,890.00	-69.88	4.60	533.00	18.00	0.13
POINT_10	POINT	HORIZONTAL	Construction Point Source 10	628,335.00	3,670,890.00	-69.85	4.60	533.00	18.00	0.13
POINT_11	POINT	HORIZONTAL	Construction Point Source 11	628,360.00	3,670,890.00	-69.81	4.60	533.00	18.00	0.13
POINT_12	POINT	HORIZONTAL	Construction Point Source 12	627,835.00	3,670,790.00	-70.10	4.60	533.00	18.00	0.13
POINT_13	POINT	HORIZONTAL	Construction Point Source 13	627,835.00	3,670,765.00	-70.06	4.60	533.00	18.00	0.13
POINT_14	POINT	HORIZONTAL	Construction Point Source 14	627,835.00	3,670,740.00	-70.01	4.60	533.00	18.00	0.13
POINT_15	POINT	HORIZONTAL	Construction Point Source 15	627,835.00	3,670,715.00	-69.97	4.60	533.00	18.00	0.13
POINT_16	POINT	HORIZONTAL	Construction Point Source 16	627,835.00	3,670,690.00	-69.94	4.60	533.00	18.00	0.13
POINT_17	POINT	HORIZONTAL	Construction Point Source 17	627,835.00	3,670,665.00	-69.90	4.60	533.00	18.00	0.13
POINT_18	POINT	HORIZONTAL	Construction Point Source 18	627,835.00	3,670,640.00	-69.85	4.60	533.00	18.00	0.13
POINT_19	POINT	HORIZONTAL	Construction Point Source 19	627,835.00	3,670,615.00	-69.80	4.60	533.00	18.00	0.13
POINT_20	POINT	HORIZONTAL	Construction Point Source 20	627,835.00	3,670,590.00	-69.75	4.60	533.00	18.00	0.13
POINT_21	POINT	HORIZONTAL	Construction Point Source 21	627,835.00	3,670,565.00	-69.71	4.60	533.00	18.00	0.13
POINT_22	POINT	HORIZONTAL	Construction Point Source 22	627,835.00	3,670,540.00	-69.66	4.60	533.00	18.00	0.13
POINT_23	POINT	HORIZONTAL	Construction Point Source 23	627,835.00	3,670,515.00	-69.60	4.60	533.00	18.00	0.13
POINT_24	POINT	HORIZONTAL	Construction Point Source 24	627,835.00	3,670,490.00	-69.38	4.60	533.00	18.00	0.13
POINT_25	POINT	HORIZONTAL	Construction Point Source 25	627,860.00	3,670,790.00	-70.10	4.60	533.00	18.00	0.13
POINT_26	POINT	HORIZONTAL	Construction Point Source 26	627,860.00	3,670,765.00	-70.06	4.60	533.00	18.00	0.13
POINT_27	POINT	HORIZONTAL	Construction Point Source 27	627,860.00	3,670,740.00	-70.01	4.60	533.00	18.00	0.13
POINT_28	POINT	HORIZONTAL	Construction Point Source 28	627,860.00	3,670,715.00	-69.95	4.60	533.00	18.00	0.13
POINT_29	POINT	HORIZONTAL	Construction Point Source 29	627,860.00	3,670,690.00	-69.93	4.60	533.00	18.00	0.13
POINT_30	POINT	HORIZONTAL	Construction Point Source 30	627,860.00	3,670,665.00	-69.89	4.60	533.00	18.00	0.13
POINT_31	POINT	HORIZONTAL	Construction Point Source 31	627,860.00	3,670,640.00	-69.81	4.60	533.00	18.00	0.13
POINT_32	POINT	HORIZONTAL	Construction Point Source 32	627,860.00	3,670,615.00	-69.77	4.60	533.00	18.00	0.13
POINT_33	POINT	HORIZONTAL	Construction Point Source 33	627,860.00	3,670,590.00	-69.74	4.60	533.00	18.00	0.13
POINT_34	POINT	HORIZONTAL	Construction Point Source 34	627,860.00	3,670,565.00	-69.68	4.60	533.00	18.00	0.13
POINT_35	POINT	HORIZONTAL	Construction Point Source 35	627,860.00	3,670,540.00	-69.64	4.60	533.00	18.00	0.13
POINT_36	POINT	HORIZONTAL	Construction Point Source 36	627,860.00	3,670,515.00	-69.57	4.60	533.00	18.00	0.13
POINT_37	POINT	HORIZONTAL	Construction Point Source 37	627,860.00	3,670,490.00	-69.44	4.60	533.00	18.00	0.13
POINT_38	POINT	HORIZONTAL	Construction Point Source 38	627,885.00	3,670,790.00	-70.06	4.60	533.00	18.00	0.13
POINT_39	POINT	HORIZONTAL	Construction Point Source 39	627,885.00	3,670,765.00	-70.03	4.60	533.00	18.00	0.13
POINT_40	POINT	HORIZONTAL	Construction Point Source 40	627,885.00	3,670,740.00	-70.01	4.60	533.00	18.00	0.13

Black Rock Geothermal Project**BRGP Construction Air Quality Impacts Analysis****Table 14. Point Source Parameters****April 2023****BRGP Construction Modeled Point Source Parameters**

Source ID	Source Type	Stack Release Type	Source Description	Easting (X)	Northing (Y)	Base Elevation	Stack Height	Temperature	Exit Velocity	Stack Diameter
				(m)	(m)	(m)	(m)	(K)	(m/s)	(m)
POINT_41	POINT	HORIZONTAL	Construction Point Source 41	627,885.00	3,670,715.00	-69.95	4.60	533.00	18.00	0.13
POINT_42	POINT	HORIZONTAL	Construction Point Source 42	627,885.00	3,670,690.00	-69.90	4.60	533.00	18.00	0.13
POINT_43	POINT	HORIZONTAL	Construction Point Source 43	627,885.00	3,670,665.00	-69.84	4.60	533.00	18.00	0.13
POINT_44	POINT	HORIZONTAL	Construction Point Source 44	627,885.00	3,670,640.00	-69.80	4.60	533.00	18.00	0.13
POINT_45	POINT	HORIZONTAL	Construction Point Source 45	627,885.00	3,670,615.00	-69.75	4.60	533.00	18.00	0.13
POINT_46	POINT	HORIZONTAL	Construction Point Source 46	627,885.00	3,670,590.00	-69.71	4.60	533.00	18.00	0.13
POINT_47	POINT	HORIZONTAL	Construction Point Source 47	627,885.00	3,670,565.00	-69.67	4.60	533.00	18.00	0.13
POINT_48	POINT	HORIZONTAL	Construction Point Source 48	627,885.00	3,670,540.00	-69.62	4.60	533.00	18.00	0.13
POINT_49	POINT	HORIZONTAL	Construction Point Source 49	627,885.00	3,670,515.00	-69.56	4.60	533.00	18.00	0.13
POINT_50	POINT	HORIZONTAL	Construction Point Source 50	627,885.00	3,670,490.00	-69.44	4.60	533.00	18.00	0.13
POINT_51	POINT	HORIZONTAL	Construction Point Source 51	627,910.00	3,670,790.00	-70.04	4.60	533.00	18.00	0.13
POINT_52	POINT	HORIZONTAL	Construction Point Source 52	627,910.00	3,670,765.00	-70.02	4.60	533.00	18.00	0.13
POINT_53	POINT	HORIZONTAL	Construction Point Source 53	627,910.00	3,670,740.00	-69.98	4.60	533.00	18.00	0.13
POINT_54	POINT	HORIZONTAL	Construction Point Source 54	627,910.00	3,670,715.00	-69.91	4.60	533.00	18.00	0.13
POINT_55	POINT	HORIZONTAL	Construction Point Source 55	627,910.00	3,670,690.00	-69.85	4.60	533.00	18.00	0.13
POINT_56	POINT	HORIZONTAL	Construction Point Source 56	627,910.00	3,670,665.00	-69.81	4.60	533.00	18.00	0.13
POINT_57	POINT	HORIZONTAL	Construction Point Source 57	627,910.00	3,670,640.00	-69.79	4.60	533.00	18.00	0.13
POINT_58	POINT	HORIZONTAL	Construction Point Source 58	627,910.00	3,670,615.00	-69.75	4.60	533.00	18.00	0.13
POINT_59	POINT	HORIZONTAL	Construction Point Source 59	627,910.00	3,670,590.00	-69.69	4.60	533.00	18.00	0.13
POINT_60	POINT	HORIZONTAL	Construction Point Source 60	627,910.00	3,670,565.00	-69.66	4.60	533.00	18.00	0.13
POINT_61	POINT	HORIZONTAL	Construction Point Source 61	627,910.00	3,670,540.00	-69.62	4.60	533.00	18.00	0.13
POINT_62	POINT	HORIZONTAL	Construction Point Source 62	627,910.00	3,670,515.00	-69.58	4.60	533.00	18.00	0.13
POINT_63	POINT	HORIZONTAL	Construction Point Source 63	627,910.00	3,670,490.00	-69.43	4.60	533.00	18.00	0.13
POINT_64	POINT	HORIZONTAL	Construction Point Source 64	627,935.00	3,670,790.00	-70.05	4.60	533.00	18.00	0.13
POINT_65	POINT	HORIZONTAL	Construction Point Source 65	627,935.00	3,670,765.00	-70.01	4.60	533.00	18.00	0.13
POINT_66	POINT	HORIZONTAL	Construction Point Source 66	627,935.00	3,670,740.00	-69.95	4.60	533.00	18.00	0.13
POINT_67	POINT	HORIZONTAL	Construction Point Source 67	627,935.00	3,670,715.00	-69.90	4.60	533.00	18.00	0.13
POINT_68	POINT	HORIZONTAL	Construction Point Source 68	627,935.00	3,670,690.00	-69.84	4.60	533.00	18.00	0.13
POINT_69	POINT	HORIZONTAL	Construction Point Source 69	627,935.00	3,670,665.00	-69.83	4.60	533.00	18.00	0.13
POINT_70	POINT	HORIZONTAL	Construction Point Source 70	627,935.00	3,670,640.00	-69.77	4.60	533.00	18.00	0.13
POINT_71	POINT	HORIZONTAL	Construction Point Source 71	627,935.00	3,670,615.00	-69.73	4.60	533.00	18.00	0.13
POINT_72	POINT	HORIZONTAL	Construction Point Source 72	627,935.00	3,670,590.00	-69.70	4.60	533.00	18.00	0.13
POINT_73	POINT	HORIZONTAL	Construction Point Source 73	627,935.00	3,670,565.00	-69.65	4.60	533.00	18.00	0.13
POINT_74	POINT	HORIZONTAL	Construction Point Source 74	627,935.00	3,670,540.00	-69.61	4.60	533.00	18.00	0.13
POINT_75	POINT	HORIZONTAL	Construction Point Source 75	627,935.00	3,670,515.00	-69.54	4.60	533.00	18.00	0.13
POINT_76	POINT	HORIZONTAL	Construction Point Source 76	627,935.00	3,670,490.00	-69.45	4.60	533.00	18.00	0.13
POINT_77	POINT	HORIZONTAL	Construction Point Source 77	627,960.00	3,670,790.00	-70.02	4.60	533.00	18.00	0.13
POINT_78	POINT	HORIZONTAL	Construction Point Source 78	627,960.00	3,670,765.00	-69.98	4.60	533.00	18.00	0.13
POINT_79	POINT	HORIZONTAL	Construction Point Source 79	627,960.00	3,670,740.00	-69.92	4.60	533.00	18.00	0.13
POINT_80	POINT	HORIZONTAL	Construction Point Source 80	627,960.00	3,670,715.00	-69.89	4.60	533.00	18.00	0.13

Black Rock Geothermal Project
BRGP Construction Air Quality Impacts Analysis
Table 14. Point Source Parameters
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BRGP Construction Modeled Point Source Parameters

Source ID	Source Type	Stack Release Type	Source Description	Easting (X)	Northing (Y)	Base Elevation	Stack Height	Temperature	Exit Velocity	Stack Diameter
				(m)	(m)	(m)	(m)	(K)	(m/s)	(m)
POINT_81	POINT	HORIZONTAL	Construction Point Source 81	627,960.00	3,670,690.00	-69.84	4.60	533.00	18.00	0.13
POINT_82	POINT	HORIZONTAL	Construction Point Source 82	627,960.00	3,670,665.00	-69.81	4.60	533.00	18.00	0.13
POINT_83	POINT	HORIZONTAL	Construction Point Source 83	627,960.00	3,670,640.00	-69.75	4.60	533.00	18.00	0.13
POINT_84	POINT	HORIZONTAL	Construction Point Source 84	627,960.00	3,670,615.00	-69.71	4.60	533.00	18.00	0.13
POINT_85	POINT	HORIZONTAL	Construction Point Source 85	627,960.00	3,670,590.00	-69.66	4.60	533.00	18.00	0.13
POINT_86	POINT	HORIZONTAL	Construction Point Source 86	627,960.00	3,670,565.00	-69.62	4.60	533.00	18.00	0.13
POINT_87	POINT	HORIZONTAL	Construction Point Source 87	627,960.00	3,670,540.00	-69.58	4.60	533.00	18.00	0.13
POINT_88	POINT	HORIZONTAL	Construction Point Source 88	627,960.00	3,670,515.00	-69.51	4.60	533.00	18.00	0.13
POINT_89	POINT	HORIZONTAL	Construction Point Source 89	627,960.00	3,670,490.00	-69.38	4.60	533.00	18.00	0.13
POINT_90	POINT	HORIZONTAL	Construction Point Source 90	627,985.00	3,670,790.00	-69.99	4.60	533.00	18.00	0.13
POINT_91	POINT	HORIZONTAL	Construction Point Source 91	627,985.00	3,670,765.00	-69.95	4.60	533.00	18.00	0.13
POINT_92	POINT	HORIZONTAL	Construction Point Source 92	627,985.00	3,670,740.00	-69.91	4.60	533.00	18.00	0.13
POINT_93	POINT	HORIZONTAL	Construction Point Source 93	627,985.00	3,670,715.00	-69.86	4.60	533.00	18.00	0.13
POINT_94	POINT	HORIZONTAL	Construction Point Source 94	627,985.00	3,670,690.00	-69.83	4.60	533.00	18.00	0.13
POINT_95	POINT	HORIZONTAL	Construction Point Source 95	627,985.00	3,670,665.00	-69.78	4.60	533.00	18.00	0.13
POINT_96	POINT	HORIZONTAL	Construction Point Source 96	627,985.00	3,670,640.00	-69.73	4.60	533.00	18.00	0.13
POINT_97	POINT	HORIZONTAL	Construction Point Source 97	627,985.00	3,670,615.00	-69.70	4.60	533.00	18.00	0.13
POINT_98	POINT	HORIZONTAL	Construction Point Source 98	627,985.00	3,670,590.00	-69.64	4.60	533.00	18.00	0.13
POINT_99	POINT	HORIZONTAL	Construction Point Source 99	627,985.00	3,670,565.00	-69.62	4.60	533.00	18.00	0.13
POINT_100	POINT	HORIZONTAL	Construction Point Source 100	627,985.00	3,670,540.00	-69.57	4.60	533.00	18.00	0.13
POINT_101	POINT	HORIZONTAL	Construction Point Source 101	627,985.00	3,670,515.00	-69.50	4.60	533.00	18.00	0.13
POINT_102	POINT	HORIZONTAL	Construction Point Source 102	627,985.00	3,670,490.00	-69.35	4.60	533.00	18.00	0.13
POINT_103	POINT	HORIZONTAL	Construction Point Source 103	628,010.00	3,670,790.00	-69.99	4.60	533.00	18.00	0.13
POINT_104	POINT	HORIZONTAL	Construction Point Source 104	628,010.00	3,670,765.00	-69.93	4.60	533.00	18.00	0.13
POINT_105	POINT	HORIZONTAL	Construction Point Source 105	628,010.00	3,670,740.00	-69.89	4.60	533.00	18.00	0.13
POINT_106	POINT	HORIZONTAL	Construction Point Source 106	628,010.00	3,670,715.00	-69.85	4.60	533.00	18.00	0.13
POINT_107	POINT	HORIZONTAL	Construction Point Source 107	628,010.00	3,670,690.00	-69.78	4.60	533.00	18.00	0.13
POINT_108	POINT	HORIZONTAL	Construction Point Source 108	628,010.00	3,670,665.00	-69.76	4.60	533.00	18.00	0.13
POINT_109	POINT	HORIZONTAL	Construction Point Source 109	628,010.00	3,670,640.00	-69.73	4.60	533.00	18.00	0.13
POINT_110	POINT	HORIZONTAL	Construction Point Source 110	628,010.00	3,670,615.00	-69.66	4.60	533.00	18.00	0.13
POINT_111	POINT	HORIZONTAL	Construction Point Source 111	628,010.00	3,670,590.00	-69.63	4.60	533.00	18.00	0.13
POINT_112	POINT	HORIZONTAL	Construction Point Source 112	628,010.00	3,670,565.00	-69.59	4.60	533.00	18.00	0.13
POINT_113	POINT	HORIZONTAL	Construction Point Source 113	628,010.00	3,670,540.00	-69.55	4.60	533.00	18.00	0.13
POINT_114	POINT	HORIZONTAL	Construction Point Source 114	628,010.00	3,670,515.00	-69.47	4.60	533.00	18.00	0.13
POINT_115	POINT	HORIZONTAL	Construction Point Source 115	628,010.00	3,670,490.00	-69.40	4.60	533.00	18.00	0.13
POINT_116	POINT	HORIZONTAL	Construction Point Source 116	628,035.00	3,670,790.00	-69.96	4.60	533.00	18.00	0.13
POINT_117	POINT	HORIZONTAL	Construction Point Source 117	628,035.00	3,670,765.00	-69.92	4.60	533.00	18.00	0.13
POINT_118	POINT	HORIZONTAL	Construction Point Source 118	628,035.00	3,670,740.00	-69.88	4.60	533.00	18.00	0.13
POINT_119	POINT	HORIZONTAL	Construction Point Source 119	628,035.00	3,670,715.00	-69.84	4.60	533.00	18.00	0.13
POINT_120	POINT	HORIZONTAL	Construction Point Source 120	628,035.00	3,670,690.00	-69.78	4.60	533.00	18.00	0.13

Black Rock Geothermal Project
BRGP Construction Air Quality Impacts Analysis
Table 14. Point Source Parameters
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BRGP Construction Modeled Point Source Parameters

Source ID	Source Type	Stack Release Type	Source Description	Easting (X)	Northing (Y)	Base Elevation	Stack Height	Temperature	Exit Velocity	Stack Diameter
				(m)	(m)	(m)	(m)	(K)	(m/s)	(m)
POINT_121	POINT	HORIZONTAL	Construction Point Source 121	628,035.00	3,670,665.00	-69.76	4.60	533.00	18.00	0.13
POINT_122	POINT	HORIZONTAL	Construction Point Source 122	628,035.00	3,670,640.00	-69.71	4.60	533.00	18.00	0.13
POINT_123	POINT	HORIZONTAL	Construction Point Source 123	628,035.00	3,670,615.00	-69.67	4.60	533.00	18.00	0.13
POINT_124	POINT	HORIZONTAL	Construction Point Source 124	628,035.00	3,670,590.00	-69.63	4.60	533.00	18.00	0.13
POINT_125	POINT	HORIZONTAL	Construction Point Source 125	628,035.00	3,670,565.00	-69.57	4.60	533.00	18.00	0.13
POINT_126	POINT	HORIZONTAL	Construction Point Source 126	628,035.00	3,670,540.00	-69.53	4.60	533.00	18.00	0.13
POINT_127	POINT	HORIZONTAL	Construction Point Source 127	628,035.00	3,670,515.00	-69.45	4.60	533.00	18.00	0.13
POINT_128	POINT	HORIZONTAL	Construction Point Source 128	628,035.00	3,670,490.00	-69.34	4.60	533.00	18.00	0.13
POINT_129	POINT	HORIZONTAL	Construction Point Source 129	628,060.00	3,670,790.00	-69.94	4.60	533.00	18.00	0.13
POINT_130	POINT	HORIZONTAL	Construction Point Source 130	628,060.00	3,670,765.00	-69.89	4.60	533.00	18.00	0.13
POINT_131	POINT	HORIZONTAL	Construction Point Source 131	628,060.00	3,670,740.00	-69.84	4.60	533.00	18.00	0.13
POINT_132	POINT	HORIZONTAL	Construction Point Source 132	628,060.00	3,670,715.00	-69.81	4.60	533.00	18.00	0.13
POINT_133	POINT	HORIZONTAL	Construction Point Source 133	628,060.00	3,670,690.00	-69.77	4.60	533.00	18.00	0.13
POINT_134	POINT	HORIZONTAL	Construction Point Source 134	628,060.00	3,670,665.00	-69.71	4.60	533.00	18.00	0.13
POINT_135	POINT	HORIZONTAL	Construction Point Source 135	628,060.00	3,670,640.00	-69.68	4.60	533.00	18.00	0.13
POINT_136	POINT	HORIZONTAL	Construction Point Source 136	628,060.00	3,670,615.00	-69.65	4.60	533.00	18.00	0.13
POINT_137	POINT	HORIZONTAL	Construction Point Source 137	628,060.00	3,670,590.00	-69.62	4.60	533.00	18.00	0.13
POINT_138	POINT	HORIZONTAL	Construction Point Source 138	628,060.00	3,670,565.00	-69.56	4.60	533.00	18.00	0.13
POINT_139	POINT	HORIZONTAL	Construction Point Source 139	628,060.00	3,670,540.00	-69.52	4.60	533.00	18.00	0.13
POINT_140	POINT	HORIZONTAL	Construction Point Source 140	628,060.00	3,670,515.00	-69.47	4.60	533.00	18.00	0.13
POINT_141	POINT	HORIZONTAL	Construction Point Source 141	628,060.00	3,670,490.00	-69.31	4.60	533.00	18.00	0.13
POINT_142	POINT	HORIZONTAL	Construction Point Source 142	628,085.00	3,670,790.00	-69.92	4.60	533.00	18.00	0.13
POINT_143	POINT	HORIZONTAL	Construction Point Source 143	628,085.00	3,670,765.00	-69.89	4.60	533.00	18.00	0.13
POINT_144	POINT	HORIZONTAL	Construction Point Source 144	628,085.00	3,670,740.00	-69.83	4.60	533.00	18.00	0.13
POINT_145	POINT	HORIZONTAL	Construction Point Source 145	628,085.00	3,670,715.00	-69.80	4.60	533.00	18.00	0.13
POINT_146	POINT	HORIZONTAL	Construction Point Source 146	628,085.00	3,670,690.00	-69.76	4.60	533.00	18.00	0.13
POINT_147	POINT	HORIZONTAL	Construction Point Source 147	628,085.00	3,670,665.00	-69.72	4.60	533.00	18.00	0.13
POINT_148	POINT	HORIZONTAL	Construction Point Source 148	628,085.00	3,670,640.00	-69.67	4.60	533.00	18.00	0.13
POINT_149	POINT	HORIZONTAL	Construction Point Source 149	628,085.00	3,670,615.00	-69.63	4.60	533.00	18.00	0.13
POINT_150	POINT	HORIZONTAL	Construction Point Source 150	628,085.00	3,670,590.00	-69.60	4.60	533.00	18.00	0.13
POINT_151	POINT	HORIZONTAL	Construction Point Source 151	628,085.00	3,670,565.00	-69.57	4.60	533.00	18.00	0.13
POINT_152	POINT	HORIZONTAL	Construction Point Source 152	628,085.00	3,670,540.00	-69.50	4.60	533.00	18.00	0.13
POINT_153	POINT	HORIZONTAL	Construction Point Source 153	628,085.00	3,670,515.00	-69.46	4.60	533.00	18.00	0.13
POINT_154	POINT	HORIZONTAL	Construction Point Source 154	628,085.00	3,670,490.00	-69.30	4.60	533.00	18.00	0.13
POINT_155	POINT	HORIZONTAL	Construction Point Source 155	628,110.00	3,670,865.00	-70.09	4.60	533.00	18.00	0.13
POINT_156	POINT	HORIZONTAL	Construction Point Source 156	628,110.00	3,670,840.00	-70.05	4.60	533.00	18.00	0.13
POINT_157	POINT	HORIZONTAL	Construction Point Source 157	628,110.00	3,670,815.00	-70.00	4.60	533.00	18.00	0.13
POINT_158	POINT	HORIZONTAL	Construction Point Source 158	628,110.00	3,670,790.00	-69.96	4.60	533.00	18.00	0.13
POINT_159	POINT	HORIZONTAL	Construction Point Source 159	628,110.00	3,670,765.00	-69.86	4.60	533.00	18.00	0.13
POINT_160	POINT	HORIZONTAL	Construction Point Source 160	628,110.00	3,670,740.00	-69.83	4.60	533.00	18.00	0.13

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Table 14. Point Source Parameters
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BRGP Construction Modeled Point Source Parameters

Source ID	Source Type	Stack Release Type	Source Description	Easting (X)	Northing (Y)	Base Elevation	Stack Height	Temperature	Exit Velocity	Stack Diameter
				(m)	(m)	(m)	(m)	(K)	(m/s)	(m)
POINT_161	POINT	HORIZONTAL	Construction Point Source 161	628,110.00	3,670,715.00	-69.77	4.60	533.00	18.00	0.13
POINT_162	POINT	HORIZONTAL	Construction Point Source 162	628,110.00	3,670,690.00	-69.74	4.60	533.00	18.00	0.13
POINT_163	POINT	HORIZONTAL	Construction Point Source 163	628,110.00	3,670,665.00	-69.71	4.60	533.00	18.00	0.13
POINT_164	POINT	HORIZONTAL	Construction Point Source 164	628,110.00	3,670,640.00	-69.68	4.60	533.00	18.00	0.13
POINT_165	POINT	HORIZONTAL	Construction Point Source 165	628,110.00	3,670,615.00	-69.63	4.60	533.00	18.00	0.13
POINT_166	POINT	HORIZONTAL	Construction Point Source 166	628,110.00	3,670,590.00	-69.59	4.60	533.00	18.00	0.13
POINT_167	POINT	HORIZONTAL	Construction Point Source 167	628,110.00	3,670,565.00	-69.54	4.60	533.00	18.00	0.13
POINT_168	POINT	HORIZONTAL	Construction Point Source 168	628,110.00	3,670,540.00	-69.49	4.60	533.00	18.00	0.13
POINT_169	POINT	HORIZONTAL	Construction Point Source 169	628,110.00	3,670,515.00	-69.46	4.60	533.00	18.00	0.13
POINT_170	POINT	HORIZONTAL	Construction Point Source 170	628,110.00	3,670,490.00	-69.28	4.60	533.00	18.00	0.13
POINT_171	POINT	HORIZONTAL	Construction Point Source 171	628,135.00	3,670,865.00	-70.08	4.60	533.00	18.00	0.13
POINT_172	POINT	HORIZONTAL	Construction Point Source 172	628,135.00	3,670,840.00	-70.04	4.60	533.00	18.00	0.13
POINT_173	POINT	HORIZONTAL	Construction Point Source 173	628,135.00	3,670,815.00	-69.96	4.60	533.00	18.00	0.13
POINT_174	POINT	HORIZONTAL	Construction Point Source 174	628,135.00	3,670,790.00	-69.91	4.60	533.00	18.00	0.13
POINT_175	POINT	HORIZONTAL	Construction Point Source 175	628,135.00	3,670,765.00	-69.84	4.60	533.00	18.00	0.13
POINT_176	POINT	HORIZONTAL	Construction Point Source 176	628,135.00	3,670,740.00	-69.81	4.60	533.00	18.00	0.13
POINT_177	POINT	HORIZONTAL	Construction Point Source 177	628,135.00	3,670,715.00	-69.77	4.60	533.00	18.00	0.13
POINT_178	POINT	HORIZONTAL	Construction Point Source 178	628,135.00	3,670,690.00	-69.72	4.60	533.00	18.00	0.13
POINT_179	POINT	HORIZONTAL	Construction Point Source 179	628,135.00	3,670,665.00	-69.69	4.60	533.00	18.00	0.13
POINT_180	POINT	HORIZONTAL	Construction Point Source 180	628,135.00	3,670,640.00	-69.64	4.60	533.00	18.00	0.13
POINT_181	POINT	HORIZONTAL	Construction Point Source 181	628,135.00	3,670,615.00	-69.61	4.60	533.00	18.00	0.13
POINT_182	POINT	HORIZONTAL	Construction Point Source 182	628,135.00	3,670,590.00	-69.56	4.60	533.00	18.00	0.13
POINT_183	POINT	HORIZONTAL	Construction Point Source 183	628,135.00	3,670,565.00	-69.52	4.60	533.00	18.00	0.13
POINT_184	POINT	HORIZONTAL	Construction Point Source 184	628,135.00	3,670,540.00	-69.49	4.60	533.00	18.00	0.13
POINT_185	POINT	HORIZONTAL	Construction Point Source 185	628,135.00	3,670,515.00	-69.45	4.60	533.00	18.00	0.13
POINT_186	POINT	HORIZONTAL	Construction Point Source 186	628,135.00	3,670,490.00	-69.33	4.60	533.00	18.00	0.13
POINT_187	POINT	HORIZONTAL	Construction Point Source 187	628,160.00	3,670,865.00	-70.07	4.60	533.00	18.00	0.13
POINT_188	POINT	HORIZONTAL	Construction Point Source 188	628,160.00	3,670,840.00	-70.02	4.60	533.00	18.00	0.13
POINT_189	POINT	HORIZONTAL	Construction Point Source 189	628,160.00	3,670,815.00	-69.95	4.60	533.00	18.00	0.13
POINT_190	POINT	HORIZONTAL	Construction Point Source 190	628,160.00	3,670,790.00	-69.90	4.60	533.00	18.00	0.13
POINT_191	POINT	HORIZONTAL	Construction Point Source 191	628,160.00	3,670,765.00	-69.87	4.60	533.00	18.00	0.13
POINT_192	POINT	HORIZONTAL	Construction Point Source 192	628,160.00	3,670,740.00	-69.79	4.60	533.00	18.00	0.13
POINT_193	POINT	HORIZONTAL	Construction Point Source 193	628,160.00	3,670,715.00	-69.75	4.60	533.00	18.00	0.13
POINT_194	POINT	HORIZONTAL	Construction Point Source 194	628,160.00	3,670,690.00	-69.72	4.60	533.00	18.00	0.13
POINT_195	POINT	HORIZONTAL	Construction Point Source 195	628,160.00	3,670,665.00	-69.67	4.60	533.00	18.00	0.13
POINT_196	POINT	HORIZONTAL	Construction Point Source 196	628,160.00	3,670,640.00	-69.64	4.60	533.00	18.00	0.13
POINT_197	POINT	HORIZONTAL	Construction Point Source 197	628,160.00	3,670,615.00	-69.59	4.60	533.00	18.00	0.13
POINT_198	POINT	HORIZONTAL	Construction Point Source 198	628,160.00	3,670,590.00	-69.55	4.60	533.00	18.00	0.13
POINT_199	POINT	HORIZONTAL	Construction Point Source 199	628,160.00	3,670,565.00	-69.51	4.60	533.00	18.00	0.13
POINT_200	POINT	HORIZONTAL	Construction Point Source 200	628,160.00	3,670,540.00	-69.45	4.60	533.00	18.00	0.13

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Table 14. Point Source Parameters
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BRGP Construction Modeled Point Source Parameters

Source ID	Source Type	Stack Release Type	Source Description	Easting (X)	Northing (Y)	Base Elevation	Stack Height	Temperature	Exit Velocity	Stack Diameter
				(m)	(m)	(m)	(m)	(K)	(m/s)	(m)
POINT_201	POINT	HORIZONTAL	Construction Point Source 201	628,160.00	3,670,515.00	-69.42	4.60	533.00	18.00	0.13
POINT_202	POINT	HORIZONTAL	Construction Point Source 202	628,160.00	3,670,490.00	-69.29	4.60	533.00	18.00	0.13
POINT_203	POINT	HORIZONTAL	Construction Point Source 203	628,185.00	3,670,865.00	-70.06	4.60	533.00	18.00	0.13
POINT_204	POINT	HORIZONTAL	Construction Point Source 204	628,185.00	3,670,840.00	-70.01	4.60	533.00	18.00	0.13
POINT_205	POINT	HORIZONTAL	Construction Point Source 205	628,185.00	3,670,815.00	-69.92	4.60	533.00	18.00	0.13
POINT_206	POINT	HORIZONTAL	Construction Point Source 206	628,185.00	3,670,790.00	-69.88	4.60	533.00	18.00	0.13
POINT_207	POINT	HORIZONTAL	Construction Point Source 207	628,185.00	3,670,765.00	-69.83	4.60	533.00	18.00	0.13
POINT_208	POINT	HORIZONTAL	Construction Point Source 208	628,185.00	3,670,740.00	-69.78	4.60	533.00	18.00	0.13
POINT_209	POINT	HORIZONTAL	Construction Point Source 209	628,185.00	3,670,715.00	-69.75	4.60	533.00	18.00	0.13
POINT_210	POINT	HORIZONTAL	Construction Point Source 210	628,185.00	3,670,690.00	-69.72	4.60	533.00	18.00	0.13
POINT_211	POINT	HORIZONTAL	Construction Point Source 211	628,185.00	3,670,665.00	-69.64	4.60	533.00	18.00	0.13
POINT_212	POINT	HORIZONTAL	Construction Point Source 212	628,185.00	3,670,640.00	-69.61	4.60	533.00	18.00	0.13
POINT_213	POINT	HORIZONTAL	Construction Point Source 213	628,185.00	3,670,615.00	-69.57	4.60	533.00	18.00	0.13
POINT_214	POINT	HORIZONTAL	Construction Point Source 214	628,185.00	3,670,590.00	-69.55	4.60	533.00	18.00	0.13
POINT_215	POINT	HORIZONTAL	Construction Point Source 215	628,185.00	3,670,565.00	-69.49	4.60	533.00	18.00	0.13
POINT_216	POINT	HORIZONTAL	Construction Point Source 216	628,185.00	3,670,540.00	-69.46	4.60	533.00	18.00	0.13
POINT_217	POINT	HORIZONTAL	Construction Point Source 217	628,185.00	3,670,515.00	-69.40	4.60	533.00	18.00	0.13
POINT_218	POINT	HORIZONTAL	Construction Point Source 218	628,185.00	3,670,490.00	-69.39	4.60	533.00	18.00	0.13
POINT_219	POINT	HORIZONTAL	Construction Point Source 219	628,210.00	3,670,865.00	-70.03	4.60	533.00	18.00	0.13
POINT_220	POINT	HORIZONTAL	Construction Point Source 220	628,210.00	3,670,840.00	-69.98	4.60	533.00	18.00	0.13
POINT_221	POINT	HORIZONTAL	Construction Point Source 221	628,210.00	3,670,815.00	-69.90	4.60	533.00	18.00	0.13
POINT_222	POINT	HORIZONTAL	Construction Point Source 222	628,210.00	3,670,790.00	-69.87	4.60	533.00	18.00	0.13
POINT_223	POINT	HORIZONTAL	Construction Point Source 223	628,210.00	3,670,765.00	-69.83	4.60	533.00	18.00	0.13
POINT_224	POINT	HORIZONTAL	Construction Point Source 224	628,210.00	3,670,740.00	-69.77	4.60	533.00	18.00	0.13
POINT_225	POINT	HORIZONTAL	Construction Point Source 225	628,210.00	3,670,715.00	-69.73	4.60	533.00	18.00	0.13
POINT_226	POINT	HORIZONTAL	Construction Point Source 226	628,210.00	3,670,690.00	-69.71	4.60	533.00	18.00	0.13
POINT_227	POINT	HORIZONTAL	Construction Point Source 227	628,210.00	3,670,665.00	-69.66	4.60	533.00	18.00	0.13
POINT_228	POINT	HORIZONTAL	Construction Point Source 228	628,210.00	3,670,640.00	-69.60	4.60	533.00	18.00	0.13
POINT_229	POINT	HORIZONTAL	Construction Point Source 229	628,210.00	3,670,615.00	-69.55	4.60	533.00	18.00	0.13
POINT_230	POINT	HORIZONTAL	Construction Point Source 230	628,210.00	3,670,590.00	-69.53	4.60	533.00	18.00	0.13
POINT_231	POINT	HORIZONTAL	Construction Point Source 231	628,210.00	3,670,565.00	-69.48	4.60	533.00	18.00	0.13
POINT_232	POINT	HORIZONTAL	Construction Point Source 232	628,210.00	3,670,540.00	-69.43	4.60	533.00	18.00	0.13
POINT_233	POINT	HORIZONTAL	Construction Point Source 233	628,210.00	3,670,515.00	-69.39	4.60	533.00	18.00	0.13
POINT_234	POINT	HORIZONTAL	Construction Point Source 234	628,210.00	3,670,490.00	-69.30	4.60	533.00	18.00	0.13
POINT_235	POINT	HORIZONTAL	Construction Point Source 235	628,235.00	3,670,865.00	-70.03	4.60	533.00	18.00	0.13
POINT_236	POINT	HORIZONTAL	Construction Point Source 236	628,235.00	3,670,840.00	-69.98	4.60	533.00	18.00	0.13
POINT_237	POINT	HORIZONTAL	Construction Point Source 237	628,235.00	3,670,815.00	-69.92	4.60	533.00	18.00	0.13
POINT_238	POINT	HORIZONTAL	Construction Point Source 238	628,235.00	3,670,790.00	-69.87	4.60	533.00	18.00	0.13
POINT_239	POINT	HORIZONTAL	Construction Point Source 239	628,235.00	3,670,765.00	-69.80	4.60	533.00	18.00	0.13
POINT_240	POINT	HORIZONTAL	Construction Point Source 240	628,235.00	3,670,740.00	-69.76	4.60	533.00	18.00	0.13

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Table 14. Point Source Parameters
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BRGP Construction Modeled Point Source Parameters

Source ID	Source Type	Stack Release Type	Source Description	Easting (X)	Northing (Y)	Base Elevation	Stack Height	Temperature	Exit Velocity	Stack Diameter
				(m)	(m)	(m)	(m)	(K)	(m/s)	(m)
POINT_241	POINT	HORIZONTAL	Construction Point Source 241	628,235.00	3,670,715.00	-69.72	4.60	533.00	18.00	0.13
POINT_242	POINT	HORIZONTAL	Construction Point Source 242	628,235.00	3,670,690.00	-69.67	4.60	533.00	18.00	0.13
POINT_243	POINT	HORIZONTAL	Construction Point Source 243	628,235.00	3,670,665.00	-69.65	4.60	533.00	18.00	0.13
POINT_244	POINT	HORIZONTAL	Construction Point Source 244	628,235.00	3,670,640.00	-69.58	4.60	533.00	18.00	0.13
POINT_245	POINT	HORIZONTAL	Construction Point Source 245	628,235.00	3,670,615.00	-69.57	4.60	533.00	18.00	0.13
POINT_246	POINT	HORIZONTAL	Construction Point Source 246	628,235.00	3,670,590.00	-69.51	4.60	533.00	18.00	0.13
POINT_247	POINT	HORIZONTAL	Construction Point Source 247	628,235.00	3,670,565.00	-69.49	4.60	533.00	18.00	0.13
POINT_248	POINT	HORIZONTAL	Construction Point Source 248	628,235.00	3,670,540.00	-69.43	4.60	533.00	18.00	0.13
POINT_249	POINT	HORIZONTAL	Construction Point Source 249	628,235.00	3,670,515.00	-69.38	4.60	533.00	18.00	0.13
POINT_250	POINT	HORIZONTAL	Construction Point Source 250	628,235.00	3,670,490.00	-69.45	4.60	533.00	18.00	0.13
POINT_251	POINT	HORIZONTAL	Construction Point Source 251	628,260.00	3,670,865.00	-69.99	4.60	533.00	18.00	0.13
POINT_252	POINT	HORIZONTAL	Construction Point Source 252	628,260.00	3,670,840.00	-69.95	4.60	533.00	18.00	0.13
POINT_253	POINT	HORIZONTAL	Construction Point Source 253	628,260.00	3,670,815.00	-69.90	4.60	533.00	18.00	0.13
POINT_254	POINT	HORIZONTAL	Construction Point Source 254	628,260.00	3,670,790.00	-69.83	4.60	533.00	18.00	0.13
POINT_255	POINT	HORIZONTAL	Construction Point Source 255	628,260.00	3,670,765.00	-69.80	4.60	533.00	18.00	0.13
POINT_256	POINT	HORIZONTAL	Construction Point Source 256	628,260.00	3,670,740.00	-69.75	4.60	533.00	18.00	0.13
POINT_257	POINT	HORIZONTAL	Construction Point Source 257	628,260.00	3,670,715.00	-69.70	4.60	533.00	18.00	0.13
POINT_258	POINT	HORIZONTAL	Construction Point Source 258	628,260.00	3,670,690.00	-69.66	4.60	533.00	18.00	0.13
POINT_259	POINT	HORIZONTAL	Construction Point Source 259	628,260.00	3,670,665.00	-69.64	4.60	533.00	18.00	0.13
POINT_260	POINT	HORIZONTAL	Construction Point Source 260	628,260.00	3,670,640.00	-69.58	4.60	533.00	18.00	0.13
POINT_261	POINT	HORIZONTAL	Construction Point Source 261	628,260.00	3,670,615.00	-69.54	4.60	533.00	18.00	0.13
POINT_262	POINT	HORIZONTAL	Construction Point Source 262	628,260.00	3,670,590.00	-69.48	4.60	533.00	18.00	0.13
POINT_263	POINT	HORIZONTAL	Construction Point Source 263	628,260.00	3,670,565.00	-69.45	4.60	533.00	18.00	0.13
POINT_264	POINT	HORIZONTAL	Construction Point Source 264	628,260.00	3,670,540.00	-69.42	4.60	533.00	18.00	0.13
POINT_265	POINT	HORIZONTAL	Construction Point Source 265	628,260.00	3,670,515.00	-69.37	4.60	533.00	18.00	0.13
POINT_266	POINT	HORIZONTAL	Construction Point Source 266	628,260.00	3,670,490.00	-69.54	4.60	533.00	18.00	0.13
POINT_267	POINT	HORIZONTAL	Construction Point Source 267	628,285.00	3,670,865.00	-69.96	4.60	533.00	18.00	0.13
POINT_268	POINT	HORIZONTAL	Construction Point Source 268	628,285.00	3,670,840.00	-69.92	4.60	533.00	18.00	0.13
POINT_269	POINT	HORIZONTAL	Construction Point Source 269	628,285.00	3,670,815.00	-69.90	4.60	533.00	18.00	0.13
POINT_270	POINT	HORIZONTAL	Construction Point Source 270	628,285.00	3,670,790.00	-69.82	4.60	533.00	18.00	0.13
POINT_271	POINT	HORIZONTAL	Construction Point Source 271	628,285.00	3,670,765.00	-69.79	4.60	533.00	18.00	0.13
POINT_272	POINT	HORIZONTAL	Construction Point Source 272	628,285.00	3,670,740.00	-69.73	4.60	533.00	18.00	0.13
POINT_273	POINT	HORIZONTAL	Construction Point Source 273	628,285.00	3,670,715.00	-69.68	4.60	533.00	18.00	0.13
POINT_274	POINT	HORIZONTAL	Construction Point Source 274	628,285.00	3,670,690.00	-69.66	4.60	533.00	18.00	0.13
POINT_275	POINT	HORIZONTAL	Construction Point Source 275	628,285.00	3,670,665.00	-69.62	4.60	533.00	18.00	0.13
POINT_276	POINT	HORIZONTAL	Construction Point Source 276	628,285.00	3,670,640.00	-69.56	4.60	533.00	18.00	0.13
POINT_277	POINT	HORIZONTAL	Construction Point Source 277	628,285.00	3,670,615.00	-69.53	4.60	533.00	18.00	0.13
POINT_278	POINT	HORIZONTAL	Construction Point Source 278	628,285.00	3,670,590.00	-69.47	4.60	533.00	18.00	0.13
POINT_279	POINT	HORIZONTAL	Construction Point Source 279	628,285.00	3,670,565.00	-69.45	4.60	533.00	18.00	0.13
POINT_280	POINT	HORIZONTAL	Construction Point Source 280	628,285.00	3,670,540.00	-69.40	4.60	533.00	18.00	0.13

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Table 14. Point Source Parameters
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BRGP Construction Modeled Point Source Parameters

Source ID	Source Type	Stack Release Type	Source Description	Easting (X)	Northing (Y)	Base Elevation	Stack Height	Temperature	Exit Velocity	Stack Diameter
				(m)	(m)	(m)	(m)	(K)	(m/s)	(m)
POINT_281	POINT	HORIZONTAL	Construction Point Source 281	628,285.00	3,670,515.00	-69.37	4.60	533.00	18.00	0.13
POINT_282	POINT	HORIZONTAL	Construction Point Source 282	628,285.00	3,670,490.00	-69.65	4.60	533.00	18.00	0.13
POINT_283	POINT	HORIZONTAL	Construction Point Source 283	628,310.00	3,670,865.00	-69.86	4.60	533.00	18.00	0.13
POINT_284	POINT	HORIZONTAL	Construction Point Source 284	628,310.00	3,670,840.00	-69.80	4.60	533.00	18.00	0.13
POINT_285	POINT	HORIZONTAL	Construction Point Source 285	628,310.00	3,670,815.00	-69.65	4.60	533.00	18.00	0.13
POINT_286	POINT	HORIZONTAL	Construction Point Source 286	628,310.00	3,670,790.00	-69.80	4.60	533.00	18.00	0.13
POINT_287	POINT	HORIZONTAL	Construction Point Source 287	628,310.00	3,670,765.00	-69.76	4.60	533.00	18.00	0.13
POINT_288	POINT	HORIZONTAL	Construction Point Source 288	628,310.00	3,670,740.00	-69.72	4.60	533.00	18.00	0.13
POINT_289	POINT	HORIZONTAL	Construction Point Source 289	628,310.00	3,670,715.00	-69.66	4.60	533.00	18.00	0.13
POINT_290	POINT	HORIZONTAL	Construction Point Source 290	628,310.00	3,670,690.00	-69.64	4.60	533.00	18.00	0.13
POINT_291	POINT	HORIZONTAL	Construction Point Source 291	628,310.00	3,670,665.00	-69.60	4.60	533.00	18.00	0.13
POINT_292	POINT	HORIZONTAL	Construction Point Source 292	628,310.00	3,670,640.00	-69.53	4.60	533.00	18.00	0.13
POINT_293	POINT	HORIZONTAL	Construction Point Source 293	628,310.00	3,670,615.00	-69.52	4.60	533.00	18.00	0.13
POINT_294	POINT	HORIZONTAL	Construction Point Source 294	628,310.00	3,670,590.00	-69.45	4.60	533.00	18.00	0.13
POINT_295	POINT	HORIZONTAL	Construction Point Source 295	628,310.00	3,670,565.00	-69.42	4.60	533.00	18.00	0.13
POINT_296	POINT	HORIZONTAL	Construction Point Source 296	628,310.00	3,670,540.00	-69.39	4.60	533.00	18.00	0.13
POINT_297	POINT	HORIZONTAL	Construction Point Source 297	628,310.00	3,670,515.00	-69.32	4.60	533.00	18.00	0.13
POINT_298	POINT	HORIZONTAL	Construction Point Source 298	628,310.00	3,670,490.00	-69.66	4.60	533.00	18.00	0.13
POINT_299	POINT	HORIZONTAL	Construction Point Source 299	628,335.00	3,670,865.00	-69.82	4.60	533.00	18.00	0.13
POINT_300	POINT	HORIZONTAL	Construction Point Source 300	628,335.00	3,670,840.00	-69.81	4.60	533.00	18.00	0.13
POINT_301	POINT	HORIZONTAL	Construction Point Source 301	628,335.00	3,670,815.00	-69.62	4.60	533.00	18.00	0.13
POINT_302	POINT	HORIZONTAL	Construction Point Source 302	628,335.00	3,670,790.00	-69.74	4.60	533.00	18.00	0.13
POINT_303	POINT	HORIZONTAL	Construction Point Source 303	628,335.00	3,670,765.00	-69.73	4.60	533.00	18.00	0.13
POINT_304	POINT	HORIZONTAL	Construction Point Source 304	628,335.00	3,670,740.00	-69.70	4.60	533.00	18.00	0.13
POINT_305	POINT	HORIZONTAL	Construction Point Source 305	628,335.00	3,670,715.00	-69.65	4.60	533.00	18.00	0.13
POINT_306	POINT	HORIZONTAL	Construction Point Source 306	628,335.00	3,670,690.00	-69.63	4.60	533.00	18.00	0.13
POINT_307	POINT	HORIZONTAL	Construction Point Source 307	628,335.00	3,670,665.00	-69.58	4.60	533.00	18.00	0.13
POINT_308	POINT	HORIZONTAL	Construction Point Source 308	628,335.00	3,670,640.00	-69.52	4.60	533.00	18.00	0.13
POINT_309	POINT	HORIZONTAL	Construction Point Source 309	628,335.00	3,670,615.00	-69.49	4.60	533.00	18.00	0.13
POINT_310	POINT	HORIZONTAL	Construction Point Source 310	628,335.00	3,670,590.00	-69.45	4.60	533.00	18.00	0.13
POINT_311	POINT	HORIZONTAL	Construction Point Source 311	628,335.00	3,670,565.00	-69.44	4.60	533.00	18.00	0.13
POINT_312	POINT	HORIZONTAL	Construction Point Source 312	628,335.00	3,670,540.00	-69.35	4.60	533.00	18.00	0.13
POINT_313	POINT	HORIZONTAL	Construction Point Source 313	628,335.00	3,670,515.00	-69.32	4.60	533.00	18.00	0.13
POINT_314	POINT	HORIZONTAL	Construction Point Source 314	628,335.00	3,670,490.00	-69.75	4.60	533.00	18.00	0.13
POINT_315	POINT	HORIZONTAL	Construction Point Source 315	628,360.00	3,670,865.00	-69.81	4.60	533.00	18.00	0.13
POINT_316	POINT	HORIZONTAL	Construction Point Source 316	628,360.00	3,670,840.00	-69.73	4.60	533.00	18.00	0.13
POINT_317	POINT	HORIZONTAL	Construction Point Source 317	628,360.00	3,670,815.00	-69.72	4.60	533.00	18.00	0.13
POINT_318	POINT	HORIZONTAL	Construction Point Source 318	628,360.00	3,670,790.00	-69.76	4.60	533.00	18.00	0.13
POINT_319	POINT	HORIZONTAL	Construction Point Source 319	628,360.00	3,670,765.00	-69.75	4.60	533.00	18.00	0.13
POINT_320	POINT	HORIZONTAL	Construction Point Source 320	628,360.00	3,670,740.00	-69.69	4.60	533.00	18.00	0.13

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Table 14. Point Source Parameters
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BRGP Construction Modeled Point Source Parameters

Source ID	Source Type	Stack Release Type	Source Description	Easting (X)	Northing (Y)	Base Elevation	Stack Height	Temperature	Exit Velocity	Stack Diameter
				(m)	(m)	(m)	(m)	(K)	(m/s)	(m)
POINT_321	POINT	HORIZONTAL	Construction Point Source 321	628,360.00	3,670,715.00	-69.66	4.60	533.00	18.00	0.13
POINT_322	POINT	HORIZONTAL	Construction Point Source 322	628,360.00	3,670,690.00	-69.61	4.60	533.00	18.00	0.13
POINT_323	POINT	HORIZONTAL	Construction Point Source 323	628,360.00	3,670,665.00	-69.61	4.60	533.00	18.00	0.13
POINT_324	POINT	HORIZONTAL	Construction Point Source 324	628,360.00	3,670,640.00	-69.54	4.60	533.00	18.00	0.13
POINT_325	POINT	HORIZONTAL	Construction Point Source 325	628,360.00	3,670,615.00	-69.51	4.60	533.00	18.00	0.13
POINT_326	POINT	HORIZONTAL	Construction Point Source 326	628,360.00	3,670,590.00	-69.47	4.60	533.00	18.00	0.13
POINT_327	POINT	HORIZONTAL	Construction Point Source 327	628,360.00	3,670,565.00	-69.42	4.60	533.00	18.00	0.13
POINT_328	POINT	HORIZONTAL	Construction Point Source 328	628,360.00	3,670,540.00	-69.35	4.60	533.00	18.00	0.13
POINT_329	POINT	HORIZONTAL	Construction Point Source 329	628,360.00	3,670,515.00	-69.31	4.60	533.00	18.00	0.13
POINT_330	POINT	HORIZONTAL	Construction Point Source 330	628,360.00	3,670,490.00	-69.59	4.60	533.00	18.00	0.13
POINT_331	POINT	HORIZONTAL	Construction Point Source 331	627,835.00	3,670,465.00	-69.79	4.60	533.00	18.00	0.13
POINT_332	POINT	HORIZONTAL	Construction Point Source 332	627,860.00	3,670,465.00	-69.77	4.60	533.00	18.00	0.13
POINT_333	POINT	HORIZONTAL	Construction Point Source 333	627,885.00	3,670,465.00	-69.76	4.60	533.00	18.00	0.13
POINT_334	POINT	HORIZONTAL	Construction Point Source 334	627,910.00	3,670,465.00	-69.72	4.60	533.00	18.00	0.13
POINT_335	POINT	HORIZONTAL	Construction Point Source 335	627,935.00	3,670,465.00	-69.70	4.60	533.00	18.00	0.13
POINT_336	POINT	HORIZONTAL	Construction Point Source 336	627,960.00	3,670,465.00	-69.69	4.60	533.00	18.00	0.13
POINT_337	POINT	HORIZONTAL	Construction Point Source 337	627,985.00	3,670,465.00	-69.65	4.60	533.00	18.00	0.13
POINT_338	POINT	HORIZONTAL	Construction Point Source 338	628,010.00	3,670,465.00	-69.61	4.60	533.00	18.00	0.13
POINT_339	POINT	HORIZONTAL	Construction Point Source 339	628,035.00	3,670,465.00	-69.62	4.60	533.00	18.00	0.13
POINT_340	POINT	HORIZONTAL	Construction Point Source 340	628,060.00	3,670,465.00	-69.59	4.60	533.00	18.00	0.13
POINT_341	POINT	HORIZONTAL	Construction Point Source 341	628,085.00	3,670,465.00	-69.54	4.60	533.00	18.00	0.13
POINT_342	POINT	HORIZONTAL	Construction Point Source 342	628,110.00	3,670,465.00	-69.53	4.60	533.00	18.00	0.13
POINT_343	POINT	HORIZONTAL	Construction Point Source 343	628,135.00	3,670,465.00	-69.53	4.60	533.00	18.00	0.13
POINT_344	POINT	HORIZONTAL	Construction Point Source 344	628,160.00	3,670,465.00	-69.48	4.60	533.00	18.00	0.13
POINT_345	POINT	HORIZONTAL	Construction Point Source 345	628,185.00	3,670,465.00	-69.50	4.60	533.00	18.00	0.13
POINT_346	POINT	HORIZONTAL	Construction Point Source 346	628,210.00	3,670,465.00	-69.42	4.60	533.00	18.00	0.13
POINT_347	POINT	HORIZONTAL	Construction Point Source 347	628,235.00	3,670,465.00	-69.53	4.60	533.00	18.00	0.13
POINT_348	POINT	HORIZONTAL	Construction Point Source 348	628,260.00	3,670,465.00	-69.71	4.60	533.00	18.00	0.13
POINT_349	POINT	HORIZONTAL	Construction Point Source 349	628,285.00	3,670,465.00	-69.74	4.60	533.00	18.00	0.13
POINT_350	POINT	HORIZONTAL	Construction Point Source 350	628,310.00	3,670,465.00	-69.68	4.60	533.00	18.00	0.13
POINT_351	POINT	HORIZONTAL	Construction Point Source 351	628,335.00	3,670,465.00	-69.70	4.60	533.00	18.00	0.13
POINT_352	POINT	HORIZONTAL	Construction Point Source 352	628,360.00	3,670,465.00	-69.73	4.60	533.00	18.00	0.13
POINT_353	POINT	HORIZONTAL	Construction Point Source 353	627,835.00	3,670,890.00	-70.31	4.60	533.00	18.00	0.13
POINT_354	POINT	HORIZONTAL	Construction Point Source 354	627,860.00	3,670,890.00	-70.30	4.60	533.00	18.00	0.13
POINT_355	POINT	HORIZONTAL	Construction Point Source 355	627,885.00	3,670,890.00	-70.28	4.60	533.00	18.00	0.13
POINT_356	POINT	HORIZONTAL	Construction Point Source 356	627,910.00	3,670,890.00	-70.25	4.60	533.00	18.00	0.13
POINT_357	POINT	HORIZONTAL	Construction Point Source 357	627,935.00	3,670,890.00	-70.24	4.60	533.00	18.00	0.13
POINT_358	POINT	HORIZONTAL	Construction Point Source 358	627,960.00	3,670,890.00	-70.23	4.60	533.00	18.00	0.13
POINT_359	POINT	HORIZONTAL	Construction Point Source 359	627,985.00	3,670,890.00	-70.19	4.60	533.00	18.00	0.13
POINT_360	POINT	HORIZONTAL	Construction Point Source 360	628,010.00	3,670,890.00	-70.20	4.60	533.00	18.00	0.13

Black Rock Geothermal Project
BRGP Construction Air Quality Impacts Analysis
Table 14. Point Source Parameters
April 2023

BRGP Construction Modeled Point Source Parameters

Source ID	Source Type	Stack Release Type	Source Description	Easting (X)	Northing (Y)	Base Elevation	Stack Height	Temperature	Exit Velocity	Stack Diameter
				(m)	(m)	(m)	(m)	(K)	(m/s)	(m)
POINT_361	POINT	HORIZONTAL	Construction Point Source 361	628,035.00	3,670,890.00	-70.18	4.60	533.00	18.00	0.13
POINT_362	POINT	HORIZONTAL	Construction Point Source 362	628,060.00	3,670,890.00	-70.15	4.60	533.00	18.00	0.13
POINT_363	POINT	HORIZONTAL	Construction Point Source 363	628,085.00	3,670,890.00	-70.12	4.60	533.00	18.00	0.13
POINT_364	POINT	HORIZONTAL	Construction Point Source 364	627,835.00	3,670,865.00	-70.25	4.60	533.00	18.00	0.13
POINT_365	POINT	HORIZONTAL	Construction Point Source 365	627,835.00	3,670,840.00	-70.20	4.60	533.00	18.00	0.13
POINT_366	POINT	HORIZONTAL	Construction Point Source 366	627,835.00	3,670,815.00	-70.13	4.60	533.00	18.00	0.13
POINT_367	POINT	HORIZONTAL	Construction Point Source 367	627,860.00	3,670,865.00	-70.24	4.60	533.00	18.00	0.13
POINT_368	POINT	HORIZONTAL	Construction Point Source 368	627,860.00	3,670,840.00	-70.21	4.60	533.00	18.00	0.13
POINT_369	POINT	HORIZONTAL	Construction Point Source 369	627,860.00	3,670,815.00	-70.14	4.60	533.00	18.00	0.13
POINT_370	POINT	HORIZONTAL	Construction Point Source 370	627,885.00	3,670,865.00	-70.23	4.60	533.00	18.00	0.13
POINT_371	POINT	HORIZONTAL	Construction Point Source 371	627,885.00	3,670,840.00	-70.19	4.60	533.00	18.00	0.13
POINT_372	POINT	HORIZONTAL	Construction Point Source 372	627,885.00	3,670,815.00	-70.12	4.60	533.00	18.00	0.13
POINT_373	POINT	HORIZONTAL	Construction Point Source 373	627,910.00	3,670,865.00	-70.20	4.60	533.00	18.00	0.13
POINT_374	POINT	HORIZONTAL	Construction Point Source 374	627,910.00	3,670,840.00	-70.17	4.60	533.00	18.00	0.13
POINT_375	POINT	HORIZONTAL	Construction Point Source 375	627,910.00	3,670,815.00	-70.12	4.60	533.00	18.00	0.13
POINT_376	POINT	HORIZONTAL	Construction Point Source 376	627,935.00	3,670,865.00	-70.20	4.60	533.00	18.00	0.13
POINT_377	POINT	HORIZONTAL	Construction Point Source 377	627,935.00	3,670,840.00	-70.16	4.60	533.00	18.00	0.13
POINT_378	POINT	HORIZONTAL	Construction Point Source 378	627,935.00	3,670,815.00	-70.14	4.60	533.00	18.00	0.13
POINT_379	POINT	HORIZONTAL	Construction Point Source 379	627,960.00	3,670,865.00	-70.17	4.60	533.00	18.00	0.13
POINT_380	POINT	HORIZONTAL	Construction Point Source 380	627,960.00	3,670,840.00	-70.15	4.60	533.00	18.00	0.13
POINT_381	POINT	HORIZONTAL	Construction Point Source 381	627,960.00	3,670,815.00	-70.10	4.60	533.00	18.00	0.13
POINT_382	POINT	HORIZONTAL	Construction Point Source 382	627,985.00	3,670,865.00	-70.20	4.60	533.00	18.00	0.13
POINT_383	POINT	HORIZONTAL	Construction Point Source 383	627,985.00	3,670,840.00	-70.14	4.60	533.00	18.00	0.13
POINT_384	POINT	HORIZONTAL	Construction Point Source 384	627,985.00	3,670,815.00	-70.08	4.60	533.00	18.00	0.13
POINT_385	POINT	HORIZONTAL	Construction Point Source 385	628,010.00	3,670,865.00	-70.17	4.60	533.00	18.00	0.13
POINT_386	POINT	HORIZONTAL	Construction Point Source 386	628,010.00	3,670,840.00	-70.12	4.60	533.00	18.00	0.13
POINT_387	POINT	HORIZONTAL	Construction Point Source 387	628,010.00	3,670,815.00	-70.05	4.60	533.00	18.00	0.13
POINT_388	POINT	HORIZONTAL	Construction Point Source 388	628,035.00	3,670,865.00	-70.15	4.60	533.00	18.00	0.13
POINT_389	POINT	HORIZONTAL	Construction Point Source 389	628,035.00	3,670,840.00	-70.08	4.60	533.00	18.00	0.13
POINT_390	POINT	HORIZONTAL	Construction Point Source 390	628,035.00	3,670,815.00	-70.03	4.60	533.00	18.00	0.13
POINT_391	POINT	HORIZONTAL	Construction Point Source 391	628,060.00	3,670,865.00	-70.10	4.60	533.00	18.00	0.13
POINT_392	POINT	HORIZONTAL	Construction Point Source 392	628,060.00	3,670,840.00	-70.07	4.60	533.00	18.00	0.13
POINT_393	POINT	HORIZONTAL	Construction Point Source 393	628,060.00	3,670,815.00	-69.98	4.60	533.00	18.00	0.13
POINT_394	POINT	HORIZONTAL	Construction Point Source 394	628,085.00	3,670,865.00	-70.10	4.60	533.00	18.00	0.13
POINT_395	POINT	HORIZONTAL	Construction Point Source 395	628,085.00	3,670,840.00	-70.05	4.60	533.00	18.00	0.13
POINT_396	POINT	HORIZONTAL	Construction Point Source 396	628,085.00	3,670,815.00	-70.00	4.60	533.00	18.00	0.13

Note: Coordinates presented are UTM NAD83 Zone 11

m = meter(s)

K = Kelvin

m/s = meter(s) per second

Black Rock Geothermal Project
BRGP Construction Air Quality Impacts Analysis
Table 15. Area Source Parameters
April 2023

BRGP Construction Modeled Area Source Parameters

Source ID	Source Description	Base Elevation	Release Height	Number of Vertices	Initial Vert. Dimension	Easting (X1)	Northing (Y1)	Easting (X2)	Northing (Y2)	Easting (X3)	Northing (Y3)	Easting (X4)	Northing (Y4)	Easting (X5)	Northing (Y5)	Easting (X6)	Northing (Y6)
		(m)	(m)		(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)
AREA_1	Construction Fugitive Dust Source	-70.10	0.00	6	0.00	627,835.90	3,670,788.63	627,833.63	3,670,465.32	628,359.86	3,670,463.80	628,359.86	3,670,890.09	628,109.24	3,670,890.85	628,109.24	3,670,790.14

Note: Coordinates presented are UTM NAD83 Zone 11
m = meter(s)

Black Rock Geothermal Project

BRGP Construction Air Quality Impacts Analysis

Table 16. Source Emission Rates

April 2023

BRGP Construction Modeled Source Emission Rates Per Source

Source ID	Source Type	Release Type	Source Description	CO	NO2	NO2A	SO2	SO2A	PM10	PM10A	PM25	PM25A
				(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)
Point1-Point352	POINT	DEFAULT	Construction Point Sources	3.82E-03	1.87E-03	1.71E-03	9.17E-06	1.70E-05	4.47E-05	1.82E-05	4.18E-05	1.72E-05
AREA_1	AREAPOLY	DEFAULT	Construction Fugitive Dust Source	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.49E-02	1.58E-02	2.59E-03	1.60E-03

Notes:

Emission rates developed based upon emissions presented in Section 5.1 and Appendix 5.1D, Construction Emissions Inventory.

Descriptions of pollutant IDs and their associated averaging periods are as follows:

CO emission rates correspond to the 1-hour and 8-hour CO averaging period.

NO2 emission rates correspond to the 1-hour NO₂ averaging period.

NO2A emission rates correspond to the Annual NO₂ averaging period.

PM25 emission rates correspond to the 24-hour PM_{2.5} averaging period.

PM25A emission rates correspond to the Annual PM_{2.5} averaging period.

PM10 emission rates correspond to the 24-hour PM₁₀ averaging period.

PM10A emission rates correspond to the Annual PM₁₀ averaging period.

SO2 emission rates correspond to the 1-hour, 3-hour, and 24-hour SO₂ averaging period.

SO2A emission rates correspond to the Annual SO₂ averaging period.

g/s = gram(s) per second

Appendix 5.1E

Basis of BACT Determination





March 9, 2017

Mr. Jesus Ramirez
Mr. Thomas Brinkerhoff
Imperial County Air Pollution Control District
150 South Ninth Street
El Centro, California 92243
(Via Email & Mail)

Subject: Elmore Back-Pressure Turbine Installation, April 2017
Update to Air Permit Application

Dear Mr. Ramirez and Mr. Binkerhoff,

Enclosed please find an update to the air permit application for the installation of a new turbine at the Elmore facility. CalEnergy submitted the original application on January 3, 2017, and is supplementing the original application information with an analysis of the Best Available Control Technologies (a BACT analysis) for minimizing air emissions from the facility.

The submittal of this information is meant to provide all of the information required for the issuance of an authority- to-construct. Upon approval of the air abatement technologies recommended in the BACT analysis, by the Imperial County Air Pollution Control District, the final equipment design will proceed. It is CalEnergy's intention to submit final design/sizing of the equipment to the air district prior to the issuance of the permit-to-operate for the new turbine and air abatement equipment.

Please do not hesitate to me at 760-348-4275, or via e-mail at Anetha.lue@calenergy.com, with any questions regarding this submittal; and thank you in advance for your review of this application.

Sincerely,

D. Anetha Lue

Digitally signed by D. Anetha Lue
DN: cn=D. Anetha Lue, o, ou=CalEnergy,
email=anetha.lue@calenergy.com, c=US
Date: 2017.03.09 18:02:47 -08'00'

Anetha Lue
Director IPP Environmental Services

Attachment

CALENERGY
OPERATING CORPORATION
7030 Gentry Road, Calipatria, California 92233
Phone: 760-348-4200 Fax: 760-348-2714

Cc: Lenie Sarion
Randy Keller
Ed Arceo
Jenny Wu
Jie Meng
Henry Veizades - Veizades & Associates, Inc.
Jill Haizlip - Geologica Geothermal Group Inc

BACT Analysis for Air Abatement Systems at Elmore Facility

Back-Pressure Turbine Installation

Prepared by
CalEnergy Operating Corporation



with
Geologica Geothermal Group, Inc.



And
Veizades & Associates, Inc.



March 07, 2017

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1 Introduction

This memorandum presents the Best Available Control Technology (BACT) analysis prepared as part of the permitting process for the proposed modification of the J.J. Elmore Geothermal Power Plant for submittal to the Imperial County Air Pollution Control District, in order to authorize the installation of a back-pressure turbine at the facility. The initial permit application was submitted on January 3, 2017, and following submittal of the application it was determined (during discussions with the air district) that since the turbine addition constituted a modification of the facility, a BACT analysis would be required to supplement the initial application. The purpose of this BACT analysis is to identify the technologically feasible and cost effective controls for limiting air emissions from the facility. This analysis briefly describes the modifications and impacts to air emissions, the potential to emit levels for air pollutants; several control technologies are described including efficiencies, cost effectiveness, and related results.

The information contained herein is based on CalEnergy's operating experience and data with air pollution controls, and on engineering estimates of the planned modification provided by Geologica Geothermal Group, Inc. (Geologica) and Veizades and Associates, Inc.

1.1 Plant Background, Modifications & BACT Thresholds

Plant Background

CalEnergy Operating Corporation (CalEnergy) owns and operates the J.J. Elmore Geothermal Power Plant (Elmore Plant), located at 786 West Sinclair Road, Calipatria, California. The Elmore Plant entered into commercial operation in 1989 with an air permit issued from the Imperial County Air Pollution Control District (ICAPCD) for 45MWe operation. The Elmore plant is currently operating under amended conditions and authority to construct with permit to operate #1890F-2 from the ICAPCD dated May 31, 2016. CalEnergy is proposing to install a back-pressure turbine at the Elmore Plant to optimize and increase the conversion of geothermal heat into electrical energy. The revised net output for the power plant will be 49.9 MWe.

The Elmore Plant currently uses high pressure steam, via a heat exchanger to augment the standard pressure steam by reheating clean condensate for re-entry into the existing condensing turbine. This system is called a heat recovery system and it generates additional steam without having the impurities in the high pressure steam encounter the turbine. At the time the Elmore facility was designed, the heat recovery system was the best available technology to make additional power without having to mitigate the impurities in high pressure steam.

Modifications

Enhancements in steam purification have been made since the Elmore facility entered commercial operation in 1989 and CalEnergy is proposing to use improved technology to remove the impurities from the high pressure (HP) steam. This improved steam purification technology will allow CalEnergy to use a more efficient high pressure steam turbine in addition to the existing turbine. Using a high pressure steam turbine in place of the heat recovery system will allow the Elmore plant to generate up to 49.9 MWe without increasing fluid flow from the geothermal resource.

In order to use a high pressure steam turbine in place of the heat recovery system, additional equipment will be installed within the existing boundary of the Elmore facility. The heat recovery system will remain in place as a back-up system. The following new equipment will be located within the power generation area of the Elmore plant and within the existing paved site containment:

1. Skid mounted back pressure Turbine and auxiliary equipment
2. Power Distribution Control (PDC) System
3. High Pressure Steam Scrubber
4. High Pressure Steam Demister
5. Standard Pressure Steam Scrubber
6. Non-condensable gas (NCG) removal system
7. High Pressure and Standard Pressure interconnecting piping

BACT Thresholds

Given that the air district has determined that the changes described herein will be determined a modification of the facility, the following requirements become effective:

- ICAPCD Rule 207 C.1.b states that “An applicant shall apply (BACT) on a pollutant by pollutant basis to any modified Emissions Unit with a Potential to Emit of 25 pounds per day or more of any Nonattainment Pollutant or its Precursors”. Given that the Elmore facility is located in a non-attainment area for particulate matter and ozone, emissions of particulate matter, and ozone precursors (i.e. nitrogen oxides, volatile organic compounds and benzene) are initially considered in this review. **With potential emissions of particulate matter at 383.6 lbs/day, and potential emission of benzene at 54.7 lbs/day, based on the permit, these parameters were included in the BACT analysis.** However, given that nitrogen oxides, and VOCs (except for benzene), are submitted by combustion engines at the facility (which are not part of the modification), nitrogen oxides and (non-benzene) VOCs are not included in the BACT analysis.
- ICAPCD Rule 207.1.c requires a BACT for “ any new or modified Emissions Unit with a Potential to Emit equal to or greater than” 55 lbs/day or hydrogen sulfide; which is emitted by the Elmore facility (and below certain thresholds for pollutants such as fluorides, which are not emitted by the source). **Given potential emission of 547.2 lbs/day of hydrogen sulfide from Elmore (based on the 22.8 lbs/hr permit limit for the source) hydrogen sulfide emissions were included in the BACT review.**

1.2 Unabated Air Pollutants & Historical Actual Emissions

Potential air pollutants, controls and monitoring were previously identified in air permit applications and permits (ATC-PTO #1890F-2) for the Elmore plant. These include hydrogen sulfide (H_2S), benzene (C_6H_6) and particulate matter (PM_{10}). In addition, since Imperial Valley is a non-attainment area for ozone, the effect (or lack thereof) of this project on nitrogen oxide and other volatile organic compound emissions was also verified. Currently, the Elmore plant maintains air emissions below permit levels with two abatement technologies: the Oxidizer Box (OxBox), which abates H_2S in the condensate from the plant, and cooling tower drift eliminators which mitigate PM_{10} emissions.

Although the proposed modifications will not change the total amount of geothermal fluid flowing through the plant, the unabated emissions for H_2S could be affected by the change because H_2S is emitted in both steam condensate (into which it dissolves) and in the non-condensable gas (NCG) flow

which remains after the steam is condensed; and the modification is expected to redistribute the H₂S concentrations in these streams. Because H₂S control technologies for the condensate and NCG flow streams can be different and they have been treated differently at Elmore, the emissions and controls for each flow stream are evaluated separately in this analysis, while understanding that H₂S emission limits apply to the combined emissions from each flow stream.

The range of partitioning of H₂S between condensate and NCG is estimated based on field testing by CalEnergy Operations. Steam mass flows and H₂S concentrations also vary depending on the relative contribution of wells supplying the plant. These variables produce a range of potential unabated H₂S emissions from the condensate and NCG flow streams (Table 1.a).

Because there will be no modifications to the cooling tower, which is the only source of particulate emissions under normal operating conditions at Elmore, impacts to PM₁₀ emissions are not anticipated. Similarly, since the total flow of geothermal fluid through the plant is not changing, and benzene emissions occur in the NCG flow (partitioning into the condensate phase is minimal), there are no anticipated changes to benzene emissions as a result of the proposed modifications.

The average benzene emissions appear to be about 0.073 lb/hr, with a maximum of 0.103 lb/hr (based on APCD data from 2014-2016). Even at maximum benzene emission, emissions are below the permit (#1890F-2) threshold limit of 2.8 lb/day and significantly below the BACT threshold of 25 lb/day.

Average cooling tower PM₁₀ emissions were 2.29 lb/hr (54.96 lb/day) in July, 2014 (based for the July 2014 source test), and are not expected to change (apart for normal fluctuations) with the plant modifications.

At Elmore nitrogen oxides and volatile organic compounds (with the exception of benzene) are emitted in minor quantities from the emergency diesel generators, the emergency diesel fire pump, and portable diesel engines (all of which are permitted by the Imperial County Air Pollution Control District). Given that the installation of this project will have no effect on these sources, a BACT analysis was not conducted for these pollutants (with the exception of benzene emissions from the geothermal brine).

The potential unabated emissions of H₂S without any abatement efforts is between 27.25-43.50 lb/hr based on plant data from 2016, and sampling of HP steam for H₂S analysis on December 7th, 2016 (Table 1.a). The average hourly rate of H₂S emissions (in NCG + condensate) based on the currently installed abatement systems is 7.28 lb/hr, which is below the current permit limit of 22.8 lb/hr (Table 1.a). The of PM₁₀ and benzene emissions from source test data is included in Table 1.b.

Table 1.a – Unabated H₂S Emissions

1) Potential for total H₂S emission with no abatement; 2) current average H₂S emissions using existing abatement system; and 3) current permit limit for H₂S emissions at Elmore.

	Total Unabated Emissions (lb/hr)	Unabated Condensate Emissions (lb/hr)	Unabated Gas Emissions (lb/hr)
	Potential to emit without any abatement		
H ₂ S minimum	40.37	13.12	27.25
H ₂ S maximum	64.44	20.94	43.50

H₂S from proposed mass flows from P&ID from June 7, 2016 and proposed Elmore modification; H₂S from plant sampling by CalEnergy on December 7, 2016.

Using an average partitioning ratio of 32.5% condensate and 67.5% gas for H₂S

Table 1.b – Benzene & PM₁₀ Source Test Data Emissions

	2014 Source Test Emissions	Average Emissions (lb/hr) ^A	Current Permit Limit (lb/hr)
Benzene	0.006	0.073	2.28
PM ₁₀	2.29	-	15.98

^A From 2014-2016

Historical actual emissions (HAEs) from the facility are shown in Tables 2.

Table 2- Historical Actual Emissions – For the Brine Process

	Quarterly Average Emissions					
	Hydrogen Sulfide Emissions, (lbs/hr)			Benzene Emissions, (lbs/hr)		
	2014	2015	2016	2014	2015	2016
Quarter I	6.17	3.65	13.04	0.02	0.04	0.04
Quarter II	7.29	3.68	5.65	0.02	0.01	0.01
Quarter III	6.87	8.36	10.81	0.01	0.01	0.03
Quarter IV	3.96	7.67	5.05	0.01	0.02	0.01

Annual Maximum of Hourly Averages					
Hydrogen Sulfide Emissions, (lbs/hr)			Benzene Emissions, (lbs/hr)		
2014	2015	2016	2014	2015	2016
10.71 Aug 2014	10.84 Aug 2015	20.57 Jan 2016	0.045 Feb 2014	0.103 Feb 2016	0.07 Jan 2016

Sampled during

Notes:

Combined emissions from condensate and non-condensable gasses are shown above.

- (1) Historical flows are based on weekly readings that can be taken when plant MW loads/output are low, historical actual emissions should be based on the annual maximum values.
- (2) Facility-wide emissions are not shown above – These include emissions from an emergency generator and emissions from portable equipment permitted in 2015 and 2016. The emissions from the portable equipment are offset.

1.3 BACT Process and Options

BACT analysis includes consideration of several possible abatement technologies. The efficiency of the current OxBox, as well as chemical oxidation and iron chelate, were considered to determine which constitutes Best Available Control Technology (BACT) for the abatement of H₂S in sour condensate liquid emissions at Elmore. For potential H₂S emissions in the non-condensable gas (NCG) flow stream, the feasibility of the use of a regenerative thermal oxidizer (RTO), bioreactor, sparger, and BIOX were considered for Elmore. RTO was considered for benzene abatement in NCG.

Both control efficiencies and cost of the abatement processes are considered in this BACT. The BACT analysis includes five steps:

1. Identification of control technologies
2. Elimination of infeasible options
3. Rank of the remaining control technologies
4. Evaluation of the most effective control
5. Selection of BACT

2 Step 1: Identification of Control Technologies

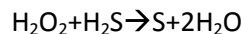
2.1 Sour Condensate Liquid (H₂S) Abatement Options

2.1.1 OxBox

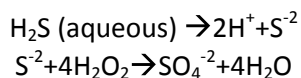
After separation of the non-condensable gas and condensate, condensate is routed to the bio-oxidation box (OxBox) in the cooling tower, where the naturally occurring bacteria present in geothermal cooling tower water abates H₂S in the condensate (see Air Permit Application for Cal Energy Region 1, Unit 3 Cooling Tower Bio-oxidation Box Modification, CalEnergy Operations 2016). Average condensate abatement efficiency from the existing OxBox and average total H₂S emissions were calculated using data reported to the APCD by CalEnergy over the last three years (from 2014-2016). The average condensate abatement efficiency of the OxBox over the last three years is 90.9%.

2.1.2 Chemical Oxidation (Iron Chelate)

The chemical oxidation process uses hydrogen peroxide (H₂O₂) to treat water in order to oxidize H₂S into elemental sulfur (S) (if the solution is neutral or acidic) or sulfates (if the solution is basic) (Rodriguez, Harvey and Asbjornsson 2014). In acidic or neutral solutions, the H₂O₂ and H₂S forms S and H₂O:



In basic solutions, H₂O₂ and S²⁻ react to form sulfate (SO₄⁻²) and H₂O (Stephens, Hill and Phelps, Jr. 1980):



Iron chelate is sometimes added as a catalyst in this oxidation process. This system can generate sulfur solid build-up in the cooling tower, a maintenance issue.

2.1.3 BIOX (liquid) System

The Biox[®] process consists of adding an oxidizing biocide into the condensate from condenser to convert dissolved hydrogen sulfide to water-soluble sulfates. Biocide-assisted oxidation prevents secondary emissions of hydrogen sulfide from cooling towers that utilize steam condensate for makeup water. The Biox[®] liquid abatement system is expected to remove at least 98 percent of the H₂S in the portion of the condensate used as cooling tower makeup water.

2.2 Non-condensable Gas (H₂S) Abatement Options

2.2.1 Regenerative Thermal Oxidizer

A Regenerative Thermal Oxidizer Unit (RTO) allows for the direct oxidizing process for H₂S in the NCG. The RTO is pre-heated with propane, and then a vacuum, created by the downstream vacuum blower, causes the steam and outside air to enter the oxidizing chamber (CE Obsidian Energy LLC 2010). The RTO oxidizes H₂S and supplemental propane in the NCG through an exothermic process (Imperial County Planning & Development Services Department 2011). As a result, H₂S is oxidized to sulfur dioxide (SO₂) and a small amount of sulfur trioxide (SO₃), while hydrogen (H) is oxidized to water vapor (CE Obsidian Energy LLC 2010). The gases then flow through a caustic scrubber and venturi scrubber to remove PM₁₀ before discharging in a stack. Small amounts of NO_x, SO_x, and PM₁₀ not present in the geothermal gas are discharged, being generated as a result of the process.

2.2.2 Bioreactor

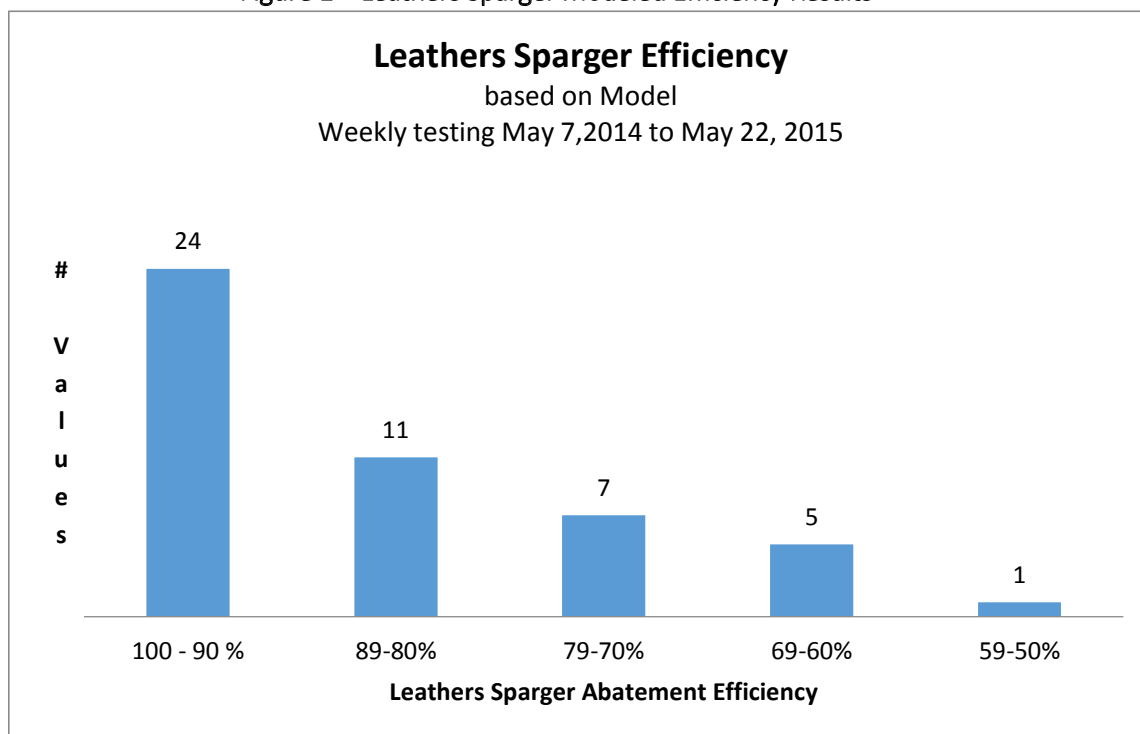
The bioreactor bubbles NCG through columns containing liquid and plastic spheres. The plastic spheres act as a surface to grow biologic agent (“microbes”). These “microbes” consume H₂S and produce sulfuric acid and sulfate. Effluent gasses from the bioreactor are routed to the shrouds on the cooling tower after abatement in the bioreactor, while condensate is discharged to the cooling tower (Gregory Jacobs, personal communication). While published literature provides the average performance of the bioreactor as a control efficiency of 99%, CalEnergy’s operating experience with this system finds that the efficiency can be reduced during times of extreme weather to approximately 50%. This is due to fact that overheating during the summer can damage the microbes and equipment; likewise excessive cold can cause the microbes to become less efficient in abating hydrogen sulfide. Heating and cooling systems are therefore used in order to attempt to achieve the optimal temperature for abatement to occur.

2.2.3 Sparger with Biocide Abatement

The sparger system for BIOX process comprises distribution pipes with bubble diffusers/nozzles. The off-gas containing hydrogen sulfide from the condenser is transported and bubbled through the sparger system to the bottom of the cooling tower basin. The hydrogen sulfide contained in the off-gas is dissolved in the cooling tower water and converted to sulfate by reacting with the oxidizing biocides and the dissolved oxygen in the water. If an effective amount of an oxidizing biocide is maintained, the sparger system for BIOX process is expected to remove more than 90%

percent of the H₂S in the non-condensable gases based on the sparger system utilized at CalEnergy's Leathers cooling tower (when emissions are measured from the shrouds). It should be noted that historical data from the Leathers sparger system has been evaluated by way of a conservative model, which has estimated an average abatement efficiency of 86% between May 7, 2014, to May 22, 2015. (However, as shown in the figure below, operational fluctuations can cause the removal efficiency to be as low as 50%, when measured by the model).

Figure 1 – Leathers Sparger Modeled Efficiency Results



2.3 Benzene Abatement Options

2.3.1 Regenerative Thermal Oxidizer

Similar to the use of RTO's for the abatement of H₂S in NCG, the RTO oxidizes hydrocarbons (in the non-condensable gas) and supplemental propane (used to pre-heat the unit) to carbon dioxide and water vapor in an exothermic process to abate benzene from NCG (Imperial County Planning & Development Services Department 2011). The gases then flow through a caustic scrubber and venturi scrubber to remove PM₁₀ before discharging in a stack. The RTO is not feasible as small amounts of NO_x, SO_x, and PM₁₀, not present in the geothermal gas are discharged, being generated as a result of the process.

2.4 2.5 Particulate Matter Abatement Options

2.4.1 (Existing) Drift Eliminators

The only source of PM₁₀ at Elmore is from Total Dissolved Solids (TDS) in the cooling tower recirculating water. Steam condensate comes from the condenser and fills the cooling tower with steam condensate. The steam condensate carries TDS, including PM₁₀, into the cooling tower. Elmore currently uses drift eliminators to control PM₁₀ emissions. Drift eliminators are devices that remove water droplets, which contain dissolved solids, from the exhaust steam and return them to the circulating tower (Calpine Corporation 1998). For the retrofit project the TDS in the cooling tower will be unaffected by the installation of the back-pressure turbine; therefore, the current drift eliminators are deemed adequate for controlling emissions.

3 Step 2 and 3: Eliminate Technically Infeasible Options and Rank Remaining Control Technologies

Eliminating Infeasible Options

Table 3 includes a summary of control efficiencies and technologies. (CH2M Hill 2004). As shown in the table, the regenerative thermal oxidizer (RTO) is not considered feasible for control of benzene emissions due to fact that more emissions will be created by the use of the technology than the emissions that are abated. That is, the uses propane to attain a combustion temperature of approximately 1500 degrees Fahrenheit, which results in combustion products of nitrogen oxides. Based on CalEnergy's RTO for Units 1 and 2 at Region 1 emission of nitrogen oxide can range from 14.5 lbs/hr (based on a source test on December 2010) which are in excess of the 0.103 lbs/hr of unabated benzene that are emitted from Elmore. **Given that RTO is considered technologically infeasible, no controls are being recommended for benzene emissions; and given that benzene is currently uncontrolled total emissions of benzene from the facility will be unchanged as a result of this project.**

The RTO could also be considered infeasible for hydrogen sulfide gaseous abatement as it produces additional emissions of particulate matter and sulfur dioxide in order to abate hydrogen sulfide. However the quantity of the emissions generated by the RTO unit cannot be definitely stated to exceed the emissions that are abated, therefore this option is not eliminated for hydrogen sulfide control based solely on technology performance.

Ranking Remaining Options

The rank of remaining control technologies (which have not been eliminated based on technology) based on average control efficiency is as follows:

For H₂S condensate abatement,

1. BIOX (liquid, 98% efficient)
2. Bio-oxidation box (ox-box) (90.9% efficient)
3. Chemical Oxidation (the control efficiency for using only H₂O₂ has not been determined)

For NCG H₂S abatement::

1. Bioreactor (99% efficient)
2. RTO (98% efficient)
3. Sparger system for (NCG, 90% efficient average)

Table 1. Control Technology Efficiencies & Feasibilities

Parameter	Technology Alternative	Control Efficiency	Technology Feasible?
Sour Condensate Liquid (H ₂ S)	Ox-Box	90.9% (3 year average) ¹	Feasible
	Chemical Oxidation	40-70% (without iron chelate), 93-98% (iron catalyst + H ₂ O ₂ combined system) ²	Feasible
	BIOX (liquid)	98%	Feasible
NCG (H ₂ S)	Regenerative Thermal Oxidizer (RTO)+caustic scrubber and venturi	~98% but increases SO _x , NO _x and PM ₁₀ ⁴	Not Feasible
	Bioreactor	99% ⁵	Feasible
	Sparger - system	90%	Feasible
NCG (Benzene)	RTO	>98% but increases net emissions by increasing SO _x , NO _x and PM ₁₀ ⁴	Not Feasible
	No Action	-	Feasible
Cooling Tower recirculating water (PM10)	Drift Eliminators (No Action)	>99% ⁸	Feasible (& already installed)

¹ Calculations based on data provided by CalEnergy

² Acurex 1980

³ Nagl 1999

⁴ Imperial County Planning & Development Services Department 2011

⁵ Rodriguez 2013

⁶ Based on Leathers data provided by Calenergy

⁸ Salton Sea Unit 6 License California Energy Commission Amendment 1, 2004

4 Steps 4: Cost Evaluation of Most Effective Technologies

4.1 Cost Analysis

Table 4 contains summary of comparative cost analysis for H₂S control technologies and the bases for these costs are included in Attachment A.

Table 4: Cost of Control Alternatives (\$/ton)

Parameter	Technology Alternative	Capital Cost	Annual Operating Cost	Abated Emission Rate (US ton/yr)	Resulting Cost \$/ton removal	Reasonable BACT cost from Agency
Sour Condensate Liquid (H ₂ S)	Ox-Box	\$570,000	\$25,000	83.4	<u>\$2,247</u>	\$14,230/ton
	Chemical Oxidation	\$400,000	\$301,000	87.6	\$5,588	\$14,230/ton
	BIOX (liquid)	\$600,000	\$250,000	89.9	\$5,145	\$14,230/ton
NCG (H ₂ S)	RTO	\$3,350,000	\$639,185	186.7	\$7,495	\$14,230/ton
	Bioreactor	\$2,000,000	\$131,702	188.6	\$2,968	\$14,230/ton
	Sparger	\$200,000	\$150,000	171.48	<u>\$1,599</u>	\$14,230/ton

5 Step 5: Selection of BACT

Selection of BACT

For abatement of hydrogen sulfide in the condensate, the BACT cost analysis (in Table 4) found that while there was little difference in the abatement efficiencies of the technologies evaluated, the bio-oxidation box (ox-box) was the most cost effective for the control of hydrogen sulfide in condensate.

For the abatement of hydrogen sulfide emissions in the non-condensable gasses, the BACT cost analysis found that the sparger (with the oxidizing biocide) was the most cost effective for the abatement of hydrogen sulfide in the non-condensable gasses and this technology is recommended in favor of the bioreactor based on cost even though the bioreactor has slightly higher abatement efficiencies as the performance of both systems are subject to fluctuations based on operational conditions. Furthermore, the operational controls for the sparger (which is the addition of chemicals) results in a faster response in improving abatement than does the adjustment of temperature and other conditions needed to optimize the performance of the microbes in bioreactor. The sparger is therefore easier to operate in terms of controlling the abatement efficiency.

Attachment B provides examples of the sparger and bioreactor technologies already in use at CalEnergy, and it provides the conceptual arrangement of this equipment at Elmore). Final specifications for the equipment will be provided before issuance of the operating permit for the equipment.

Estimating Post-retrofit Emissions

Applying these technologies to the calculated post-retrofit control emissions (shown in Table 1.a) results in average estimated post-retrofit emissions of 6 lbs/hr of hydrogen sulfide from the brine (as shown in

Table 5). Given that the expected emissions are calculated and the efficiency of the equipment will fluctuate, maximum emissions at any given time are expected to fluctuate but (as demonstrated herein) emissions will not exceed the current historical actual emission rates (shown in Table 2). Post-retrofit hydrogen sulfide emissions also comply with the permit requirement of 22.8 lbs/hr permit limit hydrogen sulfide.

Table 5 – Post-Retrofit Abated H₂S Emissions

Post-Retrofit Emissions	Condensate Abated with Bio-oxidation Box	NCG Abated with Biox (gas) system	Total expected emissions
Unabated Maximum H ₂ S Emissions (lbs/hr)	20.94	43.50	
Average Abatement Efficiency (%)	90.90%	90%	
Expected Average Emissions (lbs/hr)	1.91	4.35	6.26
Expected Average Emissions(tons/year)			27.27

6 Conclusion

The conclusion of this analysis was that:

- **Hydrogen Sulfide Emissions Control:** Control technologies will be installed to maintain emissions within the range of historical actual emissions for hydrogen sulfide by installing a bio-oxidation box on the condensate and a sparger system for the non-condensable gas stream. Furthermore the technologies selected will allow emissions to be less than or equal to historical actual maximum emission and the historical actual average emissions. Emissions will also be less than the permit limit for the facility.
- **Benzene Emissions Control:** No technology was identified that was technologically practical for controlling benzene emissions; therefore no change/reduction in unabated emissions of benzene is recommended and no changes in emission rates are expected.
- **Nitrogen Oxide & (non-benzene) VOC Emissions:** Given that the modification does not affect nitrogen oxide & (non-benzene) VOC emissions (which result from diesel and gasoline engines at the facility) a BACT analysis was not performed for these emissions.
- **Particulate Matter Emissions:** Given that the modification does not affect particulate matter emissions from the cooling tower recirculating water, or from engines at the facility) a BACT analysis was not performed for these emissions.

In conclusion, additional abatement equipment is proposed herein for this project and emissions levels will not be increased by the project.

7 References

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ATTACHMENT A - BACT Cost Worksheets

Attachment A – BACT Costs Summaries

	Condensate H2S Abatement Technologies			Non-condensable Gas H2S Abatement Technologies		
	Ox-Box	Chemical Oxidation	BIOX (liquid)	RTO	Bioreactor	Sparger
Capital Costs	\$570,000	\$400,000	\$600,000	\$3,350,000	\$2,000,000	\$200,000
Annual O&M cost (Note B)	\$25,000	\$301,000	\$250,000	\$639,185	\$131,702	\$150,000
Source testing	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000
Capital Recovery Cost (see Note A)	\$81,155	\$56,951	\$85,427	\$476,965	\$284,755	\$28,476
Annualized cost	\$156,155	\$407,951	\$385,427	\$1,166,150	\$466,457	\$228,476
Total Annualized Cost with 20 % Contingency	\$187,386	\$489,541	\$462,512	\$1,399,380	\$559,748	\$274,171
Abated Emission						
pre-abatement, lbs/hr	20.94	20.94	20.94	43.50	43.50	43.50
post-abatement, lbs/hr	1.91	0.94	0.42	0.87	0.44	4.35
abated, lbs/hr	19.04	20.00	20.53	42.63	43.07	39.15
abated, tons/yr	83.39	87.61	89.90	186.72	188.62	171.48
BACT, \$/ton abated	\$2,247	\$5,588	\$5,145	\$7,495	\$2,968	\$1,599
BACT Threshold,	\$14,230	\$14,230	\$14,230	\$14,230	\$14,230	\$14,230

[BACT Threshold is based on SCAQMD 2016 Update - using SOx Threshold for H2S Threshold - see Note B](#)

Note A - Capital Recovery Costs

Equipment life 10

Interest rate 7%

Capital recovery factor 0.1423775

The formula for the capital recovery factor is:

$$CRF = \frac{i * (1 + i)^n}{(1 + i)^n - 1}$$

where:

CRF = capital recovery factor

n = economic life of equipment

i = real interest rate

Note B: Costs have not been broken down for maintenance.

ATTACHMENT B – General Arrangement Selected Technologies

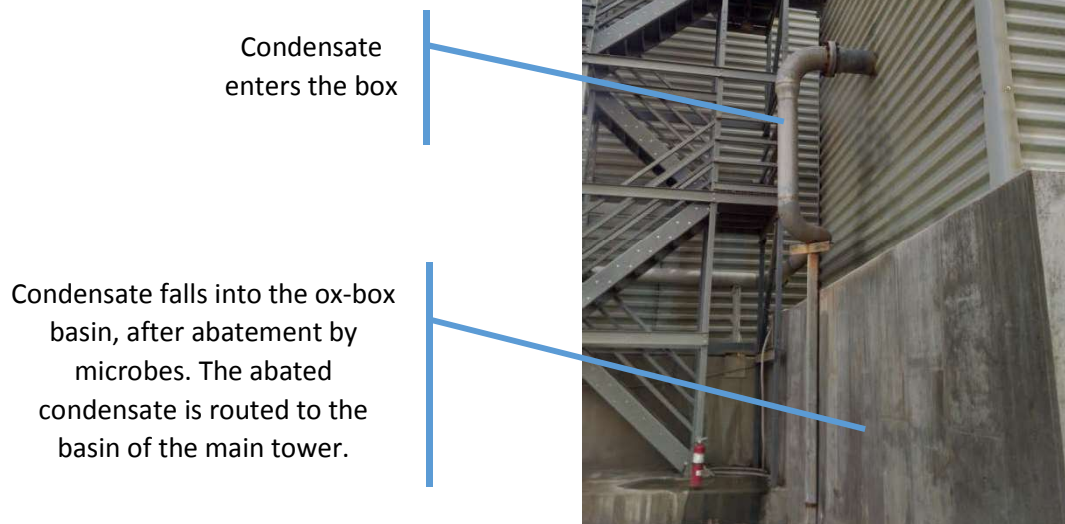
Figure B.1- External Bio-Oxidation Box Proposed for Abating H₂S from Condensate



(Southern side of) external bio-oxidation box for Vulcan facility is located adjacent to the Vulcan cooling tower rather than inside the cooling tower. A similar external box will be built for Elmore.

Figure B.2 –

Northern side of Vulcan external ox-box



CAL ENERGY REGULATORY COMPLIANCE DIVISION 200 WEST 10TH AVENUE, SUITE 200 DENVER, CO 80202		PROJECT NUMBER: _____ DRAWING NUMBER: _____ SHEET NUMBER: _____ 1 OF 1	
UNIT 3 EXTERNAL OX BOX NEW TOWER AND CONCRETE BASIN PLAN & DETAILS		ENGINEERING NAME: J. WU PROJECT NAME: J. ADVENT DRAWN BY: R. GALLS CHECKED BY: J. WU	
1 ISSUE DATE: 10/13 DESCRIPTION: ISSUED FOR REVIEW		2 ISSUE DATE: _____ DESCRIPTION: _____	
3 ISSUE DATE: _____ DESCRIPTION: _____		4 ISSUE DATE: _____ DESCRIPTION: _____	

Figure B-4 - Sparger System for Abating H₂S Emission in the Non-condensable gasses

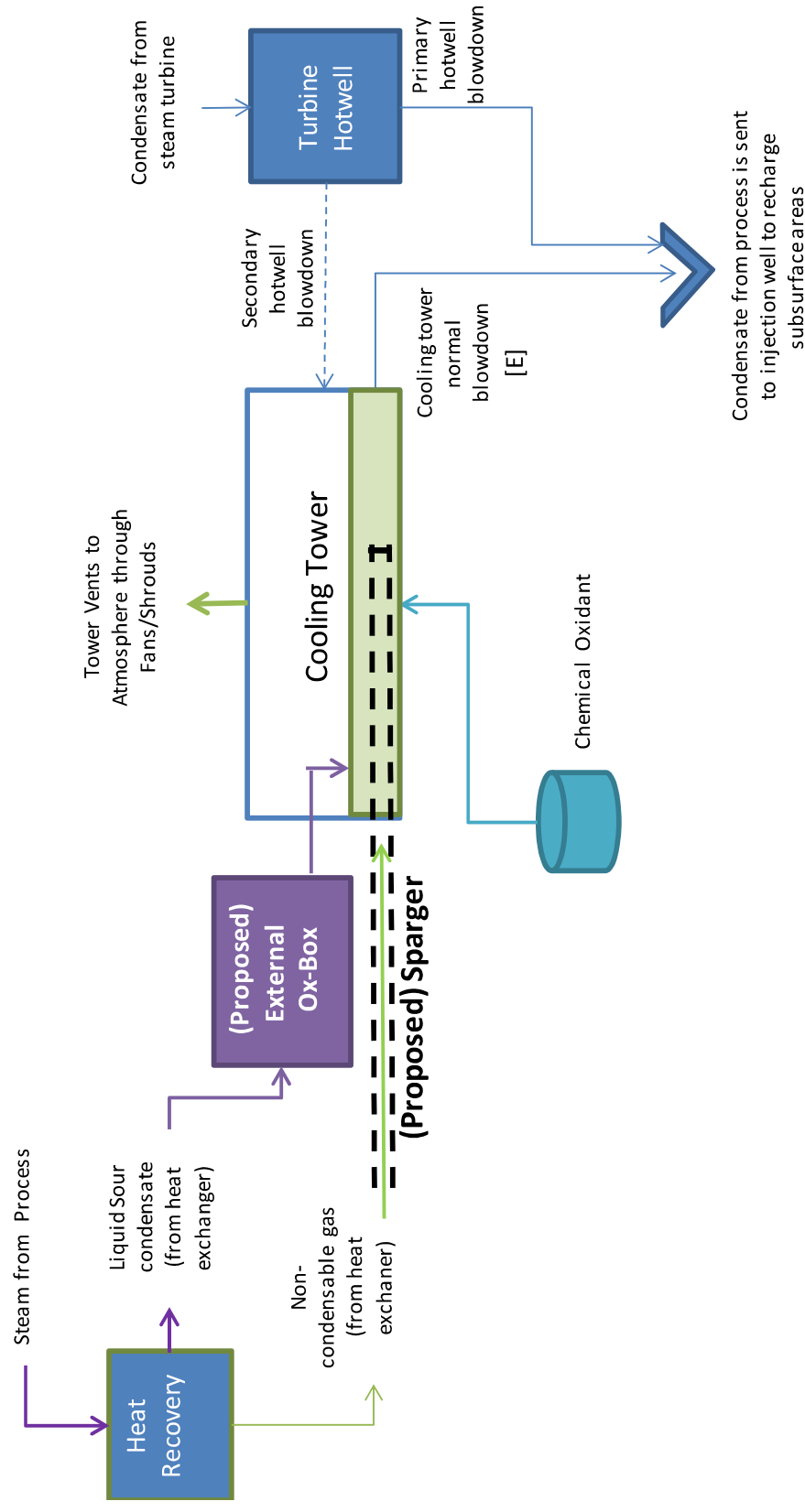


Piping for Sparger system at Leathers facility. A similar system will be installed at Elmore.



Chemical feed tank for sparger system at Leathers. Chemicals will be used at Elmore but feed system may differ depending on chemical used.

Figure B.6 - Conceptual Arrangement of Proposed External Ox-Box and Sparger for H2S Abatement at Elmore



Note that during short-duration maintenance of the Ox-box, condensate will be routed to the cooling tower basin for abatement, and additional chemicals will be used to control emissions (as described in the application letter dated 1/3/17).

The final design information will be provided prior to the issuance of a permit to operate.