

DOCKETED	
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Project Title:	Black Rock Geothermal Project (BRGP)
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Document Title:	Black Rock Geothermal Project Air Quality Permit Application Part 2
Description:	N/A
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Organization:	Jacobs
Submitter Role:	Applicant Consultant
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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	7.20E-07	0.00E+00	0.00E+00	7.20E-07	0.00E+00	0.00E+00	7.20E-07	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	Multiple 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	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	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												

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	2.56E-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	2.15E-06	2.15E-06	0.00E+00	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	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												

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	
					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	0	0	0	0	0	0	120	74	42	42	15	5	5	20	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	--	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	--	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	4.71E+02	2.57E+02	4.66E+04	
NO _x	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	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	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	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	7.94E+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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	6.30E-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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.04E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.04E-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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.41E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.41E-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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.30E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.30E-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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.30E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.30E-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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.28E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.28E-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	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	3.15E-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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.89E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.89E-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	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	3.15E-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	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	6.30E-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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.73E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.73E-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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.19E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.19E-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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.22E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.22E-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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.15E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.15E-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	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	3.15E-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	0.00E+00	0.00E+00	0.00E									

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.

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

BRGP Operational Emissions

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
BRGP Operational Emissions
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).

Black Rock Geothermal Project
BRGP Operational Emissions
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

Black Rock Geothermal Project

BRGP Operational Emissions

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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BRGP Operational Emissions

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:	$\text{ER (lbs/hr)} = \text{Recirculation Rate (gpm)} * 60 \text{ min/hr} * 3.785 \text{ liters/gal} * \text{HAP Concentration (}\mu\text{g/L)} * 1 \text{ lb} / 453.6 \text{ g} * 1 \text{ g} / 10^6 \mu\text{g} * \text{Drift Fraction}$
---	--

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

BRGP Operational Emissions

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

Black Rock Geothermal Project
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 (hr/year)	Emission Rates (lbs/day) ^a									Emission Rates (tpy)								
				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

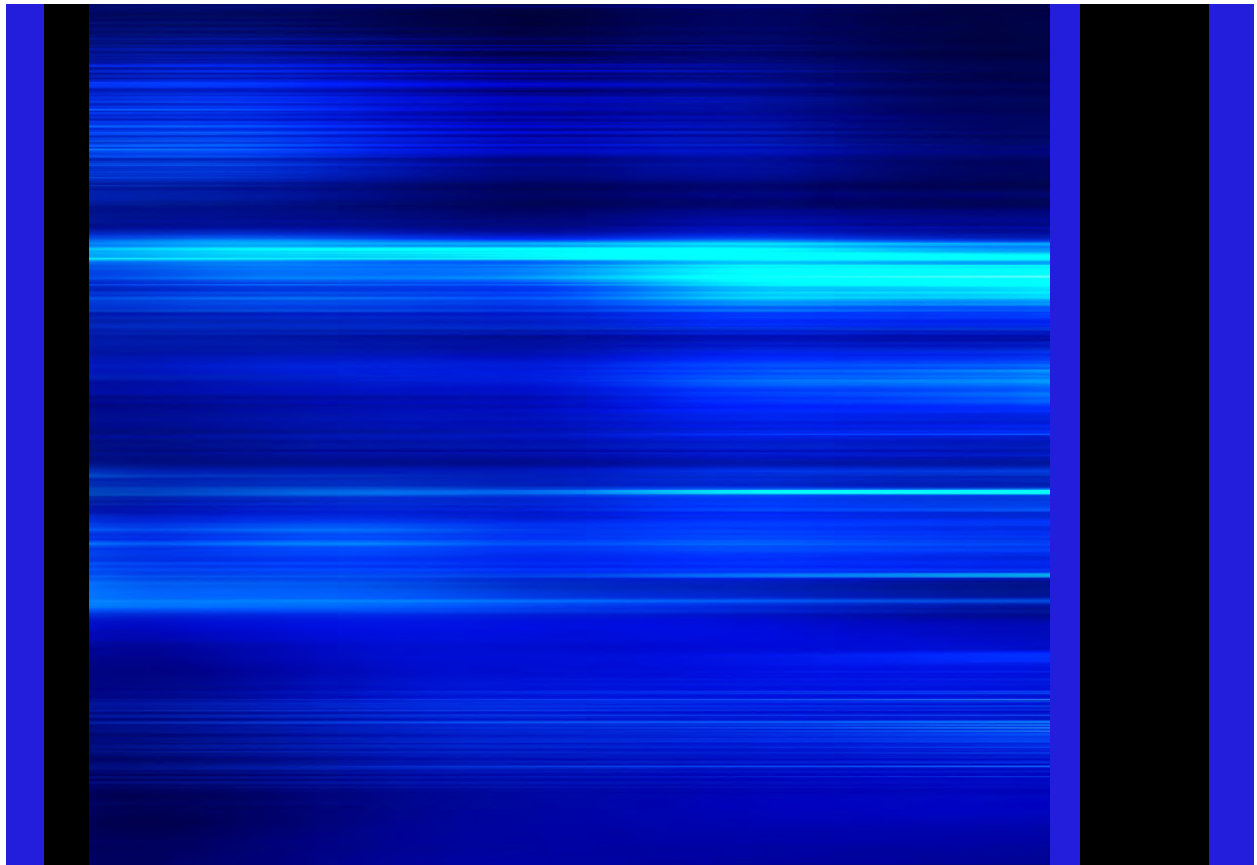


Air Dispersion Modeling Protocol for Black Rock Geothermal Project

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.

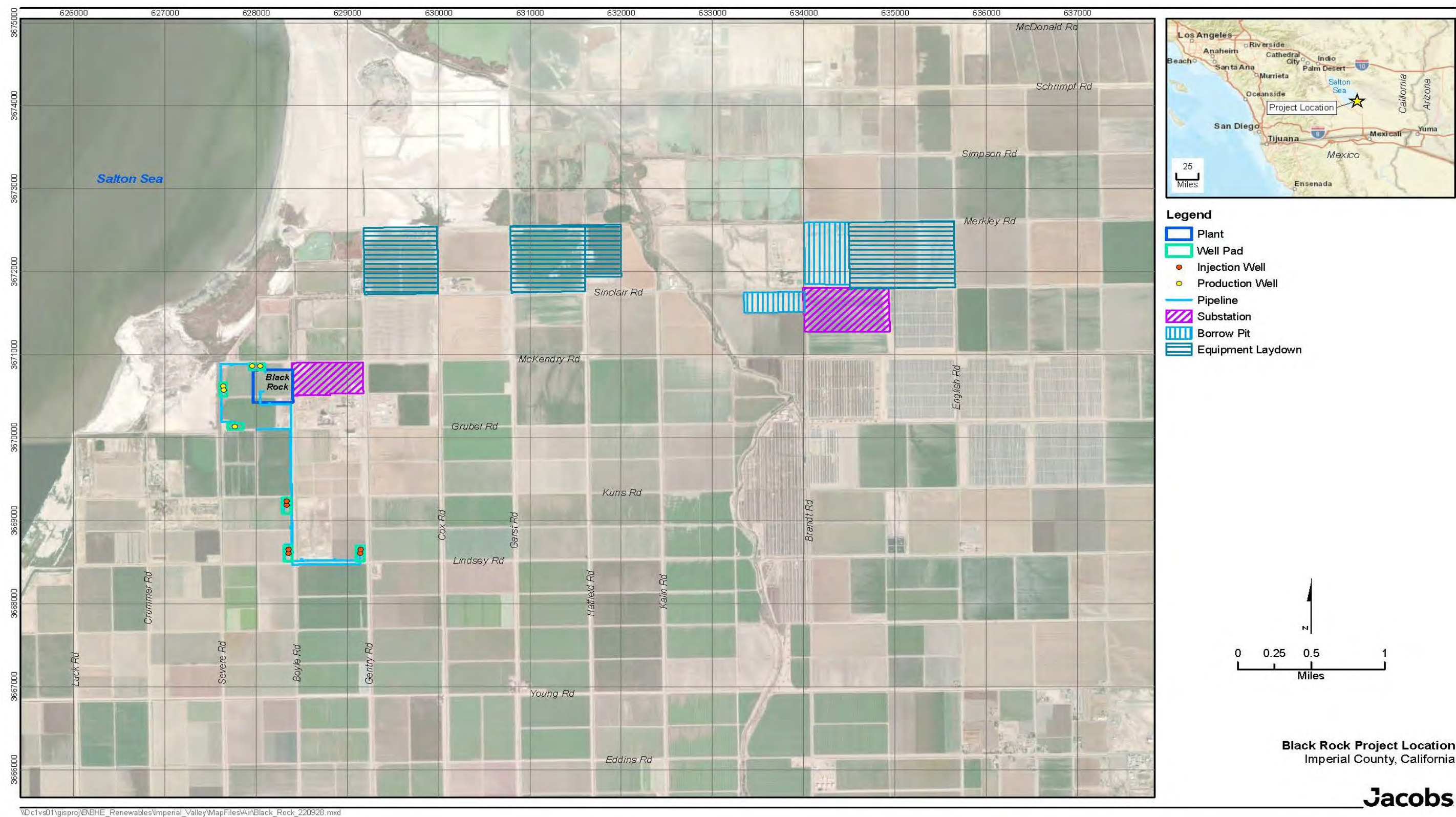


Figure 1-1. Project Location

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.

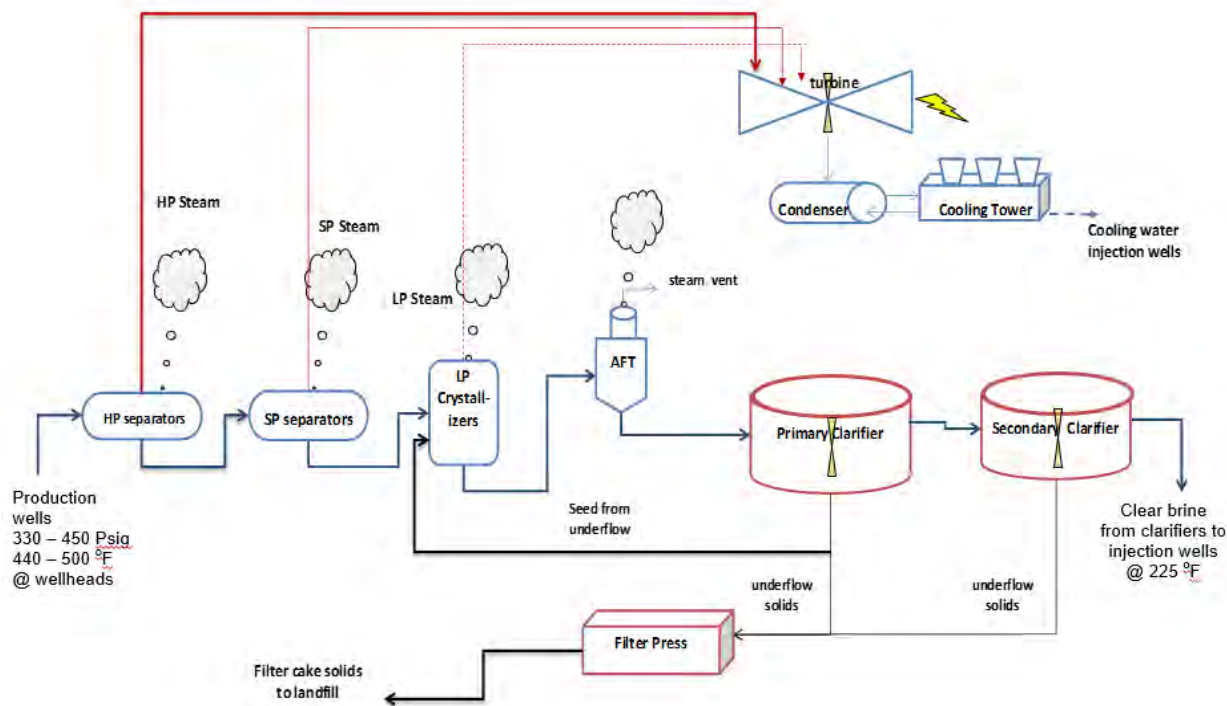


Figure 3-1. Process Flow Diagram

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.

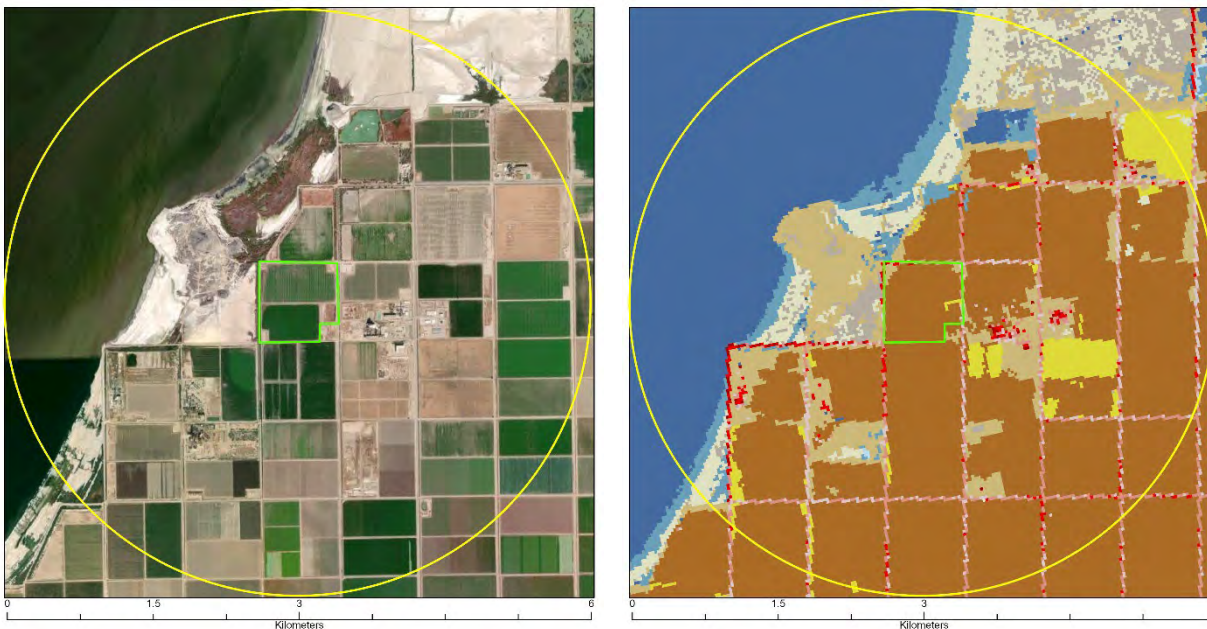
4.6 Rural versus Urban Option

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.

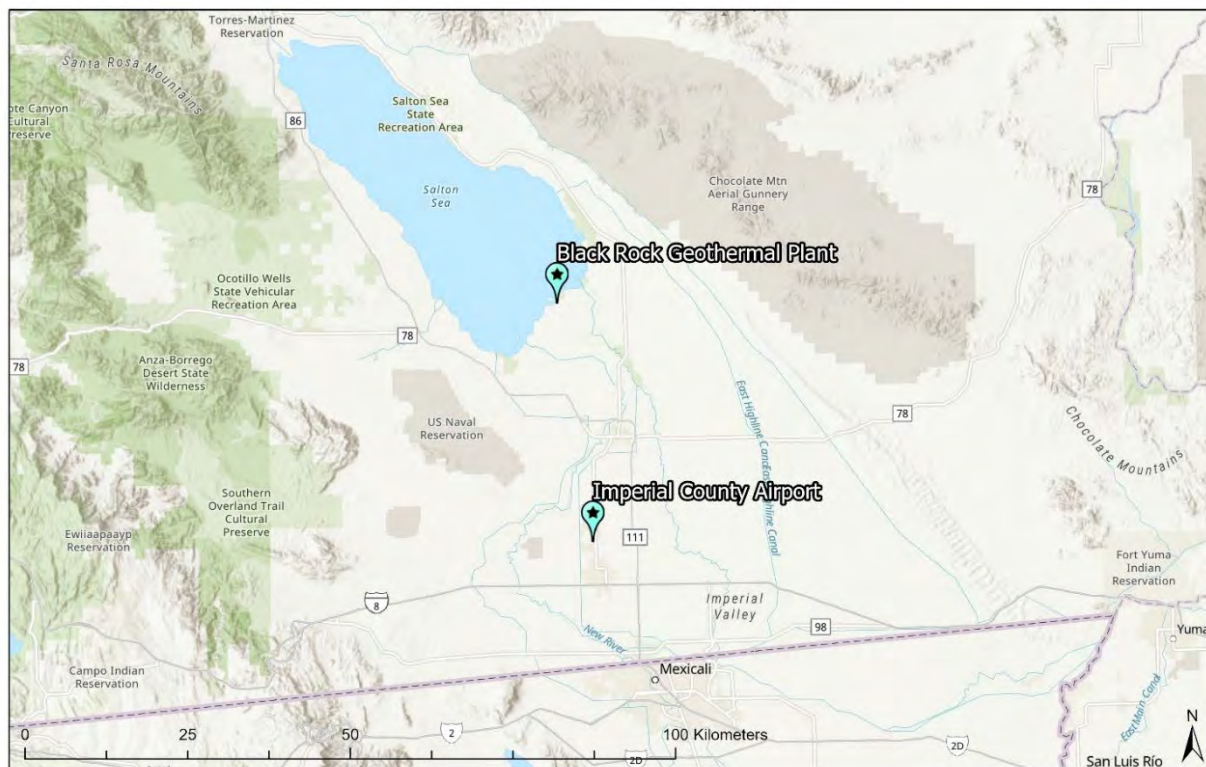


Figure 4-2. Topographical Map of Black Rock Geothermal Plant's Proximity to the Imperial County Airport

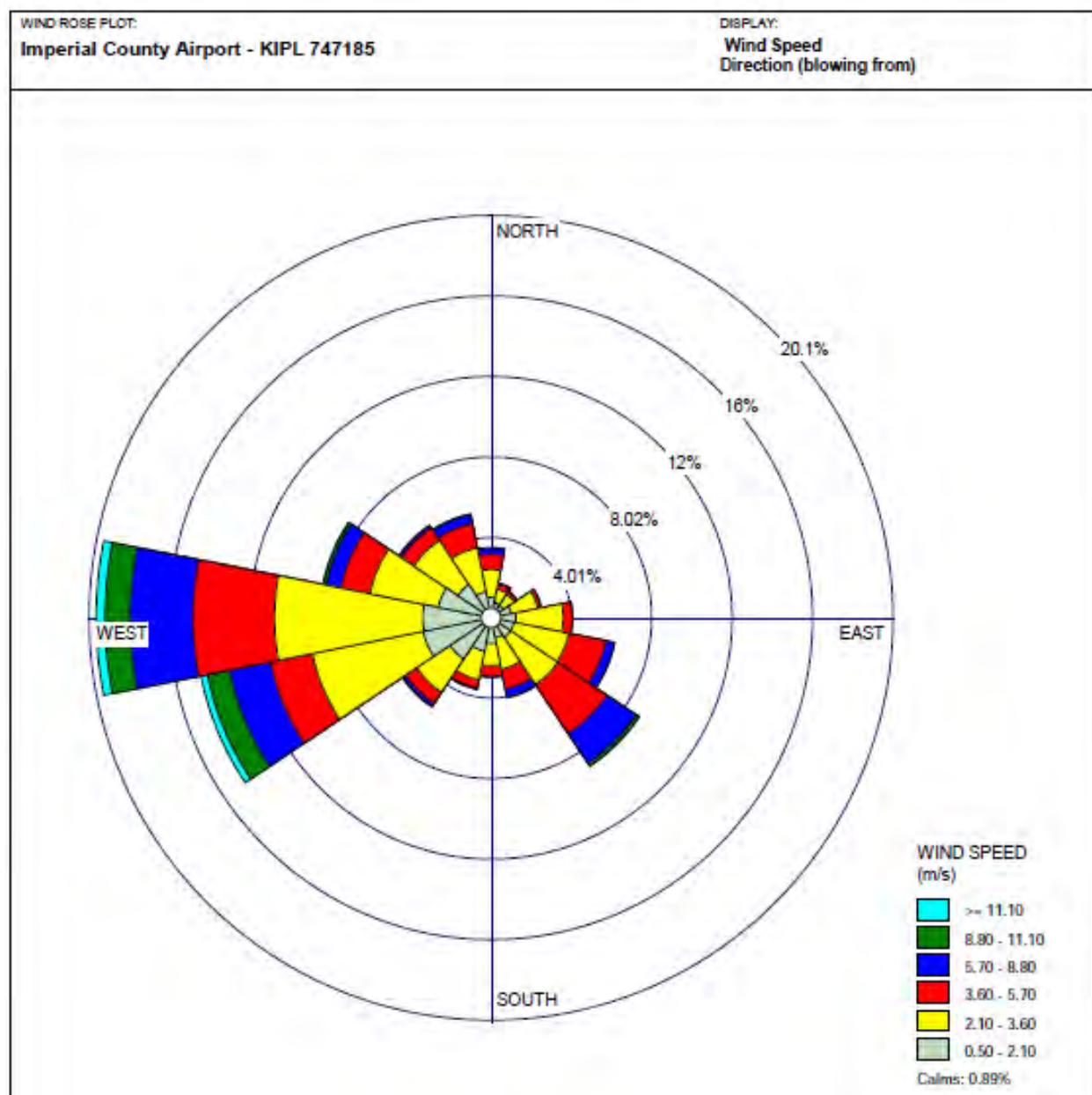


Figure 4-3. Windrose for the 2015 to 2018 and 2021 Meteorological Data for the Imperial County Airport

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:

$$\frac{\text{Total NO}_x \text{ Emissions from Project}}{\text{Lowest Illustrative MERPS value for NO}_x} + \frac{\text{Total VOC Emissions from Project}}{\text{Lowest Illustrative MERPS value for VOC}} = \text{Impact (\%)}$$

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:

$$\frac{\text{Total NO}_x \text{ Emissions from Project}}{\text{Lowest Illustrative NO}_x \text{ annual or 24hr PM}_{2.5} \text{ MERPs value}} + \frac{\text{Total SO}_2 \text{ Emissions from Project}}{\text{Lowest Illustrative SO}_2 \text{ annual or 24hr PM}_{2.5} \text{ MERPs value}} = \text{Impact (\%)}$$

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	Fugitive PM _{2.5}
Maximum Daily Emissions (lb/day)	240	118	0.58	3.37	3.15	4.74	0.49
Average Annual Emissions (tpy) ^b	16.4	6.68	0.04	0.19	0.17	0.48	0.05

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		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
Emission Source																			
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		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
Emission Source																			
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, Construction Vehicle)																			
	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, Construction Vehicle)																			
	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, 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, 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	1.15E-02	9.64E-03	9.83E-03	9.87E-03	1.12E-02	1.12E-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	1.76E-04	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	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
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:

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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.

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:

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^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 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:

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^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	May	June
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	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	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	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	May	June
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	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	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	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	May	June
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	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	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	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	May	June
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	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	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	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																	
	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																	
	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																	
	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																	
	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 n
^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 Constr

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 Constr

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
	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
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
	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
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
	0.10	0.10	0.09	0.09	0.04	0.03	0.03	0.03	0.03	0.01	0.01	0.01	0.06	0.06	0.05	0.05	0.04	0.04
Onroad Delivery Trucks ^a	0.10	0.10	0.09	0.09	0.04	0.03	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
	2.26	2.26	2.13	2.13	0.97	0.71	0.71	0.71	0.71	0.19	0.19	0.19	1.30	1.30	1.22	1.22	0.96	0.96
Onroad Delivery Trucks	2.26	2.26	2.13	2.13	0.97	0.71	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
	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
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
	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
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	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	7.51E-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	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	4.49E-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).