

DOCKETED

Docket Number:	23-AFC-02
Project Title:	Elmore North Geothermal Project (ENGP)
TN #:	249748
Document Title:	Elmore North Geothermal Project AFC Appendix 5-9 Public Health
Description:	N/A
Filer:	Jerry Salamy
Organization:	Jacobs
Submitter Role:	Applicant Consultant
Submission Date:	4/18/2023 11:32:28 AM
Docketed Date:	4/18/2023

Appendix 5.9A

Operational Health Risk Assessment



Elmore North Geothermal Project

Elmore North Operational Health Risk Assessment

Source Emission Rates: Routine Operating Year With Startups and Shutdowns

April 2023

Elmore North Operational Modeled Source Emission Rates: Routine Operating Year With Startups and Shutdowns

Source ID ^a	CAS Number	Pollutant Name	Annual Emissions (lbs/yr) ^{b, c}	Hourly Emissions (lbs/hr) ^{b, c}
CT	7439921	Lead	1.11E-02	1.46E-06
FPUMP	7439921	Lead	0.00E+00	0.00E+00
G1	7439921	Lead	0.00E+00	0.00E+00
G2	7439921	Lead	0.00E+00	0.00E+00
G3	7439921	Lead	0.00E+00	0.00E+00
G4	7439921	Lead	0.00E+00	0.00E+00
G5	7439921	Lead	0.00E+00	0.00E+00
PTU	7439921	Lead	0.00E+00	0.00E+00
RMP	7439921	Lead	0.00E+00	0.00E+00
CT	7439976	Mercury	8.37E-03	1.10E-06
FPUMP	7439976	Mercury	0.00E+00	0.00E+00
G1	7439976	Mercury	0.00E+00	0.00E+00
G2	7439976	Mercury	0.00E+00	0.00E+00
G3	7439976	Mercury	0.00E+00	0.00E+00
G4	7439976	Mercury	0.00E+00	0.00E+00
G5	7439976	Mercury	0.00E+00	0.00E+00
PTU	7439976	Mercury	5.56E-02	0.00E+00
RMP	7439976	Mercury	5.58E-01	0.00E+00
CT	71432	Benzene	2.40E+02	3.20E-02
FPUMP	71432	Benzene	0.00E+00	0.00E+00
G1	71432	Benzene	0.00E+00	0.00E+00
G2	71432	Benzene	0.00E+00	0.00E+00
G3	71432	Benzene	0.00E+00	0.00E+00
G4	71432	Benzene	0.00E+00	0.00E+00
G5	71432	Benzene	0.00E+00	0.00E+00
PTU	71432	Benzene	2.67E+01	0.00E+00
RMP	71432	Benzene	2.68E+02	0.00E+00
CT	108883	Toluene	1.56E+00	2.08E-04
FPUMP	108883	Toluene	0.00E+00	0.00E+00
G1	108883	Toluene	0.00E+00	0.00E+00
G2	108883	Toluene	0.00E+00	0.00E+00
G3	108883	Toluene	0.00E+00	0.00E+00
G4	108883	Toluene	0.00E+00	0.00E+00
G5	108883	Toluene	0.00E+00	0.00E+00
PTU	108883	Toluene	1.43E-01	0.00E+00
RMP	108883	Toluene	1.43E+00	0.00E+00
CT	100414	Ethylbenzene	1.34E+00	1.78E-04
FPUMP	100414	Ethylbenzene	0.00E+00	0.00E+00
G1	100414	Ethylbenzene	0.00E+00	0.00E+00
G2	100414	Ethylbenzene	0.00E+00	0.00E+00
G3	100414	Ethylbenzene	0.00E+00	0.00E+00
G4	100414	Ethylbenzene	0.00E+00	0.00E+00
G5	100414	Ethylbenzene	0.00E+00	0.00E+00
PTU	100414	Ethylbenzene	1.18E-01	0.00E+00
RMP	100414	Ethylbenzene	1.18E+00	0.00E+00

Elmore North Geothermal Project

Elmore North Operational Health Risk Assessment

Source Emission Rates: Routine Operating Year With Startups and Shutdowns

April 2023

Elmore North Operational Modeled Source Emission Rates: Routine Operating Year With Startups and Shutdowns

Source ID ^a	CAS Number	Pollutant Name	Annual Emissions (lbs/yr) ^{b, c}	Hourly Emissions (lbs/hr) ^{b, c}
CT	1330207	Xylenes	1.62E+00	2.15E-04
FPUMP	1330207	Xylenes	0.00E+00	0.00E+00
G1	1330207	Xylenes	0.00E+00	0.00E+00
G2	1330207	Xylenes	0.00E+00	0.00E+00
G3	1330207	Xylenes	0.00E+00	0.00E+00
G4	1330207	Xylenes	0.00E+00	0.00E+00
G5	1330207	Xylenes	0.00E+00	0.00E+00
PTU	1330207	Xylenes	1.18E-01	0.00E+00
RMP	1330207	Xylenes	1.18E+00	0.00E+00
CT	7429905	Aluminum	1.56E-02	2.06E-06
FPUMP	7429905	Aluminum	0.00E+00	0.00E+00
G1	7429905	Aluminum	0.00E+00	0.00E+00
G2	7429905	Aluminum	0.00E+00	0.00E+00
G3	7429905	Aluminum	0.00E+00	0.00E+00
G4	7429905	Aluminum	0.00E+00	0.00E+00
G5	7429905	Aluminum	0.00E+00	0.00E+00
PTU	7429905	Aluminum	0.00E+00	0.00E+00
RMP	7429905	Aluminum	0.00E+00	0.00E+00
CT	7440360	Antimony	2.34E-03	3.08E-07
FPUMP	7440360	Antimony	0.00E+00	0.00E+00
G1	7440360	Antimony	0.00E+00	0.00E+00
G2	7440360	Antimony	0.00E+00	0.00E+00
G3	7440360	Antimony	0.00E+00	0.00E+00
G4	7440360	Antimony	0.00E+00	0.00E+00
G5	7440360	Antimony	0.00E+00	0.00E+00
PTU	7440360	Antimony	0.00E+00	0.00E+00
RMP	7440360	Antimony	0.00E+00	0.00E+00
CT	7440393	Barium	7.50E-02	9.87E-06
FPUMP	7440393	Barium	0.00E+00	0.00E+00
G1	7440393	Barium	0.00E+00	0.00E+00
G2	7440393	Barium	0.00E+00	0.00E+00
G3	7440393	Barium	0.00E+00	0.00E+00
G4	7440393	Barium	0.00E+00	0.00E+00
G5	7440393	Barium	0.00E+00	0.00E+00
PTU	7440393	Barium	0.00E+00	0.00E+00
RMP	7440393	Barium	0.00E+00	0.00E+00
CT	7440417	Beryllium	1.56E-04	2.06E-08
FPUMP	7440417	Beryllium	0.00E+00	0.00E+00
G1	7440417	Beryllium	0.00E+00	0.00E+00
G2	7440417	Beryllium	0.00E+00	0.00E+00
G3	7440417	Beryllium	0.00E+00	0.00E+00
G4	7440417	Beryllium	0.00E+00	0.00E+00
G5	7440417	Beryllium	0.00E+00	0.00E+00
PTU	7440417	Beryllium	0.00E+00	0.00E+00
RMP	7440417	Beryllium	0.00E+00	0.00E+00

Elmore North Geothermal Project

Elmore North Operational Health Risk Assessment

Source Emission Rates: Routine Operating Year With Startups and Shutdowns

April 2023

Elmore North Operational Modeled Source Emission Rates: Routine Operating Year With Startups and Shutdowns

Source ID ^a	CAS Number	Pollutant Name	Annual Emissions (lbs/yr) ^{b, c}	Hourly Emissions (lbs/hr) ^{b, c}
CT	7440439	Cadmium	4.69E-04	6.17E-08
FPUMP	7440439	Cadmium	0.00E+00	0.00E+00
G1	7440439	Cadmium	0.00E+00	0.00E+00
G2	7440439	Cadmium	0.00E+00	0.00E+00
G3	7440439	Cadmium	0.00E+00	0.00E+00
G4	7440439	Cadmium	0.00E+00	0.00E+00
G5	7440439	Cadmium	0.00E+00	0.00E+00
PTU	7440439	Cadmium	0.00E+00	0.00E+00
RMP	7440439	Cadmium	0.00E+00	0.00E+00
CT	7440473	Chromium	7.81E-04	1.03E-07
FPUMP	7440473	Chromium	0.00E+00	0.00E+00
G1	7440473	Chromium	0.00E+00	0.00E+00
G2	7440473	Chromium	0.00E+00	0.00E+00
G3	7440473	Chromium	0.00E+00	0.00E+00
G4	7440473	Chromium	0.00E+00	0.00E+00
G5	7440473	Chromium	0.00E+00	0.00E+00
PTU	7440473	Chromium	0.00E+00	0.00E+00
RMP	7440473	Chromium	0.00E+00	0.00E+00
CT	7440508	Copper	7.50E-03	9.87E-07
FPUMP	7440508	Copper	0.00E+00	0.00E+00
G1	7440508	Copper	0.00E+00	0.00E+00
G2	7440508	Copper	0.00E+00	0.00E+00
G3	7440508	Copper	0.00E+00	0.00E+00
G4	7440508	Copper	0.00E+00	0.00E+00
G5	7440508	Copper	0.00E+00	0.00E+00
PTU	7440508	Copper	0.00E+00	0.00E+00
RMP	7440508	Copper	0.00E+00	0.00E+00
CT	7439965	Manganese	7.19E-01	9.46E-05
FPUMP	7439965	Manganese	0.00E+00	0.00E+00
G1	7439965	Manganese	0.00E+00	0.00E+00
G2	7439965	Manganese	0.00E+00	0.00E+00
G3	7439965	Manganese	0.00E+00	0.00E+00
G4	7439965	Manganese	0.00E+00	0.00E+00
G5	7439965	Manganese	0.00E+00	0.00E+00
PTU	7439965	Manganese	0.00E+00	0.00E+00
RMP	7439965	Manganese	0.00E+00	0.00E+00
CT	7440020	Nickel	1.91E-03	2.51E-07
FPUMP	7440020	Nickel	0.00E+00	0.00E+00
G1	7440020	Nickel	0.00E+00	0.00E+00
G2	7440020	Nickel	0.00E+00	0.00E+00
G3	7440020	Nickel	0.00E+00	0.00E+00
G4	7440020	Nickel	0.00E+00	0.00E+00
G5	7440020	Nickel	0.00E+00	0.00E+00
PTU	7440020	Nickel	0.00E+00	0.00E+00
RMP	7440020	Nickel	0.00E+00	0.00E+00

Elmore North Geothermal Project

Elmore North Operational Health Risk Assessment

Source Emission Rates: Routine Operating Year With Startups and Shutdowns

April 2023

Elmore North Operational Modeled Source Emission Rates: Routine Operating Year With Startups and Shutdowns

Source ID ^a	CAS Number	Pollutant Name	Annual Emissions (lbs/yr) ^{b, c}	Hourly Emissions (lbs/hr) ^{b, c}
CT	7782492	Selenium	2.47E-02	3.25E-06
FPUMP	7782492	Selenium	0.00E+00	0.00E+00
G1	7782492	Selenium	0.00E+00	0.00E+00
G2	7782492	Selenium	0.00E+00	0.00E+00
G3	7782492	Selenium	0.00E+00	0.00E+00
G4	7782492	Selenium	0.00E+00	0.00E+00
G5	7782492	Selenium	0.00E+00	0.00E+00
PTU	7782492	Selenium	0.00E+00	0.00E+00
RMP	7782492	Selenium	0.00E+00	0.00E+00
CT	1175	Silica, Crystln	7.81E-01	1.03E-04
FPUMP	1175	Silica, Crystln	0.00E+00	0.00E+00
G1	1175	Silica, Crystln	0.00E+00	0.00E+00
G2	1175	Silica, Crystln	0.00E+00	0.00E+00
G3	1175	Silica, Crystln	0.00E+00	0.00E+00
G4	1175	Silica, Crystln	0.00E+00	0.00E+00
G5	1175	Silica, Crystln	0.00E+00	0.00E+00
PTU	1175	Silica, Crystln	0.00E+00	0.00E+00
RMP	1175	Silica, Crystln	0.00E+00	0.00E+00
CT	7440224	Silver	7.81E-04	1.03E-07
FPUMP	7440224	Silver	0.00E+00	0.00E+00
G1	7440224	Silver	0.00E+00	0.00E+00
G2	7440224	Silver	0.00E+00	0.00E+00
G3	7440224	Silver	0.00E+00	0.00E+00
G4	7440224	Silver	0.00E+00	0.00E+00
G5	7440224	Silver	0.00E+00	0.00E+00
PTU	7440224	Silver	0.00E+00	0.00E+00
RMP	7440224	Silver	0.00E+00	0.00E+00
CT	7440666	Zinc	4.45E-01	5.86E-05
FPUMP	7440666	Zinc	0.00E+00	0.00E+00
G1	7440666	Zinc	0.00E+00	0.00E+00
G2	7440666	Zinc	0.00E+00	0.00E+00
G3	7440666	Zinc	0.00E+00	0.00E+00
G4	7440666	Zinc	0.00E+00	0.00E+00
G5	7440666	Zinc	0.00E+00	0.00E+00
PTU	7440666	Zinc	0.00E+00	0.00E+00
RMP	7440666	Zinc	0.00E+00	0.00E+00
CT	9901	DieselExhPM	0.00E+00	0.00E+00
FPUMP	9901	DieselExhPM	2.86E+00	5.72E-02
G1	9901	DieselExhPM	8.93E+00	1.79E-01
G2	9901	DieselExhPM	1.15E+01	2.31E-01
G3	9901	DieselExhPM	1.15E+01	2.31E-01
G4	9901	DieselExhPM	1.15E+01	2.31E-01
G5	9901	DieselExhPM	1.15E+01	2.31E-01
PTU	9901	DieselExhPM	0.00E+00	0.00E+00
RMP	9901	DieselExhPM	0.00E+00	0.00E+00

Elmore North Geothermal Project

Elmore North Operational Health Risk Assessment

Source Emission Rates: Routine Operating Year With Startups and Shutdowns

April 2023

Elmore North Operational Modeled Source Emission Rates: Routine Operating Year With Startups and Shutdowns

Source ID ^a	CAS Number	Pollutant Name	Annual Emissions (lbs/yr) ^{b, c}	Hourly Emissions (lbs/hr) ^{b, c}
CT	67663	Chloroform	0.00E+00	0.00E+00
FPUMP	67663	Chloroform	0.00E+00	0.00E+00
G1	67663	Chloroform	0.00E+00	0.00E+00
G2	67663	Chloroform	0.00E+00	0.00E+00
G3	67663	Chloroform	0.00E+00	0.00E+00
G4	67663	Chloroform	0.00E+00	0.00E+00
G5	67663	Chloroform	0.00E+00	0.00E+00
PTU	67663	Chloroform	0.00E+00	0.00E+00
RMP	67663	Chloroform	0.00E+00	0.00E+00
CT	50000	Formaldehyde	0.00E+00	0.00E+00
FPUMP	50000	Formaldehyde	0.00E+00	0.00E+00
G1	50000	Formaldehyde	0.00E+00	0.00E+00
G2	50000	Formaldehyde	0.00E+00	0.00E+00
G3	50000	Formaldehyde	0.00E+00	0.00E+00
G4	50000	Formaldehyde	0.00E+00	0.00E+00
G5	50000	Formaldehyde	0.00E+00	0.00E+00
PTU	50000	Formaldehyde	0.00E+00	0.00E+00
RMP	50000	Formaldehyde	0.00E+00	0.00E+00
CT	1150	PAHs-w/	0.00E+00	0.00E+00
FPUMP	1150	PAHs-w/	0.00E+00	0.00E+00
G1	1150	PAHs-w/	0.00E+00	0.00E+00
G2	1150	PAHs-w/	0.00E+00	0.00E+00
G3	1150	PAHs-w/	0.00E+00	0.00E+00
G4	1150	PAHs-w/	0.00E+00	0.00E+00
G5	1150	PAHs-w/	0.00E+00	0.00E+00
PTU	1150	PAHs-w/	0.00E+00	0.00E+00
RMP	1150	PAHs-w/	0.00E+00	0.00E+00
CT	91203	Naphthalene	0.00E+00	0.00E+00
FPUMP	91203	Naphthalene	0.00E+00	0.00E+00
G1	91203	Naphthalene	0.00E+00	0.00E+00
G2	91203	Naphthalene	0.00E+00	0.00E+00
G3	91203	Naphthalene	0.00E+00	0.00E+00
G4	91203	Naphthalene	0.00E+00	0.00E+00
G5	91203	Naphthalene	0.00E+00	0.00E+00
PTU	91203	Naphthalene	0.00E+00	0.00E+00
RMP	91203	Naphthalene	0.00E+00	0.00E+00
CT	75070	Acetaldehyde	0.00E+00	0.00E+00
FPUMP	75070	Acetaldehyde	0.00E+00	0.00E+00
G1	75070	Acetaldehyde	0.00E+00	0.00E+00
G2	75070	Acetaldehyde	0.00E+00	0.00E+00
G3	75070	Acetaldehyde	0.00E+00	0.00E+00
G4	75070	Acetaldehyde	0.00E+00	0.00E+00
G5	75070	Acetaldehyde	0.00E+00	0.00E+00
PTU	75070	Acetaldehyde	0.00E+00	0.00E+00
RMP	75070	Acetaldehyde	0.00E+00	0.00E+00

Elmore North Geothermal Project

Elmore North Operational Health Risk Assessment

Source Emission Rates: Routine Operating Year With Startups and Shutdowns

April 2023

Elmore North Operational Modeled Source Emission Rates: Routine Operating Year With Startups and Shutdowns

Source ID ^a	CAS Number	Pollutant Name	Annual Emissions (lbs/yr) ^{b, c}	Hourly Emissions (lbs/hr) ^{b, c}
CT	107028	Acrolein	0.00E+00	0.00E+00
FPUMP	107028	Acrolein	0.00E+00	0.00E+00
G1	107028	Acrolein	0.00E+00	0.00E+00
G2	107028	Acrolein	0.00E+00	0.00E+00
G3	107028	Acrolein	0.00E+00	0.00E+00
G4	107028	Acrolein	0.00E+00	0.00E+00
G5	107028	Acrolein	0.00E+00	0.00E+00
PTU	107028	Acrolein	0.00E+00	0.00E+00
RMP	107028	Acrolein	0.00E+00	0.00E+00
CT	115071	Propylene	0.00E+00	0.00E+00
FPUMP	115071	Propylene	0.00E+00	0.00E+00
G1	115071	Propylene	0.00E+00	0.00E+00
G2	115071	Propylene	0.00E+00	0.00E+00
G3	115071	Propylene	0.00E+00	0.00E+00
G4	115071	Propylene	0.00E+00	0.00E+00
G5	115071	Propylene	0.00E+00	0.00E+00
PTU	115071	Propylene	0.00E+00	0.00E+00
RMP	115071	Propylene	0.00E+00	0.00E+00
CT	110543	Hexane	0.00E+00	0.00E+00
FPUMP	110543	Hexane	0.00E+00	0.00E+00
G1	110543	Hexane	0.00E+00	0.00E+00
G2	110543	Hexane	0.00E+00	0.00E+00
G3	110543	Hexane	0.00E+00	0.00E+00
G4	110543	Hexane	0.00E+00	0.00E+00
G5	110543	Hexane	0.00E+00	0.00E+00
PTU	110543	Hexane	0.00E+00	0.00E+00
RMP	110543	Hexane	0.00E+00	0.00E+00
CT	1166	Radon	1.40E+03	9.29E-05
FPUMP	1166	Radon	0.00E+00	0.00E+00
G1	1166	Radon	0.00E+00	0.00E+00
G2	1166	Radon	0.00E+00	0.00E+00
G3	1166	Radon	0.00E+00	0.00E+00
G4	1166	Radon	0.00E+00	0.00E+00
G5	1166	Radon	0.00E+00	0.00E+00
PTU	1166	Radon	1.55E+02	0.00E+00
RMP	1166	Radon	1.56E+03	0.00E+00
CT	208968	Acenaphthylene	0.00E+00	0.00E+00
FPUMP	208968	Acenaphthylene	0.00E+00	0.00E+00
G1	208968	Acenaphthylene	0.00E+00	0.00E+00
G2	208968	Acenaphthylene	0.00E+00	0.00E+00
G3	208968	Acenaphthylene	0.00E+00	0.00E+00
G4	208968	Acenaphthylene	0.00E+00	0.00E+00
G5	208968	Acenaphthylene	0.00E+00	0.00E+00
PTU	208968	Acenaphthylene	0.00E+00	0.00E+00
RMP	208968	Acenaphthylene	0.00E+00	0.00E+00

Elmore North Geothermal Project

Elmore North Operational Health Risk Assessment

Source Emission Rates: Routine Operating Year With Startups and Shutdowns

April 2023

Elmore North Operational Modeled Source Emission Rates: Routine Operating Year With Startups and Shutdowns

Source ID ^a	CAS Number	Pollutant Name	Annual Emissions (lbs/yr) ^{b, c}	Hourly Emissions (lbs/hr) ^{b, c}
CT	83329	Acenaphthene	0.00E+00	0.00E+00
FPUMP	83329	Acenaphthene	0.00E+00	0.00E+00
G1	83329	Acenaphthene	0.00E+00	0.00E+00
G2	83329	Acenaphthene	0.00E+00	0.00E+00
G3	83329	Acenaphthene	0.00E+00	0.00E+00
G4	83329	Acenaphthene	0.00E+00	0.00E+00
G5	83329	Acenaphthene	0.00E+00	0.00E+00
PTU	83329	Acenaphthene	0.00E+00	0.00E+00
RMP	83329	Acenaphthene	0.00E+00	0.00E+00
CT	86737	Fluorene	0.00E+00	0.00E+00
FPUMP	86737	Fluorene	0.00E+00	0.00E+00
G1	86737	Fluorene	0.00E+00	0.00E+00
G2	86737	Fluorene	0.00E+00	0.00E+00
G3	86737	Fluorene	0.00E+00	0.00E+00
G4	86737	Fluorene	0.00E+00	0.00E+00
G5	86737	Fluorene	0.00E+00	0.00E+00
PTU	86737	Fluorene	0.00E+00	0.00E+00
RMP	86737	Fluorene	0.00E+00	0.00E+00
CT	85018	Phenanthrene	0.00E+00	0.00E+00
FPUMP	85018	Phenanthrene	0.00E+00	0.00E+00
G1	85018	Phenanthrene	0.00E+00	0.00E+00
G2	85018	Phenanthrene	0.00E+00	0.00E+00
G3	85018	Phenanthrene	0.00E+00	0.00E+00
G4	85018	Phenanthrene	0.00E+00	0.00E+00
G5	85018	Phenanthrene	0.00E+00	0.00E+00
PTU	85018	Phenanthrene	0.00E+00	0.00E+00
RMP	85018	Phenanthrene	0.00E+00	0.00E+00
CT	120127	Anthracene	0.00E+00	0.00E+00
FPUMP	120127	Anthracene	0.00E+00	0.00E+00
G1	120127	Anthracene	0.00E+00	0.00E+00
G2	120127	Anthracene	0.00E+00	0.00E+00
G3	120127	Anthracene	0.00E+00	0.00E+00
G4	120127	Anthracene	0.00E+00	0.00E+00
G5	120127	Anthracene	0.00E+00	0.00E+00
PTU	120127	Anthracene	0.00E+00	0.00E+00
RMP	120127	Anthracene	0.00E+00	0.00E+00
CT	206440	Fluoranthene	0.00E+00	0.00E+00
FPUMP	206440	Fluoranthene	0.00E+00	0.00E+00
G1	206440	Fluoranthene	0.00E+00	0.00E+00
G2	206440	Fluoranthene	0.00E+00	0.00E+00
G3	206440	Fluoranthene	0.00E+00	0.00E+00
G4	206440	Fluoranthene	0.00E+00	0.00E+00
G5	206440	Fluoranthene	0.00E+00	0.00E+00
PTU	206440	Fluoranthene	0.00E+00	0.00E+00
RMP	206440	Fluoranthene	0.00E+00	0.00E+00

Elmore North Geothermal Project

Elmore North Operational Health Risk Assessment

Source Emission Rates: Routine Operating Year With Startups and Shutdowns

April 2023

Elmore North Operational Modeled Source Emission Rates: Routine Operating Year With Startups and Shutdowns

Source ID ^a	CAS Number	Pollutant Name	Annual Emissions (lbs/yr) ^{b, c}	Hourly Emissions (lbs/hr) ^{b, c}
CT	129000	Pyrene	0.00E+00	0.00E+00
FPUMP	129000	Pyrene	0.00E+00	0.00E+00
G1	129000	Pyrene	0.00E+00	0.00E+00
G2	129000	Pyrene	0.00E+00	0.00E+00
G3	129000	Pyrene	0.00E+00	0.00E+00
G4	129000	Pyrene	0.00E+00	0.00E+00
G5	129000	Pyrene	0.00E+00	0.00E+00
PTU	129000	Pyrene	0.00E+00	0.00E+00
RMP	129000	Pyrene	0.00E+00	0.00E+00
CT	56553	Benz[a]anthracene	0.00E+00	0.00E+00
FPUMP	56553	Benz[a]anthracene	0.00E+00	0.00E+00
G1	56553	Benz[a]anthracene	0.00E+00	0.00E+00
G2	56553	Benz[a]anthracene	0.00E+00	0.00E+00
G3	56553	Benz[a]anthracene	0.00E+00	0.00E+00
G4	56553	Benz[a]anthracene	0.00E+00	0.00E+00
G5	56553	Benz[a]anthracene	0.00E+00	0.00E+00
PTU	56553	Benz[a]anthracene	0.00E+00	0.00E+00
RMP	56553	Benz[a]anthracene	0.00E+00	0.00E+00
CT	218019	Chrysene	0.00E+00	0.00E+00
FPUMP	218019	Chrysene	0.00E+00	0.00E+00
G1	218019	Chrysene	0.00E+00	0.00E+00
G2	218019	Chrysene	0.00E+00	0.00E+00
G3	218019	Chrysene	0.00E+00	0.00E+00
G4	218019	Chrysene	0.00E+00	0.00E+00
G5	218019	Chrysene	0.00E+00	0.00E+00
PTU	218019	Chrysene	0.00E+00	0.00E+00
RMP	218019	Chrysene	0.00E+00	0.00E+00
CT	205992	Benzo[b]fluoranthene	0.00E+00	0.00E+00
FPUMP	205992	Benzo[b]fluoranthene	0.00E+00	0.00E+00
G1	205992	Benzo[b]fluoranthene	0.00E+00	0.00E+00
G2	205992	Benzo[b]fluoranthene	0.00E+00	0.00E+00
G3	205992	Benzo[b]fluoranthene	0.00E+00	0.00E+00
G4	205992	Benzo[b]fluoranthene	0.00E+00	0.00E+00
G5	205992	Benzo[b]fluoranthene	0.00E+00	0.00E+00
PTU	205992	Benzo[b]fluoranthene	0.00E+00	0.00E+00
RMP	205992	Benzo[b]fluoranthene	0.00E+00	0.00E+00
CT	207089	Benzo[k]fluoranthene	0.00E+00	0.00E+00
FPUMP	207089	Benzo[k]fluoranthene	0.00E+00	0.00E+00
G1	207089	Benzo[k]fluoranthene	0.00E+00	0.00E+00
G2	207089	Benzo[k]fluoranthene	0.00E+00	0.00E+00
G3	207089	Benzo[k]fluoranthene	0.00E+00	0.00E+00
G4	207089	Benzo[k]fluoranthene	0.00E+00	0.00E+00
G5	207089	Benzo[k]fluoranthene	0.00E+00	0.00E+00
PTU	207089	Benzo[k]fluoranthene	0.00E+00	0.00E+00
RMP	207089	Benzo[k]fluoranthene	0.00E+00	0.00E+00

Elmore North Geothermal Project

Elmore North Operational Health Risk Assessment

Source Emission Rates: Routine Operating Year With Startups and Shutdowns

April 2023

Elmore North Operational Modeled Source Emission Rates: Routine Operating Year With Startups and Shutdowns

Source ID ^a	CAS Number	Pollutant Name	Annual Emissions (lbs/yr) ^{b, c}	Hourly Emissions (lbs/hr) ^{b, c}
CT	50328	Benzo[a]pyrene	0.00E+00	0.00E+00
FPUMP	50328	Benzo[a]pyrene	0.00E+00	0.00E+00
G1	50328	Benzo[a]pyrene	0.00E+00	0.00E+00
G2	50328	Benzo[a]pyrene	0.00E+00	0.00E+00
G3	50328	Benzo[a]pyrene	0.00E+00	0.00E+00
G4	50328	Benzo[a]pyrene	0.00E+00	0.00E+00
G5	50328	Benzo[a]pyrene	0.00E+00	0.00E+00
PTU	50328	Benzo[a]pyrene	0.00E+00	0.00E+00
RMP	50328	Benzo[a]pyrene	0.00E+00	0.00E+00
CT	193395	ln[1,2,3-cd]pyr	0.00E+00	0.00E+00
FPUMP	193395	ln[1,2,3-cd]pyr	0.00E+00	0.00E+00
G1	193395	ln[1,2,3-cd]pyr	0.00E+00	0.00E+00
G2	193395	ln[1,2,3-cd]pyr	0.00E+00	0.00E+00
G3	193395	ln[1,2,3-cd]pyr	0.00E+00	0.00E+00
G4	193395	ln[1,2,3-cd]pyr	0.00E+00	0.00E+00
G5	193395	ln[1,2,3-cd]pyr	0.00E+00	0.00E+00
PTU	193395	ln[1,2,3-cd]pyr	0.00E+00	0.00E+00
RMP	193395	ln[1,2,3-cd]pyr	0.00E+00	0.00E+00
CT	53703	D[a,h]anthracen	0.00E+00	0.00E+00
FPUMP	53703	D[a,h]anthracen	0.00E+00	0.00E+00
G1	53703	D[a,h]anthracen	0.00E+00	0.00E+00
G2	53703	D[a,h]anthracen	0.00E+00	0.00E+00
G3	53703	D[a,h]anthracen	0.00E+00	0.00E+00
G4	53703	D[a,h]anthracen	0.00E+00	0.00E+00
G5	53703	D[a,h]anthracen	0.00E+00	0.00E+00
PTU	53703	D[a,h]anthracen	0.00E+00	0.00E+00
RMP	53703	D[a,h]anthracen	0.00E+00	0.00E+00
CT	191242	B[g,h,i]perylene	0.00E+00	0.00E+00
FPUMP	191242	B[g,h,i]perylene	0.00E+00	0.00E+00
G1	191242	B[g,h,i]perylene	0.00E+00	0.00E+00
G2	191242	B[g,h,i]perylene	0.00E+00	0.00E+00
G3	191242	B[g,h,i]perylene	0.00E+00	0.00E+00
G4	191242	B[g,h,i]perylene	0.00E+00	0.00E+00
G5	191242	B[g,h,i]perylene	0.00E+00	0.00E+00
PTU	191242	B[g,h,i]perylene	0.00E+00	0.00E+00
RMP	191242	B[g,h,i]perylene	0.00E+00	0.00E+00
CT	7783064	H2S	0.00E+00	0.00E+00
FPUMP	7783064	H2S	0.00E+00	0.00E+00
G1	7783064	H2S	0.00E+00	0.00E+00
G2	7783064	H2S	0.00E+00	0.00E+00
G3	7783064	H2S	0.00E+00	0.00E+00
G4	7783064	H2S	0.00E+00	0.00E+00
G5	7783064	H2S	0.00E+00	0.00E+00
PTU	7783064	H2S	0.00E+00	0.00E+00
RMP	7783064	H2S	0.00E+00	0.00E+00

Elmore North Geothermal Project

Elmore North Operational Health Risk Assessment

Source Emission Rates: Routine Operating Year With Startups and Shutdowns

April 2023

Elmore North Operational Modeled Source Emission Rates: Routine Operating Year With Startups and Shutdowns

Source ID ^a	CAS Number	Pollutant Name	Annual Emissions (lbs/yr) ^{b, c}	Hourly Emissions (lbs/hr) ^{b, c}
CT	7664417	NH3	6.95E+04	8.31E+00
FPUMP	7664417	NH3	0.00E+00	0.00E+00
G1	7664417	NH3	1.39E+01	2.77E-01
G2	7664417	NH3	1.69E+01	3.37E-01
G3	7664417	NH3	1.69E+01	3.37E-01
G4	7664417	NH3	1.69E+01	3.37E-01
G5	7664417	NH3	1.69E+01	3.37E-01
PTU	7664417	NH3	8.10E+01	0.00E+00
RMP	7664417	NH3	8.12E+02	0.00E+00
CT	124389	CO2	8.07E+06	1.07E+03
FPUMP	124389	CO2	0.00E+00	0.00E+00
G1	124389	CO2	0.00E+00	0.00E+00
G2	124389	CO2	0.00E+00	0.00E+00
G3	124389	CO2	0.00E+00	0.00E+00
G4	124389	CO2	0.00E+00	0.00E+00
G5	124389	CO2	0.00E+00	0.00E+00
PTU	124389	CO2	8.98E+05	0.00E+00
RMP	124389	CO2	9.01E+06	0.00E+00
CT	74828	CH4	2.02E+04	2.69E+00
FPUMP	74828	CH4	0.00E+00	0.00E+00
G1	74828	CH4	0.00E+00	0.00E+00
G2	74828	CH4	0.00E+00	0.00E+00
G3	74828	CH4	0.00E+00	0.00E+00
G4	74828	CH4	0.00E+00	0.00E+00
G5	74828	CH4	0.00E+00	0.00E+00
PTU	74828	CH4	2.24E+03	0.00E+00
RMP	74828	CH4	2.25E+04	0.00E+00
CT	10024972	Nitrous Oxide	0.00E+00	0.00E+00
FPUMP	10024972	Nitrous Oxide	0.00E+00	0.00E+00
G1	10024972	Nitrous Oxide	0.00E+00	0.00E+00
G2	10024972	Nitrous Oxide	0.00E+00	0.00E+00
G3	10024972	Nitrous Oxide	0.00E+00	0.00E+00
G4	10024972	Nitrous Oxide	0.00E+00	0.00E+00
G5	10024972	Nitrous Oxide	0.00E+00	0.00E+00
PTU	10024972	Nitrous Oxide	0.00E+00	0.00E+00

Elmore North Geothermal Project

Elmore North Operational Health Risk Assessment

Source Emission Rates: Routine Operating Year With Startups and Shutdowns

April 2023

Elmore North Operational Modeled Source Emission Rates: Routine Operating Year With Startups and Shutdowns

Source ID ^a	CAS Number	Pollutant Name	Annual Emissions (lbs/yr) ^{b, c}	Hourly Emissions (lbs/hr) ^{b, c}
RMP	10024972	Nitrous Oxide	0.00E+00	0.00E+00
CT	7440382	Arsenic	1.47E-01	1.93E-05
FPUMP	7440382	Arsenic	0.00E+00	0.00E+00
G1	7440382	Arsenic	0.00E+00	0.00E+00
G2	7440382	Arsenic	0.00E+00	0.00E+00
G3	7440382	Arsenic	0.00E+00	0.00E+00
G4	7440382	Arsenic	0.00E+00	0.00E+00
G5	7440382	Arsenic	0.00E+00	0.00E+00
PTU	7440382	Arsenic	3.40E-02	0.00E+00
RMP	7440382	Arsenic	3.42E-01	0.00E+00
CT	106990	1,3-Butadiene	0.00E+00	0.00E+00
FPUMP	106990	1,3-Butadiene	0.00E+00	0.00E+00
G1	106990	1,3-Butadiene	0.00E+00	0.00E+00
G2	106990	1,3-Butadiene	0.00E+00	0.00E+00
G3	106990	1,3-Butadiene	0.00E+00	0.00E+00
G4	106990	1,3-Butadiene	0.00E+00	0.00E+00
G5	106990	1,3-Butadiene	0.00E+00	0.00E+00
PTU	106990	1,3-Butadiene	0.00E+00	0.00E+00
RMP	106990	1,3-Butadiene	0.00E+00	0.00E+00
CT	7440484	Cobalt	1.56E-04	2.06E-08
FPUMP	7440484	Cobalt	0.00E+00	0.00E+00
G1	7440484	Cobalt	0.00E+00	0.00E+00
G2	7440484	Cobalt	0.00E+00	0.00E+00
G3	7440484	Cobalt	0.00E+00	0.00E+00
G4	7440484	Cobalt	0.00E+00	0.00E+00
G5	7440484	Cobalt	0.00E+00	0.00E+00
PTU	7440484	Cobalt	0.00E+00	0.00E+00
RMP	7440484	Cobalt	0.00E+00	0.00E+00
CT	7440622	vanadium (ume or dust)	7.81E-04	1.03E-07
FPUMP	7440622	vanadium (ume or dust)	0.00E+00	0.00E+00
G1	7440622	vanadium (ume or dust)	0.00E+00	0.00E+00
G2	7440622	vanadium (ume or dust)	0.00E+00	0.00E+00
G3	7440622	vanadium (ume or dust)	0.00E+00	0.00E+00
G4	7440622	vanadium (ume or dust)	0.00E+00	0.00E+00
G5	7440622	vanadium (ume or dust)	0.00E+00	0.00E+00
PTU	7440622	vanadium (ume or dust)	0.00E+00	0.00E+00
RMP	7440622	vanadium (ume or dust)	0.00E+00	0.00E+00

^a The CT source group includes emissions associated with a single cooling tower cell.

^b Radon emissions are presented in units of curies per time period. These emission do not match and are higher than those presented in Appendix 5.1A based upon final Applicant requested revisions. The associated health risk modeling was not updated as radon does not have any health risk related values in the HARP2 database and does impact results presented in Section 5.9.

^c CARB/OEHHA-developed health risk assessment criteria for DPM includes risks and estimates of all speciated emissions. Therefore, only DPM is modeled from diesel combustion sources including the emergency generators and fire water pump.

lbs/yr = pound(s) per year

lbs/hr = pound(s) per hour

Elmore North Geothermal Project

Elmore North Operational Health Risk Assessment

Source Emission Rates: Routine Operating Year Without Startups and Shutdowns

April 2023

Elmore North Operational Modeled Source Emission Rates: Routine Operating Year Without Startups and Shutdowns

Source ID ^a	CAS Number	Pollutant Name	Annual Emissions (lbs/yr) ^{b, c}	Hourly Emissions (lbs/hr) ^{b, c}
CT	7439921	Lead	1.28E-02	1.46E-06
FPUMP	7439921	Lead	0.00E+00	0.00E+00
G1	7439921	Lead	0.00E+00	0.00E+00
G2	7439921	Lead	0.00E+00	0.00E+00
G3	7439921	Lead	0.00E+00	0.00E+00
G4	7439921	Lead	0.00E+00	0.00E+00
G5	7439921	Lead	0.00E+00	0.00E+00
PTU	7439921	Lead	0.00E+00	0.00E+00
RMP	7439921	Lead	0.00E+00	0.00E+00
CT	7439976	Mercury	9.64E-03	1.10E-06
FPUMP	7439976	Mercury	0.00E+00	0.00E+00
G1	7439976	Mercury	0.00E+00	0.00E+00
G2	7439976	Mercury	0.00E+00	0.00E+00
G3	7439976	Mercury	0.00E+00	0.00E+00
G4	7439976	Mercury	0.00E+00	0.00E+00
G5	7439976	Mercury	0.00E+00	0.00E+00
PTU	7439976	Mercury	0.00E+00	0.00E+00
RMP	7439976	Mercury	0.00E+00	0.00E+00
CT	71432	Benzene	2.80E+02	3.20E-02
FPUMP	71432	Benzene	0.00E+00	0.00E+00
G1	71432	Benzene	0.00E+00	0.00E+00
G2	71432	Benzene	0.00E+00	0.00E+00
G3	71432	Benzene	0.00E+00	0.00E+00
G4	71432	Benzene	0.00E+00	0.00E+00
G5	71432	Benzene	0.00E+00	0.00E+00
PTU	71432	Benzene	0.00E+00	0.00E+00
RMP	71432	Benzene	0.00E+00	0.00E+00
CT	108883	Toluene	1.82E+00	2.08E-04
FPUMP	108883	Toluene	0.00E+00	0.00E+00
G1	108883	Toluene	0.00E+00	0.00E+00
G2	108883	Toluene	0.00E+00	0.00E+00
G3	108883	Toluene	0.00E+00	0.00E+00
G4	108883	Toluene	0.00E+00	0.00E+00
G5	108883	Toluene	0.00E+00	0.00E+00
PTU	108883	Toluene	0.00E+00	0.00E+00
RMP	108883	Toluene	0.00E+00	0.00E+00
CT	100414	Ethylbenzene	1.56E+00	1.78E-04
FPUMP	100414	Ethylbenzene	0.00E+00	0.00E+00
G1	100414	Ethylbenzene	0.00E+00	0.00E+00
G2	100414	Ethylbenzene	0.00E+00	0.00E+00
G3	100414	Ethylbenzene	0.00E+00	0.00E+00
G4	100414	Ethylbenzene	0.00E+00	0.00E+00
G5	100414	Ethylbenzene	0.00E+00	0.00E+00

Elmore North Geothermal Project

Elmore North Operational Health Risk Assessment

Source Emission Rates: Routine Operating Year Without Startups and Shutdowns

April 2023

Elmore North Operational Modeled Source Emission Rates: Routine Operating Year Without Startups and Shutdowns

Source ID ^a	CAS Number	Pollutant Name	Annual Emissions (lbs/yr) ^{b, c}	Hourly Emissions (lbs/hr) ^{b, c}
PTU	100414	Ethylbenzene	0.00E+00	0.00E+00
RMP	100414	Ethylbenzene	0.00E+00	0.00E+00
CT	1330207	Xylenes	1.89E+00	2.15E-04
FPUMP	1330207	Xylenes	0.00E+00	0.00E+00
G1	1330207	Xylenes	0.00E+00	0.00E+00
G2	1330207	Xylenes	0.00E+00	0.00E+00
G3	1330207	Xylenes	0.00E+00	0.00E+00
G4	1330207	Xylenes	0.00E+00	0.00E+00
G5	1330207	Xylenes	0.00E+00	0.00E+00
PTU	1330207	Xylenes	0.00E+00	0.00E+00
RMP	1330207	Xylenes	0.00E+00	0.00E+00
CT	7429905	Aluminum	1.80E-02	2.06E-06
FPUMP	7429905	Aluminum	0.00E+00	0.00E+00
G1	7429905	Aluminum	0.00E+00	0.00E+00
G2	7429905	Aluminum	0.00E+00	0.00E+00
G3	7429905	Aluminum	0.00E+00	0.00E+00
G4	7429905	Aluminum	0.00E+00	0.00E+00
G5	7429905	Aluminum	0.00E+00	0.00E+00
PTU	7429905	Aluminum	0.00E+00	0.00E+00
RMP	7429905	Aluminum	0.00E+00	0.00E+00
CT	7440360	Antimony	2.70E-03	3.08E-07
FPUMP	7440360	Antimony	0.00E+00	0.00E+00
G1	7440360	Antimony	0.00E+00	0.00E+00
G2	7440360	Antimony	0.00E+00	0.00E+00
G3	7440360	Antimony	0.00E+00	0.00E+00
G4	7440360	Antimony	0.00E+00	0.00E+00
G5	7440360	Antimony	0.00E+00	0.00E+00
PTU	7440360	Antimony	0.00E+00	0.00E+00
RMP	7440360	Antimony	0.00E+00	0.00E+00
CT	7440393	Barium	8.65E-02	9.87E-06
FPUMP	7440393	Barium	0.00E+00	0.00E+00
G1	7440393	Barium	0.00E+00	0.00E+00
G2	7440393	Barium	0.00E+00	0.00E+00
G3	7440393	Barium	0.00E+00	0.00E+00
G4	7440393	Barium	0.00E+00	0.00E+00
G5	7440393	Barium	0.00E+00	0.00E+00
PTU	7440393	Barium	0.00E+00	0.00E+00
RMP	7440393	Barium	0.00E+00	0.00E+00
CT	7440417	Beryllium	1.80E-04	2.06E-08
FPUMP	7440417	Beryllium	0.00E+00	0.00E+00
G1	7440417	Beryllium	0.00E+00	0.00E+00
G2	7440417	Beryllium	0.00E+00	0.00E+00
G3	7440417	Beryllium	0.00E+00	0.00E+00

Elmore North Geothermal Project

Elmore North Operational Health Risk Assessment

Source Emission Rates: Routine Operating Year Without Startups and Shutdowns

April 2023

Elmore North Operational Modeled Source Emission Rates: Routine Operating Year Without Startups and Shutdowns

Source ID ^a	CAS Number	Pollutant Name	Annual Emissions (lbs/yr) ^{b, c}	Hourly Emissions (lbs/hr) ^{b, c}
G4	7440417	Beryllium	0.00E+00	0.00E+00
G5	7440417	Beryllium	0.00E+00	0.00E+00
PTU	7440417	Beryllium	0.00E+00	0.00E+00
RMP	7440417	Beryllium	0.00E+00	0.00E+00
CT	7440439	Cadmium	5.40E-04	6.17E-08
FPUMP	7440439	Cadmium	0.00E+00	0.00E+00
G1	7440439	Cadmium	0.00E+00	0.00E+00
G2	7440439	Cadmium	0.00E+00	0.00E+00
G3	7440439	Cadmium	0.00E+00	0.00E+00
G4	7440439	Cadmium	0.00E+00	0.00E+00
G5	7440439	Cadmium	0.00E+00	0.00E+00
PTU	7440439	Cadmium	0.00E+00	0.00E+00
RMP	7440439	Cadmium	0.00E+00	0.00E+00
CT	7440473	Chromium	9.01E-04	1.03E-07
FPUMP	7440473	Chromium	0.00E+00	0.00E+00
G1	7440473	Chromium	0.00E+00	0.00E+00
G2	7440473	Chromium	0.00E+00	0.00E+00
G3	7440473	Chromium	0.00E+00	0.00E+00
G4	7440473	Chromium	0.00E+00	0.00E+00
G5	7440473	Chromium	0.00E+00	0.00E+00
PTU	7440473	Chromium	0.00E+00	0.00E+00
RMP	7440473	Chromium	0.00E+00	0.00E+00
CT	7440508	Copper	8.65E-03	9.87E-07
FPUMP	7440508	Copper	0.00E+00	0.00E+00
G1	7440508	Copper	0.00E+00	0.00E+00
G2	7440508	Copper	0.00E+00	0.00E+00
G3	7440508	Copper	0.00E+00	0.00E+00
G4	7440508	Copper	0.00E+00	0.00E+00
G5	7440508	Copper	0.00E+00	0.00E+00
PTU	7440508	Copper	0.00E+00	0.00E+00
RMP	7440508	Copper	0.00E+00	0.00E+00
CT	7439965	Manganese	8.29E-01	9.46E-05
FPUMP	7439965	Manganese	0.00E+00	0.00E+00
G1	7439965	Manganese	0.00E+00	0.00E+00
G2	7439965	Manganese	0.00E+00	0.00E+00
G3	7439965	Manganese	0.00E+00	0.00E+00
G4	7439965	Manganese	0.00E+00	0.00E+00
G5	7439965	Manganese	0.00E+00	0.00E+00
PTU	7439965	Manganese	0.00E+00	0.00E+00
RMP	7439965	Manganese	0.00E+00	0.00E+00
CT	7440020	Nickel	2.20E-03	2.51E-07
FPUMP	7440020	Nickel	0.00E+00	0.00E+00
G1	7440020	Nickel	0.00E+00	0.00E+00

Elmore North Geothermal Project

Elmore North Operational Health Risk Assessment

Source Emission Rates: Routine Operating Year Without Startups and Shutdowns

April 2023

Elmore North Operational Modeled Source Emission Rates: Routine Operating Year Without Startups and Shutdowns

Source ID ^a	CAS Number	Pollutant Name	Annual Emissions (lbs/yr) ^{b, c}	Hourly Emissions (lbs/hr) ^{b, c}
G2	7440020	Nickel	0.00E+00	0.00E+00
G3	7440020	Nickel	0.00E+00	0.00E+00
G4	7440020	Nickel	0.00E+00	0.00E+00
G5	7440020	Nickel	0.00E+00	0.00E+00
PTU	7440020	Nickel	0.00E+00	0.00E+00
RMP	7440020	Nickel	0.00E+00	0.00E+00
CT	7782492	Selenium	2.85E-02	3.25E-06
FPUMP	7782492	Selenium	0.00E+00	0.00E+00
G1	7782492	Selenium	0.00E+00	0.00E+00
G2	7782492	Selenium	0.00E+00	0.00E+00
G3	7782492	Selenium	0.00E+00	0.00E+00
G4	7782492	Selenium	0.00E+00	0.00E+00
G5	7782492	Selenium	0.00E+00	0.00E+00
PTU	7782492	Selenium	0.00E+00	0.00E+00
RMP	7782492	Selenium	0.00E+00	0.00E+00
CT	1175	Silica, Crystln	9.01E-01	1.03E-04
FPUMP	1175	Silica, Crystln	0.00E+00	0.00E+00
G1	1175	Silica, Crystln	0.00E+00	0.00E+00
G2	1175	Silica, Crystln	0.00E+00	0.00E+00
G3	1175	Silica, Crystln	0.00E+00	0.00E+00
G4	1175	Silica, Crystln	0.00E+00	0.00E+00
G5	1175	Silica, Crystln	0.00E+00	0.00E+00
PTU	1175	Silica, Crystln	0.00E+00	0.00E+00
RMP	1175	Silica, Crystln	0.00E+00	0.00E+00
CT	7440224	Silver	9.01E-04	1.03E-07
FPUMP	7440224	Silver	0.00E+00	0.00E+00
G1	7440224	Silver	0.00E+00	0.00E+00
G2	7440224	Silver	0.00E+00	0.00E+00
G3	7440224	Silver	0.00E+00	0.00E+00
G4	7440224	Silver	0.00E+00	0.00E+00
G5	7440224	Silver	0.00E+00	0.00E+00
PTU	7440224	Silver	0.00E+00	0.00E+00
RMP	7440224	Silver	0.00E+00	0.00E+00
CT	7440666	Zinc	5.13E-01	5.86E-05
FPUMP	7440666	Zinc	0.00E+00	0.00E+00
G1	7440666	Zinc	0.00E+00	0.00E+00
G2	7440666	Zinc	0.00E+00	0.00E+00
G3	7440666	Zinc	0.00E+00	0.00E+00
G4	7440666	Zinc	0.00E+00	0.00E+00
G5	7440666	Zinc	0.00E+00	0.00E+00
PTU	7440666	Zinc	0.00E+00	0.00E+00
RMP	7440666	Zinc	0.00E+00	0.00E+00
CT	9901	DieselExhPM	0.00E+00	0.00E+00

Elmore North Geothermal Project

Elmore North Operational Health Risk Assessment

Source Emission Rates: Routine Operating Year Without Startups and Shutdowns

April 2023

Elmore North Operational Modeled Source Emission Rates: Routine Operating Year Without Startups and Shutdowns

Source ID ^a	CAS Number	Pollutant Name	Annual Emissions (lbs/yr) ^{b, c}	Hourly Emissions (lbs/hr) ^{b, c}
FPUMP	9901	DieselExhPM	2.86E+00	5.72E-02
G1	9901	DieselExhPM	8.93E+00	1.79E-01
G2	9901	DieselExhPM	1.15E+01	2.31E-01
G3	9901	DieselExhPM	1.15E+01	2.31E-01
G4	9901	DieselExhPM	1.15E+01	2.31E-01
G5	9901	DieselExhPM	1.15E+01	2.31E-01
PTU	9901	DieselExhPM	0.00E+00	0.00E+00
RMP	9901	DieselExhPM	0.00E+00	0.00E+00
CT	67663	Chloroform	0.00E+00	0.00E+00
FPUMP	67663	Chloroform	0.00E+00	0.00E+00
G1	67663	Chloroform	0.00E+00	0.00E+00
G2	67663	Chloroform	0.00E+00	0.00E+00
G3	67663	Chloroform	0.00E+00	0.00E+00
G4	67663	Chloroform	0.00E+00	0.00E+00
G5	67663	Chloroform	0.00E+00	0.00E+00
PTU	67663	Chloroform	0.00E+00	0.00E+00
RMP	67663	Chloroform	0.00E+00	0.00E+00
CT	50000	Formaldehyde	0.00E+00	0.00E+00
FPUMP	50000	Formaldehyde	0.00E+00	0.00E+00
G1	50000	Formaldehyde	0.00E+00	0.00E+00
G2	50000	Formaldehyde	0.00E+00	0.00E+00
G3	50000	Formaldehyde	0.00E+00	0.00E+00
G4	50000	Formaldehyde	0.00E+00	0.00E+00
G5	50000	Formaldehyde	0.00E+00	0.00E+00
PTU	50000	Formaldehyde	0.00E+00	0.00E+00
RMP	50000	Formaldehyde	0.00E+00	0.00E+00
CT	1150	PAHs-w/	0.00E+00	0.00E+00
FPUMP	1150	PAHs-w/	0.00E+00	0.00E+00
G1	1150	PAHs-w/	0.00E+00	0.00E+00
G2	1150	PAHs-w/	0.00E+00	0.00E+00
G3	1150	PAHs-w/	0.00E+00	0.00E+00
G4	1150	PAHs-w/	0.00E+00	0.00E+00
G5	1150	PAHs-w/	0.00E+00	0.00E+00
PTU	1150	PAHs-w/	0.00E+00	0.00E+00
RMP	1150	PAHs-w/	0.00E+00	0.00E+00
CT	91203	Naphthalene	0.00E+00	0.00E+00
FPUMP	91203	Naphthalene	0.00E+00	0.00E+00
G1	91203	Naphthalene	0.00E+00	0.00E+00
G2	91203	Naphthalene	0.00E+00	0.00E+00
G3	91203	Naphthalene	0.00E+00	0.00E+00
G4	91203	Naphthalene	0.00E+00	0.00E+00
G5	91203	Naphthalene	0.00E+00	0.00E+00
PTU	91203	Naphthalene	0.00E+00	0.00E+00

Elmore North Geothermal Project

Elmore North Operational Health Risk Assessment

Source Emission Rates: Routine Operating Year Without Startups and Shutdowns

April 2023

Elmore North Operational Modeled Source Emission Rates: Routine Operating Year Without Startups and Shutdowns

Source ID ^a	CAS Number	Pollutant Name	Annual Emissions (lbs/yr) ^{b, c}	Hourly Emissions (lbs/hr) ^{b, c}
RMP	91203	Naphthalene	0.00E+00	0.00E+00
CT	75070	Acetaldehyde	0.00E+00	0.00E+00
FPUMP	75070	Acetaldehyde	0.00E+00	0.00E+00
G1	75070	Acetaldehyde	0.00E+00	0.00E+00
G2	75070	Acetaldehyde	0.00E+00	0.00E+00
G3	75070	Acetaldehyde	0.00E+00	0.00E+00
G4	75070	Acetaldehyde	0.00E+00	0.00E+00
G5	75070	Acetaldehyde	0.00E+00	0.00E+00
PTU	75070	Acetaldehyde	0.00E+00	0.00E+00
RMP	75070	Acetaldehyde	0.00E+00	0.00E+00
CT	107028	Acrolein	0.00E+00	0.00E+00
FPUMP	107028	Acrolein	0.00E+00	0.00E+00
G1	107028	Acrolein	0.00E+00	0.00E+00
G2	107028	Acrolein	0.00E+00	0.00E+00
G3	107028	Acrolein	0.00E+00	0.00E+00
G4	107028	Acrolein	0.00E+00	0.00E+00
G5	107028	Acrolein	0.00E+00	0.00E+00
PTU	107028	Acrolein	0.00E+00	0.00E+00
RMP	107028	Acrolein	0.00E+00	0.00E+00
CT	115071	Propylene	0.00E+00	0.00E+00
FPUMP	115071	Propylene	0.00E+00	0.00E+00
G1	115071	Propylene	0.00E+00	0.00E+00
G2	115071	Propylene	0.00E+00	0.00E+00
G3	115071	Propylene	0.00E+00	0.00E+00
G4	115071	Propylene	0.00E+00	0.00E+00
G5	115071	Propylene	0.00E+00	0.00E+00
PTU	115071	Propylene	0.00E+00	0.00E+00
RMP	115071	Propylene	0.00E+00	0.00E+00
CT	110543	Hexane	0.00E+00	0.00E+00
FPUMP	110543	Hexane	0.00E+00	0.00E+00
G1	110543	Hexane	0.00E+00	0.00E+00
G2	110543	Hexane	0.00E+00	0.00E+00
G3	110543	Hexane	0.00E+00	0.00E+00
G4	110543	Hexane	0.00E+00	0.00E+00
G5	110543	Hexane	0.00E+00	0.00E+00
PTU	110543	Hexane	0.00E+00	0.00E+00
RMP	110543	Hexane	0.00E+00	0.00E+00
CT	1166	Radon	8.14E-01	9.29E-05
FPUMP	1166	Radon	0.00E+00	0.00E+00
G1	1166	Radon	0.00E+00	0.00E+00
G2	1166	Radon	0.00E+00	0.00E+00
G3	1166	Radon	0.00E+00	0.00E+00
G4	1166	Radon	0.00E+00	0.00E+00

Elmore North Geothermal Project

Elmore North Operational Health Risk Assessment

Source Emission Rates: Routine Operating Year Without Startups and Shutdowns

April 2023

Elmore North Operational Modeled Source Emission Rates: Routine Operating Year Without Startups and Shutdowns

Source ID ^a	CAS Number	Pollutant Name	Annual Emissions (lbs/yr) ^{b, c}	Hourly Emissions (lbs/hr) ^{b, c}
G5	1166	Radon	0.00E+00	0.00E+00
PTU	1166	Radon	0.00E+00	0.00E+00
RMP	1166	Radon	0.00E+00	0.00E+00
CT	208968	Acenaphthylene	0.00E+00	0.00E+00
FPUMP	208968	Acenaphthylene	0.00E+00	0.00E+00
G1	208968	Acenaphthylene	0.00E+00	0.00E+00
G2	208968	Acenaphthylene	0.00E+00	0.00E+00
G3	208968	Acenaphthylene	0.00E+00	0.00E+00
G4	208968	Acenaphthylene	0.00E+00	0.00E+00
G5	208968	Acenaphthylene	0.00E+00	0.00E+00
PTU	208968	Acenaphthylene	0.00E+00	0.00E+00
RMP	208968	Acenaphthylene	0.00E+00	0.00E+00
CT	83329	Acenaphthene	0.00E+00	0.00E+00
FPUMP	83329	Acenaphthene	0.00E+00	0.00E+00
G1	83329	Acenaphthene	0.00E+00	0.00E+00
G2	83329	Acenaphthene	0.00E+00	0.00E+00
G3	83329	Acenaphthene	0.00E+00	0.00E+00
G4	83329	Acenaphthene	0.00E+00	0.00E+00
G5	83329	Acenaphthene	0.00E+00	0.00E+00
PTU	83329	Acenaphthene	0.00E+00	0.00E+00
RMP	83329	Acenaphthene	0.00E+00	0.00E+00
CT	86737	Fluorene	0.00E+00	0.00E+00
FPUMP	86737	Fluorene	0.00E+00	0.00E+00
G1	86737	Fluorene	0.00E+00	0.00E+00
G2	86737	Fluorene	0.00E+00	0.00E+00
G3	86737	Fluorene	0.00E+00	0.00E+00
G4	86737	Fluorene	0.00E+00	0.00E+00
G5	86737	Fluorene	0.00E+00	0.00E+00
PTU	86737	Fluorene	0.00E+00	0.00E+00
RMP	86737	Fluorene	0.00E+00	0.00E+00
CT	85018	Phenanthrene	0.00E+00	0.00E+00
FPUMP	85018	Phenanthrene	0.00E+00	0.00E+00
G1	85018	Phenanthrene	0.00E+00	0.00E+00
G2	85018	Phenanthrene	0.00E+00	0.00E+00
G3	85018	Phenanthrene	0.00E+00	0.00E+00
G4	85018	Phenanthrene	0.00E+00	0.00E+00
G5	85018	Phenanthrene	0.00E+00	0.00E+00
PTU	85018	Phenanthrene	0.00E+00	0.00E+00
RMP	85018	Phenanthrene	0.00E+00	0.00E+00
CT	120127	Anthracene	0.00E+00	0.00E+00
FPUMP	120127	Anthracene	0.00E+00	0.00E+00
G1	120127	Anthracene	0.00E+00	0.00E+00
G2	120127	Anthracene	0.00E+00	0.00E+00

Elmore North Geothermal Project

Elmore North Operational Health Risk Assessment

Source Emission Rates: Routine Operating Year Without Startups and Shutdowns

April 2023

Elmore North Operational Modeled Source Emission Rates: Routine Operating Year Without Startups and Shutdowns

Source ID ^a	CAS Number	Pollutant Name	Annual Emissions (lbs/yr) ^{b, c}	Hourly Emissions (lbs/hr) ^{b, c}
G3	120127	Anthracene	0.00E+00	0.00E+00
G4	120127	Anthracene	0.00E+00	0.00E+00
G5	120127	Anthracene	0.00E+00	0.00E+00
PTU	120127	Anthracene	0.00E+00	0.00E+00
RMP	120127	Anthracene	0.00E+00	0.00E+00
CT	206440	Fluoranthene	0.00E+00	0.00E+00
FPUMP	206440	Fluoranthene	0.00E+00	0.00E+00
G1	206440	Fluoranthene	0.00E+00	0.00E+00
G2	206440	Fluoranthene	0.00E+00	0.00E+00
G3	206440	Fluoranthene	0.00E+00	0.00E+00
G4	206440	Fluoranthene	0.00E+00	0.00E+00
G5	206440	Fluoranthene	0.00E+00	0.00E+00
PTU	206440	Fluoranthene	0.00E+00	0.00E+00
RMP	206440	Fluoranthene	0.00E+00	0.00E+00
CT	129000	Pyrene	0.00E+00	0.00E+00
FPUMP	129000	Pyrene	0.00E+00	0.00E+00
G1	129000	Pyrene	0.00E+00	0.00E+00
G2	129000	Pyrene	0.00E+00	0.00E+00
G3	129000	Pyrene	0.00E+00	0.00E+00
G4	129000	Pyrene	0.00E+00	0.00E+00
G5	129000	Pyrene	0.00E+00	0.00E+00
PTU	129000	Pyrene	0.00E+00	0.00E+00
RMP	129000	Pyrene	0.00E+00	0.00E+00
CT	56553	Benz[a]anthracene	0.00E+00	0.00E+00
FPUMP	56553	Benz[a]anthracene	0.00E+00	0.00E+00
G1	56553	Benz[a]anthracene	0.00E+00	0.00E+00
G2	56553	Benz[a]anthracene	0.00E+00	0.00E+00
G3	56553	Benz[a]anthracene	0.00E+00	0.00E+00
G4	56553	Benz[a]anthracene	0.00E+00	0.00E+00
G5	56553	Benz[a]anthracene	0.00E+00	0.00E+00
PTU	56553	Benz[a]anthracene	0.00E+00	0.00E+00
RMP	56553	Benz[a]anthracene	0.00E+00	0.00E+00
CT	218019	Chrysene	0.00E+00	0.00E+00
FPUMP	218019	Chrysene	0.00E+00	0.00E+00
G1	218019	Chrysene	0.00E+00	0.00E+00
G2	218019	Chrysene	0.00E+00	0.00E+00
G3	218019	Chrysene	0.00E+00	0.00E+00
G4	218019	Chrysene	0.00E+00	0.00E+00
G5	218019	Chrysene	0.00E+00	0.00E+00
PTU	218019	Chrysene	0.00E+00	0.00E+00
RMP	218019	Chrysene	0.00E+00	0.00E+00
CT	205992	Benzo[b]fluoranthene	0.00E+00	0.00E+00
FPUMP	205992	Benzo[b]fluoranthene	0.00E+00	0.00E+00

Elmore North Geothermal Project

Elmore North Operational Health Risk Assessment

Source Emission Rates: Routine Operating Year Without Startups and Shutdowns

April 2023

Elmore North Operational Modeled Source Emission Rates: Routine Operating Year Without Startups and Shutdowns

Source ID ^a	CAS Number	Pollutant Name	Annual Emissions (lbs/yr) ^{b, c}	Hourly Emissions (lbs/hr) ^{b, c}
G1	205992	Benzo[b]fluoranthene	0.00E+00	0.00E+00
G2	205992	Benzo[b]fluoranthene	0.00E+00	0.00E+00
G3	205992	Benzo[b]fluoranthene	0.00E+00	0.00E+00
G4	205992	Benzo[b]fluoranthene	0.00E+00	0.00E+00
G5	205992	Benzo[b]fluoranthene	0.00E+00	0.00E+00
PTU	205992	Benzo[b]fluoranthene	0.00E+00	0.00E+00
RMP	205992	Benzo[b]fluoranthene	0.00E+00	0.00E+00
CT	207089	Benzo[k]fluoranthene	0.00E+00	0.00E+00
FPUMP	207089	Benzo[k]fluoranthene	0.00E+00	0.00E+00
G1	207089	Benzo[k]fluoranthene	0.00E+00	0.00E+00
G2	207089	Benzo[k]fluoranthene	0.00E+00	0.00E+00
G3	207089	Benzo[k]fluoranthene	0.00E+00	0.00E+00
G4	207089	Benzo[k]fluoranthene	0.00E+00	0.00E+00
G5	207089	Benzo[k]fluoranthene	0.00E+00	0.00E+00
PTU	207089	Benzo[k]fluoranthene	0.00E+00	0.00E+00
RMP	207089	Benzo[k]fluoranthene	0.00E+00	0.00E+00
CT	50328	Benzo[a]pyrene	0.00E+00	0.00E+00
FPUMP	50328	Benzo[a]pyrene	0.00E+00	0.00E+00
G1	50328	Benzo[a]pyrene	0.00E+00	0.00E+00
G2	50328	Benzo[a]pyrene	0.00E+00	0.00E+00
G3	50328	Benzo[a]pyrene	0.00E+00	0.00E+00
G4	50328	Benzo[a]pyrene	0.00E+00	0.00E+00
G5	50328	Benzo[a]pyrene	0.00E+00	0.00E+00
PTU	50328	Benzo[a]pyrene	0.00E+00	0.00E+00
RMP	50328	Benzo[a]pyrene	0.00E+00	0.00E+00
CT	193395	In[1,2,3-cd]pyr	0.00E+00	0.00E+00
FPUMP	193395	In[1,2,3-cd]pyr	0.00E+00	0.00E+00
G1	193395	In[1,2,3-cd]pyr	0.00E+00	0.00E+00
G2	193395	In[1,2,3-cd]pyr	0.00E+00	0.00E+00
G3	193395	In[1,2,3-cd]pyr	0.00E+00	0.00E+00
G4	193395	In[1,2,3-cd]pyr	0.00E+00	0.00E+00
G5	193395	In[1,2,3-cd]pyr	0.00E+00	0.00E+00
PTU	193395	In[1,2,3-cd]pyr	0.00E+00	0.00E+00
RMP	193395	In[1,2,3-cd]pyr	0.00E+00	0.00E+00
CT	53703	D[a,h]anthracen	0.00E+00	0.00E+00
FPUMP	53703	D[a,h]anthracen	0.00E+00	0.00E+00
G1	53703	D[a,h]anthracen	0.00E+00	0.00E+00
G2	53703	D[a,h]anthracen	0.00E+00	0.00E+00
G3	53703	D[a,h]anthracen	0.00E+00	0.00E+00
G4	53703	D[a,h]anthracen	0.00E+00	0.00E+00
G5	53703	D[a,h]anthracen	0.00E+00	0.00E+00
PTU	53703	D[a,h]anthracen	0.00E+00	0.00E+00
RMP	53703	D[a,h]anthracen	0.00E+00	0.00E+00

Elmore North Geothermal Project

Elmore North Operational Health Risk Assessment

Source Emission Rates: Routine Operating Year Without Startups and Shutdowns

April 2023

Elmore North Operational Modeled Source Emission Rates: Routine Operating Year Without Startups and Shutdowns

Source ID ^a	CAS Number	Pollutant Name	Annual Emissions (lbs/yr) ^{b, c}	Hourly Emissions (lbs/hr) ^{b, c}
CT	191242	B[g,h,i]perylene	0.00E+00	0.00E+00
FPUMP	191242	B[g,h,i]perylene	0.00E+00	0.00E+00
G1	191242	B[g,h,i]perylene	0.00E+00	0.00E+00
G2	191242	B[g,h,i]perylene	0.00E+00	0.00E+00
G3	191242	B[g,h,i]perylene	0.00E+00	0.00E+00
G4	191242	B[g,h,i]perylene	0.00E+00	0.00E+00
G5	191242	B[g,h,i]perylene	0.00E+00	0.00E+00
PTU	191242	B[g,h,i]perylene	0.00E+00	0.00E+00
RMP	191242	B[g,h,i]perylene	0.00E+00	0.00E+00
CT	7783064	H2S	0.00E+00	0.00E+00
FPUMP	7783064	H2S	0.00E+00	0.00E+00
G1	7783064	H2S	0.00E+00	0.00E+00
G2	7783064	H2S	0.00E+00	0.00E+00
G3	7783064	H2S	0.00E+00	0.00E+00
G4	7783064	H2S	0.00E+00	0.00E+00
G5	7783064	H2S	0.00E+00	0.00E+00
PTU	7783064	H2S	0.00E+00	0.00E+00
RMP	7783064	H2S	0.00E+00	0.00E+00
CT	7664417	NH3	7.28E+04	8.31E+00
FPUMP	7664417	NH3	0.00E+00	0.00E+00
G1	7664417	NH3	1.39E+01	2.77E-01
G2	7664417	NH3	1.69E+01	3.37E-01
G3	7664417	NH3	1.69E+01	3.37E-01
G4	7664417	NH3	1.69E+01	3.37E-01
G5	7664417	NH3	1.69E+01	3.37E-01
PTU	7664417	NH3	0.00E+00	0.00E+00
RMP	7664417	NH3	0.00E+00	0.00E+00
CT	124389	CO2	9.42E+06	1.07E+03
FPUMP	124389	CO2	0.00E+00	0.00E+00
G1	124389	CO2	0.00E+00	0.00E+00
G2	124389	CO2	0.00E+00	0.00E+00
G3	124389	CO2	0.00E+00	0.00E+00
G4	124389	CO2	0.00E+00	0.00E+00
G5	124389	CO2	0.00E+00	0.00E+00
PTU	124389	CO2	0.00E+00	0.00E+00
RMP	124389	CO2	0.00E+00	0.00E+00
CT	74828	CH4	2.35E+04	2.69E+00
FPUMP	74828	CH4	0.00E+00	0.00E+00
G1	74828	CH4	0.00E+00	0.00E+00
G2	74828	CH4	0.00E+00	0.00E+00
G3	74828	CH4	0.00E+00	0.00E+00
G4	74828	CH4	0.00E+00	0.00E+00
G5	74828	CH4	0.00E+00	0.00E+00

Elmore North Geothermal Project

Elmore North Operational Health Risk Assessment

Source Emission Rates: Routine Operating Year Without Startups and Shutdowns

April 2023

Elmore North Operational Modeled Source Emission Rates: Routine Operating Year Without Startups and Shutdowns

Source ID ^a	CAS Number	Pollutant Name	Annual Emissions (lbs/yr) ^{b, c}	Hourly Emissions (lbs/hr) ^{b, c}
PTU	74828	CH4	0.00E+00	0.00E+00
RMP	74828	CH4	0.00E+00	0.00E+00
CT	10024972	Nitrous Oxide	0.00E+00	0.00E+00
FPUMP	10024972	Nitrous Oxide	0.00E+00	0.00E+00
G1	10024972	Nitrous Oxide	0.00E+00	0.00E+00
G2	10024972	Nitrous Oxide	0.00E+00	0.00E+00
G3	10024972	Nitrous Oxide	0.00E+00	0.00E+00
G4	10024972	Nitrous Oxide	0.00E+00	0.00E+00
G5	10024972	Nitrous Oxide	0.00E+00	0.00E+00
PTU	10024972	Nitrous Oxide	0.00E+00	0.00E+00
RMP	10024972	Nitrous Oxide	0.00E+00	0.00E+00
CT	7440382	Arsenic	1.70E-01	1.93E-05
FPUMP	7440382	Arsenic	0.00E+00	0.00E+00
G1	7440382	Arsenic	0.00E+00	0.00E+00
G2	7440382	Arsenic	0.00E+00	0.00E+00
G3	7440382	Arsenic	0.00E+00	0.00E+00
G4	7440382	Arsenic	0.00E+00	0.00E+00
G5	7440382	Arsenic	0.00E+00	0.00E+00
PTU	7440382	Arsenic	0.00E+00	0.00E+00
RMP	7440382	Arsenic	0.00E+00	0.00E+00
CT	106990	1,3-Butadiene	0.00E+00	0.00E+00
FPUMP	106990	1,3-Butadiene	0.00E+00	0.00E+00
G1	106990	1,3-Butadiene	0.00E+00	0.00E+00
G2	106990	1,3-Butadiene	0.00E+00	0.00E+00
G3	106990	1,3-Butadiene	0.00E+00	0.00E+00
G4	106990	1,3-Butadiene	0.00E+00	0.00E+00
G5	106990	1,3-Butadiene	0.00E+00	0.00E+00
PTU	106990	1,3-Butadiene	0.00E+00	0.00E+00
RMP	106990	1,3-Butadiene	0.00E+00	0.00E+00
CT	7440484	Cobalt	1.80E-04	2.06E-08
FPUMP	7440484	Cobalt	0.00E+00	0.00E+00
G1	7440484	Cobalt	0.00E+00	0.00E+00
G2	7440484	Cobalt	0.00E+00	0.00E+00
G3	7440484	Cobalt	0.00E+00	0.00E+00
G4	7440484	Cobalt	0.00E+00	0.00E+00
G5	7440484	Cobalt	0.00E+00	0.00E+00
PTU	7440484	Cobalt	0.00E+00	0.00E+00
RMP	7440484	Cobalt	0.00E+00	0.00E+00
CT	7440622	Vanadium (fume or dust)	9.01E-04	1.03E-07
FPUMP	7440622	Vanadium (fume or dust)	0.00E+00	0.00E+00
G1	7440622	Vanadium (fume or dust)	0.00E+00	0.00E+00
G2	7440622	Vanadium (fume or dust)	0.00E+00	0.00E+00
G3	7440622	Vanadium (fume or dust)	0.00E+00	0.00E+00

Elmore North Geothermal Project

Elmore North Operational Health Risk Assessment

Source Emission Rates: Routine Operating Year Without Startups and Shutdowns

April 2023

Elmore North Operational Modeled Source Emission Rates: Routine Operating Year Without Startups and Shutdowns

Source ID ^a	CAS Number	Pollutant Name	Annual Emissions (lbs/yr) ^{b, c}	Hourly Emissions (lbs/hr) ^{b, c}
G4	7440622	Vanadium (fume or dust)	0.00E+00	0.00E+00
G5	7440622	Vanadium (fume or dust)	0.00E+00	0.00E+00
PTU	7440622	Vanadium (fume or dust)	0.00E+00	0.00E+00
RMP	7440622	Vanadium (fume or dust)	0.00E+00	0.00E+00

^a The CT source group includes emissions associated with a single cooling tower cell.

^b Radon emissions are presented in units of curies per time period. These emission do not match and are higher than those presented in Appendix 5.1A based upon final Applicant requested revisions. The associated health risk modeling was not updated as radon does not have any health risk related values in the HARP2 database and does impact results presented in Section 5.9.

^c CARB/OEHHA-developed health risk assessment criteria for DPM includes risks and estimates of all speciated emissions. Therefore, only DPM is modeled from diesel combustion sources including the emergency generators and fire water pump.

lbs/yr = pound(s) per year

lbs/hr = pound(s) per hour

Elmore North Geothermal Project

Elmore North Operational Health Risk Assessment Health

Risk Assessment Results

April 2023

Elmore North Operational Health Risk Assessment Results

Risk Type	Risk Analysis ^a	Receptor #	Easting ^b	Northing ^b	Risk ^c	Thresholds ^d
Facility Wide Impacts: Routine Operating Year with Startups and Shutdowns						
Cancer	PMI	50	630,719.91	3,672,183.53	14.62	--
	MEIR	5,634	638,180.33	3,672,664.25	0.52	10.00
	MEIW	50	630,719.91	3,672,183.53	0.66	10.00
	Maximally Exposed Sensitive Receptor	5,634	638,180.33	3,672,664.25	0.52	10.00
Non-Cancer Chronic	PMI	50	630,719.91	3,672,183.53	0.85	--
	MEIR	5,634	638,180.33	3,672,664.25	0.03	1.00
	MEIW	50	630,719.91	3,672,183.53	0.85	1.00
	Maximally Exposed Sensitive Receptor	5,634	638,180.33	3,672,664.25	0.03	1.00
Non-Cancer Acute	PMI	455	631,100.00	3,671,650.00	0.43	--
	MEIR	5,629	629,090.70	3,671,844.15	0.17	1.00
	MEIW	455	631,100.00	3,671,650.00	0.43	1.00
	Maximally Exposed Sensitive Receptor	5,629	629,090.70	3,671,844.15	0.17	1.00
Facility Wide Impacts: Routine Operating Year without Startups and Shutdowns						
Cancer	PMI	50	630,719.91	3,672,183.53	16.42	--
	MEIR	5,634	638,180.33	3,672,664.25	0.52	10.00
	MEIW	50	630,719.91	3,672,183.53	0.74	10.00
	Maximally Exposed Sensitive Receptor	5,634	638,180.33	3,672,664.25	0.52	10.00
Non-Cancer Chronic	PMI	50	630,719.91	3,672,183.53	0.96	--
	MEIR	5,629	629,090.70	3,671,844.15	0.03	1.00
	MEIW	50	630,719.91	3,672,183.53	0.96	1.00
	Maximally Exposed Sensitive Receptor	5,629	629,090.70	3,671,844.15	0.03	1.00
Non-Cancer Acute	PMI	455	631,100.00	3,671,650.00	0.43	--
	MEIR	5,629	629,090.70	3,671,844.15	0.17	1.00
	MEIW	455	631,100.00	3,671,650.00	0.43	1.00
	Maximally Exposed Sensitive Receptor	5,629	629,090.70	3,671,844.15	0.17	1.00

^a There are no nearby sensitive receptors so the Project conservatively assumes all nearby residences are potential sensitive receptors. For all non-cancer MEIW locations, the MEIW is assumed equal to the PMI.

^b Coordinates presented are UTM NAD 83 Zone 11, meters

^c Health risk results presented in incidences per million for cancer risks and hazard indices (HI) for non-cancer chronic and acute risks.

^d Thresholds presented in incidences per million for cancer risks and HI for non-cancer chronic and acute risks. In the absence of ICAPCD thresholds, facility total risk results are compared to the SCAQMD's CEQA significance thresholds.

Note: "--" = Not applicable per discussion in Section 5.9.

Appendix 5.9B

Construction Health Risk Assessment



Elmore North Geothermal Project

Elmore North Construction Health Risk Assessment

Health Risk Assessment Results - Cancer

April 2023

Modeled Concentrations

Maximum annual impact of annualized project emissions

PMI	0.08878	µg/m ³	Diesel PM
MEIR	0.00292	µg/m ³	Diesel PM
Sensitive	0.00292	µg/m ³	Diesel PM
MEIW	0.08878	µg/m ³	Diesel PM

Construction HRA per the 2015 OEHHA Guidance

Residential Calculation Procedure for Cancer Risks

PMI

Year	0 (3rd tri)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Dose (mg/kg/day)	3.08E-05	9.29E-05	9.29E-05	7.34E-05	7.34E-05	7.34E-05	7.34E-05	7.34E-05	7.34E-05	6.35E-05	6.35E-05	6.35E-05	6.35E-05	6.35E-05	6.35E-05	6.35E-05	2.86E-05	2.86E-05	2.86E-05	2.86E-05	2.86E-05	2.86E-05	2.86E-05	2.86E-05	2.86E-05	2.86E-05	2.86E-05	2.86E-05	2.86E-05	2.86E-05	
Risk	1.03E-06	1.24E-05	1.24E-05	2.49E-06	2.49E-06	2.49E-06	2.49E-06	2.49E-06	2.49E-06	2.16E-06	2.16E-06	2.16E-06	2.16E-06	2.16E-06	2.16E-06	2.16E-06	3.28E-07	3.28E-07	3.28E-07	3.28E-07	3.28E-07	3.28E-07	3.28E-07	3.28E-07	3.28E-07	3.28E-07	3.28E-07	3.28E-07	3.28E-07	3.28E-07	
Rolling 3-yr Risk ^a				2.83E-05	1.74E-05	7.47E-06	7.47E-06	7.47E-06	7.47E-06	7.14E-06	6.80E-06	6.47E-06	6.47E-06	6.47E-06	6.47E-06	6.47E-06	4.64E-06	2.81E-06	9.83E-07	9.83E-07	9.83E-07	9.83E-07	9.83E-07	9.83E-07	9.83E-07	9.83E-07	9.83E-07	9.83E-07	9.83E-07	9.83E-07	
Risk per Million				28.34	17.39	7.47	7.47	7.47	7.47	7.14	6.80	6.47	6.47	6.47	6.47	6.47	4.64	2.81	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	

MEIR

Year	0 (3rd tri)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Dose (mg/kg/day)	1.01E-06	3.06E-06	3.06E-06	2.41E-06	2.41E-06	2.41E-06	2.41E-06	2.41E-06	2.41E-06	2.09E-06	2.09E-06	2.09E-06	2.09E-06	2.09E-06	2.09E-06	2.09E-06	9.39E-07	9.39E-07	9.39E-07	9.39E-07	9.39E-07	9.39E-07	9.39E-07	9.39E-07	9.39E-07	9.39E-07	9.39E-07	9.39E-07	9.39E-07	9.39E-07	
Risk	3.38E-08	4.08E-07	4.08E-07	8.19E-08	8.19E-08	8.19E-08	8.19E-08	8.19E-08	8.19E-08	7.09E-08	7.09E-08	7.09E-08	7.09E-08	7.09E-08	7.09E-08	7.09E-08	1.08E-08	1.08E-08	1.08E-08	1.08E-08	1.08E-08	1.08E-08	1.08E-08	1.08E-08	1.08E-08	1.08E-08	1.08E-08	1.08E-08	1.08E-08	1.08E-08	
Rolling 3-yr Risk ^a				9.32E-07	5.72E-07	2.46E-07	2.46E-07	2.46E-07	2.46E-07	2.35E-07	2.24E-07	2.13E-07	2.13E-07	2.13E-07	2.13E-07	2.13E-07	1.53E-07	9.24E-08	3.23E-08	3.23E-08	3.23E-08	3.23E-08	3.23E-08	3.23E-08	3.23E-08	3.23E-08	3.23E-08	3.23E-08	3.23E-08	3.23E-08	
Risk per Million				0.93	0.57	0.25	0.25	0.25	0.25	0.23	0.22	0.21	0.21	0.21	0.21	0.21	0.15	0.09	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	

MESR

Year	0 (3rd tri)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Dose (mg/kg/day)	1.01E-06	3.06E-06	3.06E-06	2.41E-06	2.41E-06	2.41E-06	2.41E-06	2.41E-06	2.41E-06	2.09E-06	2.09E-06	2.09E-06	2.09E-06	2.09E-06	2.09E-06	2.09E-06	9.39E-07	9.39E-07	9.39E-07	9.39E-07	9.39E-07	9.39E-07	9.39E-07	9.39E-07	9.39E-07	9.39E-07	9.39E-07	9.39E-07	9.39E-07	9.39E-07	
Risk	3.38E-08	4.08E-07	4.08E-07	8.19E-08	8.19E-08	8.19E-08	8.19E-08	8.19E-08	8.19E-08	7.09E-08	7.09E-08	7.09E-08	7.09E-08	7.09E-08	7.09E-08	7.09E-08	1.08E-08	1.08E-08	1.08E-08	1.08E-08	1.08E-08	1.08E-08	1.08E-08	1.08E-08	1.08E-08	1.08E-08	1.08E-08	1.08E-08	1.08E-08	1.08E-08	
Rolling 3-yr Risk ^a				9.32E-07	5.72E-07	2.46E-07	2.46E-07	2.46E-07	2.46E-07	2.35E-07	2.24E-07	2.13E-07	2.13E-07	2.13E-07	2.13E-07	2.13E-07	1.53E-07	9.24E-08	3.23E-08	3.23E-08	3.23E-08	3.23E-08	3.23E-08	3.23E-08	3.23E-08	3.23E-08	3.23E-08	3.23E-08	3.23E-08	3.23E-08	
Risk per Million				0.93	0.57	0.25	0.25	0.25	0.25	0.23	0.22	0.21	0.21	0.21	0.21	0.21	0.15	0.09	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	

Worker Calculation Procedure for Cancer Risks

MEIW

Year	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Dose (mg/kg/day)	1.39E-05	1.39E-05	1.39E-05	1.39E-05	1.39E-05	1.39E-05	1.39E-05	1.39E-05	1.39E-05	1.39E-05	1.39E-05	1.39E-05	1.39E-05	1.39E-05	1.39E-05	1.39E-05	1.39E-05	1.39E-05	1.39E-05	1.39E-05	1.39E-05	1.39E-05	1.39E-05	1.39E-05	
Risk	2.18E-07	2.18E-07	2.18E-07	2.18E-07	2.18E-07	2.18E-07	2.18E-07	2.18E-07	2.18E-07	2.18E-07	2.18E-07	2.18E-07	2.18E-07	2.18E-07	2.18E-07	2.18E-07	2.18E-07	2.18E-07	2.18E-07	2.18E-07	2.18E-07	2.18E-07	2.18E-07	2.18E-07	
Rolling 3-yr Risk ^a			6.55E-07	6.55E-07	6.55E-07	6.55E-07	6.55E-07	6.55E-07	6.55E-07	6.55E-07	6.55E-07	6.55E-07	6.55E-07	6.55E-07	6.55E-07	6.55E-07	6.55E-07	6.55E-07	6.55E-07	6.55E-07	6.55E-07	6.55E-07	6.55E-07	6.55E-07	
Risk per Million			0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	

Note:
^a Cancer risk was summed on a 3-year rolling basis to conservatively mirror the 29-month duration of Project construction.

Elmore North Geothermal Project
Elmore North Construction Health Risk Assessment
Health Risk Assessment Results - Chronic
April 2023

Construction HRA per the 2015 OEHHA Guidance
Calculation Procedure for Chronic Hazard Index

Receptor Type	Pollutant	Maximum Annual Modeled Concentration ($\mu\text{g}/\text{m}^3$) ^a	REL ($\mu\text{g}/\text{m}^3$) ^b	Chronic Hazard Index
PMI	Diesel PM	0.089	5.00	0.02
MEIR	Diesel PM	0.003	5.00	0.0006
MESR	Diesel PM	0.003	5.00	0.0006
MEIW	Diesel PM	0.089	5.00	0.02

Notes:

^a Maximum Annual Modeled Concentrations taken from Appendix 5.9B, Modeled Concentrations Table.

^b REL taken from the *Consolidated Table of OEHHA/ARB Approved Risk Assessment Health Values* (CARB 2022a).

Elmore North Geothermal Project

Elmore North Construction Health Risk Assessment

Health Risk Assessment Worker Cancer Risk Methodology

April 2023

Dose Constants

Year	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
WAF ^a	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
BR/BW	230.0	230.0	230.0	230.0	230.0	230.0	230.0	230.0	230.0	230.0	230.0	230.0	230.0	230.0	230.0	230.0	230.0	230.0	230.0	230.0	230.0	230.0	230.0	230.0	230.0
A	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
EF	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68
Conversion	1.00E-06	1.00E-06	1.00E-06	1.00E-06	1.00E-06	1.00E-06	1.00E-06	1.00E-06	1.00E-06	1.00E-06	1.00E-06	1.00E-06	1.00E-06	1.00E-06	1.00E-06	1.00E-06	1.00E-06	1.00E-06	1.00E-06	1.00E-06	1.00E-06	1.00E-06	1.00E-06	1.00E-06	1.00E-06

Risk Constants

Year	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
CPF (Diesel PM)	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
ASF	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
ED	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
AT	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70

Note:

^a Conservatively assumes construction activities occur 24 hours per day, 7 days per week.