

DOCKETED

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Appendix 5.9A

Operational Health Risk Assessment



Morton Bay Geothermal Project

Morton Bay Health Risk Assessment

Sensitive Receptors

April 2023

Morton Bay Nearby Sensitive Receptors

Receptor Number	Receptor Description	X Coordinate	Y Coordinate
5,622	Residence	630,020	3,666,838
5,623	Residence	630,812	3,666,941
5,624	Residence	632,437	3,665,342
5,625	Residence	634,165	3,665,327
5,626	Residence	633,274	3,668,579
5,627	Residence	635,720	3,668,695
5,628	Residence	635,683	3,667,001
5,629	Residence	636,085	3,666,125
5,630	Residence	629,091	3,671,844
5,631	Residence	629,311	3,674,439
5,632	Residence	633,189	3,676,633
5,633	Residence	638,071	3,677,428
5,634	Residence	637,938	3,674,194
5,635	Residence	638,180	3,672,664

Note: Coordinates presented are UTM NAD83 Zone 11, meters

Morton Bay Geothermal Project

Morton Bay Health Risk Assessment

Census Receptors

April 2023

Morton Bay Nearby Census Receptors

Receptor Number	Receptor Description	X Coordinate	Y Coordinate	Population
5,636	Census Receptor	636,696	3,682,655	0
5,637	Census Receptor	639,583	3,680,189	10
5,638	Census Receptor	639,097	3,679,648	0
5,639	Census Receptor	638,074	3,681,572	9
5,640	Census Receptor	637,148	3,680,807	8
5,641	Census Receptor	634,352	3,682,677	0
5,642	Census Receptor	638,931	3,678,995	0
5,643	Census Receptor	639,067	3,678,887	0
5,644	Census Receptor	640,169	3,679,097	0
5,645	Census Receptor	639,498	3,679,201	0
5,646	Census Receptor	639,393	3,679,082	0
5,647	Census Receptor	639,870	3,678,354	0
5,648	Census Receptor	640,402	3,677,816	0
5,649	Census Receptor	639,301	3,677,890	2
5,650	Census Receptor	638,695	3,677,882	0
5,651	Census Receptor	638,213	3,677,815	0
5,652	Census Receptor	638,074	3,678,120	2
5,653	Census Receptor	638,189	3,677,074	29
5,654	Census Receptor	638,695	3,677,075	4
5,655	Census Receptor	639,308	3,677,086	0
5,656	Census Receptor	641,647	3,675,511	0
5,657	Census Receptor	640,815	3,677,106	0
5,658	Census Receptor	640,001	3,677,095	0
5,659	Census Receptor	640,011	3,676,301	0
5,660	Census Receptor	640,823	3,676,301	0
5,661	Census Receptor	639,315	3,676,283	0
5,662	Census Receptor	638,918	3,676,278	0
5,663	Census Receptor	638,413	3,676,270	0
5,664	Census Receptor	638,426	3,675,466	0
5,665	Census Receptor	638,929	3,675,477	0
5,666	Census Receptor	639,327	3,675,478	0
5,667	Census Receptor	640,025	3,675,488	0
5,668	Census Receptor	640,007	3,675,899	0
5,669	Census Receptor	639,739	3,674,673	0
5,670	Census Receptor	638,536	3,674,661	4
5,671	Census Receptor	638,542	3,673,854	0
5,672	Census Receptor	639,744	3,673,867	0
5,673	Census Receptor	641,259	3,673,906	0
5,674	Census Receptor	641,245	3,674,697	0
5,675	Census Receptor	640,838	3,675,495	0

Morton Bay Geothermal Project

Morton Bay Health Risk Assessment Census

Receptors

April 2023

Morton Bay Nearby Census Receptors

Receptor Number	Receptor Description	X Coordinate	Y Coordinate	Population
5,676	Census Receptor	638,551	3,673,051	2
5,677	Census Receptor	641,272	3,673,091	0
5,678	Census Receptor	641,324	3,673,509	0
5,679	Census Receptor	639,768	3,673,452	0
5,680	Census Receptor	639,755	3,673,051	0
5,681	Census Receptor	639,764	3,672,265	0
5,682	Census Receptor	641,298	3,672,674	0
5,683	Census Receptor	641,284	3,672,272	0
5,684	Census Receptor	639,793	3,671,453	0
5,685	Census Receptor	639,076	3,671,543	0
5,686	Census Receptor	638,568	3,671,445	0
5,687	Census Receptor	638,559	3,672,249	0
5,688	Census Receptor	638,577	3,670,618	0
5,689	Census Receptor	639,070	3,670,642	0
5,690	Census Receptor	639,729	3,671,031	0
5,691	Census Receptor	639,789	3,670,631	0
5,692	Census Receptor	640,113	3,669,851	0
5,693	Census Receptor	639,389	3,669,839	0
5,694	Census Receptor	639,835	3,669,432	0
5,695	Census Receptor	638,591	3,669,028	0
5,696	Census Receptor	638,584	3,669,813	0
5,697	Census Receptor	638,599	3,668,237	3
5,698	Census Receptor	638,614	3,667,822	0
5,699	Census Receptor	632,342	3,683,811	0
5,700	Census Receptor	637,060	3,679,948	0
5,701	Census Receptor	637,914	3,679,393	0
5,702	Census Receptor	627,051	3,678,982	0
5,703	Census Receptor	627,155	3,670,991	0
5,704	Census Receptor	629,644	3,677,138	0
5,705	Census Receptor	629,375	3,675,191	0
5,706	Census Receptor	630,177	3,673,064	3
5,707	Census Receptor	628,027	3,671,919	0
5,708	Census Receptor	626,742	3,670,099	0
5,709	Census Receptor	628,778	3,672,116	4
5,710	Census Receptor	631,617	3,679,429	1
5,711	Census Receptor	632,857	3,682,234	11
5,712	Census Receptor	633,792	3,680,585	1
5,713	Census Receptor	636,113	3,680,114	1
5,714	Census Receptor	633,929	3,679,444	0
5,715	Census Receptor	634,004	3,679,853	0

Morton Bay Geothermal Project

Morton Bay Health Risk Assessment

Census Receptors

April 2023

Morton Bay Nearby Census Receptors

Receptor Number	Receptor Description	X Coordinate	Y Coordinate	Population
5,716	Census Receptor	631,160	3,672,764	0
5,717	Census Receptor	632,345	3,672,252	0
5,718	Census Receptor	633,050	3,672,205	0
5,719	Census Receptor	632,951	3,672,989	0
5,720	Census Receptor	634,606	3,673,010	0
5,721	Census Receptor	636,856	3,673,417	0
5,722	Census Receptor	636,839	3,673,832	3
5,723	Census Receptor	636,828	3,674,639	0
5,724	Census Receptor	636,750	3,675,052	0
5,725	Census Receptor	633,987	3,675,392	0
5,726	Census Receptor	633,951	3,675,796	0
5,727	Census Receptor	634,129	3,675,823	0
5,728	Census Receptor	636,812	3,676,259	4
5,729	Census Receptor	636,846	3,676,664	0
5,730	Census Receptor	636,792	3,677,065	0
5,731	Census Receptor	636,376	3,677,850	0
5,732	Census Receptor	637,378	3,677,866	10
5,733	Census Receptor	636,612	3,678,699	2
5,734	Census Receptor	637,561	3,679,218	0
5,735	Census Receptor	636,504	3,679,466	0
5,736	Census Receptor	636,969	3,679,089	0
5,737	Census Receptor	634,020	3,679,035	0
5,738	Census Receptor	633,936	3,678,623	6
5,739	Census Receptor	633,952	3,677,824	0
5,740	Census Receptor	633,871	3,677,409	0
5,741	Census Receptor	633,961	3,677,017	1
5,742	Census Receptor	633,920	3,676,628	0
5,743	Census Receptor	633,974	3,676,224	0
5,744	Census Receptor	638,254	3,679,066	53
5,745	Census Receptor	638,326	3,679,178	89
5,746	Census Receptor	638,603	3,679,174	0
5,747	Census Receptor	638,599	3,679,049	0
5,748	Census Receptor	637,927	3,679,151	0
5,749	Census Receptor	638,072	3,678,960	39
5,750	Census Receptor	638,265	3,678,995	27
5,751	Census Receptor	638,465	3,679,003	13
5,752	Census Receptor	638,669	3,678,967	44
5,753	Census Receptor	638,623	3,678,874	13
5,754	Census Receptor	638,664	3,678,835	14
5,755	Census Receptor	638,739	3,678,822	2

Morton Bay Geothermal Project

Morton Bay Health Risk Assessment

Census Receptors

April 2023

Morton Bay Nearby Census Receptors

Receptor Number	Receptor Description	X Coordinate	Y Coordinate	Population
5,756	Census Receptor	638,858	3,678,844	39
5,757	Census Receptor	638,975	3,678,592	0
5,758	Census Receptor	638,859	3,678,720	35
5,759	Census Receptor	638,694	3,678,712	19
5,760	Census Receptor	638,605	3,678,739	0
5,761	Census Receptor	638,471	3,678,717	34
5,762	Census Receptor	638,471	3,678,809	11
5,763	Census Receptor	638,467	3,678,870	26
5,764	Census Receptor	638,468	3,678,940	10
5,765	Census Receptor	638,266	3,678,932	21
5,766	Census Receptor	638,269	3,678,838	37
5,767	Census Receptor	638,074	3,678,835	27
5,768	Census Receptor	638,075	3,678,711	32
5,769	Census Receptor	638,271	3,678,746	29
5,770	Census Receptor	638,271	3,678,683	38
5,771	Census Receptor	637,570	3,678,465	114
5,772	Census Receptor	638,075	3,678,590	0
5,773	Census Receptor	638,245	3,678,624	19
5,774	Census Receptor	638,345	3,678,593	7
5,775	Census Receptor	638,451	3,678,601	21
5,776	Census Receptor	638,542	3,678,575	34
5,777	Census Receptor	638,674	3,678,597	42
5,778	Census Receptor	638,860	3,678,599	14
5,779	Census Receptor	638,862	3,678,477	14
5,780	Census Receptor	638,676	3,678,475	39
5,781	Census Receptor	638,499	3,678,466	21
5,782	Census Receptor	638,410	3,678,492	0
5,783	Census Receptor	638,275	3,678,471	39
5,784	Census Receptor	638,245	3,678,566	16
5,785	Census Receptor	638,477	3,678,345	27
5,786	Census Receptor	638,678	3,678,349	17
5,787	Census Receptor	638,863	3,678,351	15
5,788	Census Receptor	638,344	3,678,322	0
5,789	Census Receptor	638,253	3,678,350	11
5,790	Census Receptor	638,078	3,678,341	16
5,791	Census Receptor	638,077	3,678,470	0
5,792	Census Receptor	636,532	3,675,859	0
5,793	Census Receptor	636,835	3,675,830	0
5,794	Census Receptor	636,816	3,675,438	0
5,795	Census Receptor	634,819	3,672,601	0

Morton Bay Geothermal Project

Morton Bay Health Risk Assessment

Census Receptors

April 2023

Morton Bay Nearby Census Receptors

Receptor Number	Receptor Description	X Coordinate	Y Coordinate	Population
5,796	Census Receptor	633,796	3,672,577	0
5,797	Census Receptor	633,792	3,672,178	0
5,798	Census Receptor	634,821	3,672,191	0
5,799	Census Receptor	636,049	3,672,217	0
5,800	Census Receptor	637,257	3,672,232	0
5,801	Census Receptor	636,875	3,672,640	0
5,802	Census Receptor	636,848	3,673,028	0
5,803	Census Receptor	633,737	3,669,371	5
5,804	Census Receptor	634,842	3,671,398	0
5,805	Census Receptor	633,485	3,667,547	3
5,806	Census Receptor	632,737	3,670,848	0
5,807	Census Receptor	632,036	3,670,146	0
5,808	Census Receptor	631,227	3,670,139	0
5,809	Census Receptor	630,421	3,670,531	0
5,810	Census Receptor	629,595	3,671,722	0
5,811	Census Receptor	629,583	3,672,126	0
5,812	Census Receptor	632,822	3,669,354	0
5,813	Census Receptor	632,860	3,667,743	0
5,814	Census Receptor	632,061	3,667,730	0
5,815	Census Receptor	631,636	3,670,034	0
5,816	Census Receptor	630,015	3,670,414	0
5,817	Census Receptor	629,606	3,670,518	0
5,818	Census Receptor	629,209	3,670,508	0
5,819	Census Receptor	628,787	3,671,309	0
5,820	Census Receptor	628,735	3,671,709	0
5,821	Census Receptor	628,001	3,671,301	0
5,822	Census Receptor	630,028	3,668,910	0
5,823	Census Receptor	630,444	3,668,917	0
5,824	Census Receptor	630,825	3,669,939	0
5,825	Census Receptor	631,254	3,667,719	6
5,826	Census Receptor	630,461	3,667,712	2
5,827	Census Receptor	630,059	3,667,697	0
5,828	Census Receptor	630,033	3,667,752	0
5,829	Census Receptor	629,631	3,667,698	0
5,830	Census Receptor	629,612	3,668,907	0
5,831	Census Receptor	628,826	3,669,705	0
5,832	Census Receptor	628,423	3,669,766	0
5,833	Census Receptor	628,403	3,669,528	0
5,834	Census Receptor	628,006	3,669,690	0
5,835	Census Receptor	627,221	3,669,280	0

Morton Bay Geothermal Project

Morton Bay Health Risk Assessment

Census Receptors

April 2023

Morton Bay Nearby Census Receptors

Receptor Number	Receptor Description	X Coordinate	Y Coordinate	Population
5,836	Census Receptor	626,409	3,669,252	0
5,837	Census Receptor	625,523	3,667,969	0
5,838	Census Receptor	626,424	3,667,658	0
5,839	Census Receptor	627,235	3,667,667	0
5,840	Census Receptor	628,040	3,667,675	0
5,841	Census Receptor	628,840	3,667,688	0
5,842	Census Receptor	628,869	3,666,079	0
5,843	Census Receptor	629,659	3,666,492	6
5,844	Census Receptor	630,463	3,666,502	0
5,845	Census Receptor	631,270	3,666,513	0
5,846	Census Receptor	632,077	3,666,524	0
5,847	Census Receptor	632,877	3,666,536	0
5,848	Census Receptor	633,381	3,666,693	0
5,849	Census Receptor	633,748	3,666,514	0
5,850	Census Receptor	633,798	3,667,999	0
5,851	Census Receptor	633,964	3,667,348	0
5,852	Census Receptor	632,087	3,665,722	7
5,853	Census Receptor	631,282	3,665,711	0
5,854	Census Receptor	630,474	3,665,699	0
5,855	Census Receptor	629,668	3,665,686	0
5,856	Census Receptor	634,471	3,668,168	0
5,857	Census Receptor	636,877	3,668,613	0
5,858	Census Receptor	636,908	3,669,008	13
5,859	Census Receptor	636,892	3,669,806	0
5,860	Census Receptor	637,006	3,670,197	0
5,861	Census Receptor	636,883	3,670,600	0
5,862	Census Receptor	636,922	3,671,004	0
5,863	Census Receptor	636,802	3,671,026	0
5,864	Census Receptor	636,873	3,671,431	0
5,865	Census Receptor	634,083	3,670,160	0
5,866	Census Receptor	634,856	3,670,576	0
5,867	Census Receptor	634,850	3,670,978	0
5,868	Census Receptor	634,876	3,668,982	0
5,869	Census Receptor	634,867	3,669,372	0
5,870	Census Receptor	634,880	3,669,774	0
5,871	Census Receptor	636,858	3,669,418	0
5,872	Census Receptor	636,791	3,669,394	0
5,873	Census Receptor	634,868	3,668,588	0
5,874	Census Receptor	633,318	3,665,283	0
5,875	Census Receptor	633,498	3,665,497	0

Morton Bay Geothermal Project

Morton Bay Health Risk Assessment

Census Receptors

April 2023

Morton Bay Nearby Census Receptors

Receptor Number	Receptor Description	X Coordinate	Y Coordinate	Population
5,876	Census Receptor	632,888	3,665,731	0
5,877	Census Receptor	634,902	3,665,939	2
5,878	Census Receptor	634,917	3,666,145	0
5,879	Census Receptor	634,907	3,666,562	0
5,880	Census Receptor	634,899	3,667,364	8
5,881	Census Receptor	635,285	3,668,170	0
5,882	Census Receptor	635,714	3,668,169	0
5,883	Census Receptor	635,724	3,665,953	0
5,884	Census Receptor	635,934	3,666,157	0
5,885	Census Receptor	635,937	3,666,182	0
5,886	Census Receptor	636,136	3,666,582	39
5,887	Census Receptor	636,992	3,667,380	6
5,888	Census Receptor	636,917	3,667,810	0
5,889	Census Receptor	636,923	3,668,213	0
5,890	Census Receptor	638,142	3,667,859	0
5,891	Census Receptor	633,744	3,665,781	8
5,892	Census Receptor	636,341	3,666,162	0
5,893	Census Receptor	637,140	3,666,593	21
5,894	Census Receptor	636,737	3,666,586	15
5,895	Census Receptor	628,430	3,666,853	0
5,896	Census Receptor	628,071	3,666,052	0
5,897	Census Receptor	633,993	3,674,612	1
5,898	Census Receptor	634,210	3,674,214	0
5,899	Census Receptor	634,584	3,673,807	1
5,900	Census Receptor	637,783	3,677,869	50

Note: Coordinates presented are UTM NAD83 Zone 11, meters

Morton Bay Geothermal Project

Morton Bay Operational Health Risk Assessment

Source Emission Rates: Routine Operating Year With Startups and Shutdowns

April 2023

Morton Bay 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	8.39E-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	5.32E-02	0.00E+00
RMP	7439976	Mercury	5.58E-01	0.00E+00
CT	71432	Benzene	2.41E+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	2.55E+01	0.00E+00
RMP	71432	Benzene	2.68E+02	0.00E+00
CT	108883	Toluene	1.57E+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	1.36E-01	0.00E+00
RMP	108883	Toluene	1.43E+00	0.00E+00
CT	100414	Ethylbenzene	1.35E+00	1.79E-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

Morton Bay Geothermal Project

Morton Bay Operational Health Risk Assessment

Source Emission Rates: Routine Operating Year With Startups and Shutdowns

April 2023

Morton Bay 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}
PTU	100414	Ethylbenzene	1.13E-01	0.00E+00
RMP	100414	Ethylbenzene	1.18E+00	0.00E+00
CT	1330207	Xylenes	1.64E+00	2.17E-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	1.13E-01	0.00E+00
RMP	1330207	Xylenes	1.18E+00	0.00E+00
CT	7429905	Aluminum	1.57E-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	2.35E-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	7.53E-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	1.57E-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

Morton Bay Geothermal Project

Morton Bay Operational Health Risk Assessment

Source Emission Rates: Routine Operating Year With Startups and Shutdowns

April 2023

Morton Bay 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}
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	4.70E-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	7.84E-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	7.53E-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	7.21E-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

Morton Bay Geothermal Project

Morton Bay Operational Health Risk Assessment

Source Emission Rates: Routine Operating Year With Startups and Shutdowns

April 2023

Morton Bay 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}
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	2.48E-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	7.84E-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	7.84E-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	4.47E-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

Morton Bay Geothermal Project

Morton Bay Operational Health Risk Assessment

Source Emission Rates: Routine Operating Year With Startups and Shutdowns

April 2023

Morton Bay 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}
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

Morton Bay Geothermal Project

Morton Bay Operational Health Risk Assessment

Source Emission Rates: Routine Operating Year With Startups and Shutdowns

April 2023

Morton Bay 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	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	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

Morton Bay Geothermal Project

Morton Bay Operational Health Risk Assessment

Source Emission Rates: Routine Operating Year With Startups and Shutdowns

April 2023

Morton Bay 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}
G5	1166	Radon	0.00E+00	0.00E+00
PTU	1166	Radon	1.48E+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
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

Morton Bay Geothermal Project

Morton Bay Operational Health Risk Assessment

Source Emission Rates: Routine Operating Year With Startups and Shutdowns

April 2023

Morton Bay 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}
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

Morton Bay Geothermal Project

Morton Bay Operational Health Risk Assessment

Source Emission Rates: Routine Operating Year With Startups and Shutdowns

April 2023

Morton Bay 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}
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	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

Morton Bay Geothermal Project

Morton Bay Operational Health Risk Assessment

Source Emission Rates: Routine Operating Year With Startups and Shutdowns

April 2023

Morton Bay 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	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	7.15E+04	8.53E+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	7.75E+01	0.00E+00
RMP	7664417	NH3	8.12E+02	0.00E+00
CT	124389	CO2	8.21E+06	1.09E+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	8.71E+05	0.00E+00
RMP	124389	CO2	9.13E+06	0.00E+00
CT	74828	CH4	2.05E+04	2.72E+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

Morton Bay Geothermal Project

Morton Bay Operational Health Risk Assessment

Source Emission Rates: Routine Operating Year With Startups and Shutdowns

April 2023

Morton Bay 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}
PTU	74828	CH4	2.18E+03	0.00E+00
RMP	74828	CH4	2.28E+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
RMP	10024972	Nitrous Oxide	0.00E+00	0.00E+00
CT	7440382	Arsenic	1.48E-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	3.26E-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	1.57E-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)	7.84E-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

Morton Bay Geothermal Project

Morton Bay Operational Health Risk Assessment

Source Emission Rates: Routine Operating Year With Startups and Shutdowns

April 2023

Morton Bay 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}
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

Morton Bay Geothermal Project

Morton Bay Operational Health Risk Assessment

Source Emission Rates: Routine Operating Year Without Startups and Shutdowns

April 2023

Morton Bay 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	1.83E+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	1.57E+00	1.79E-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

Morton Bay Geothermal Project

Morton Bay Operational Health Risk Assessment

Source Emission Rates: Routine Operating Year Without Startups and Shutdowns

April 2023

Morton Bay 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	1.90E+00	2.17E-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

Morton Bay Geothermal Project

Morton Bay Operational Health Risk Assessment

Source Emission Rates: Routine Operating Year Without Startups and Shutdowns

April 2023

Morton Bay 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

Morton Bay Geothermal Project

Morton Bay Operational Health Risk Assessment

Source Emission Rates: Routine Operating Year Without Startups and Shutdowns

April 2023

Morton Bay 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

Morton Bay Geothermal Project

Morton Bay Operational Health Risk Assessment

Source Emission Rates: Routine Operating Year Without Startups and Shutdowns

April 2023

Morton Bay 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

Morton Bay Geothermal Project

Morton Bay Operational Health Risk Assessment

Source Emission Rates: Routine Operating Year Without Startups and Shutdowns

April 2023

Morton Bay 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

Morton Bay Geothermal Project

Morton Bay Operational Health Risk Assessment

Source Emission Rates: Routine Operating Year Without Startups and Shutdowns

April 2023

Morton Bay 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

Morton Bay Geothermal Project

Morton Bay Operational Health Risk Assessment

Source Emission Rates: Routine Operating Year Without Startups and Shutdowns

April 2023

Morton Bay 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

Morton Bay Geothermal Project

Morton Bay Operational Health Risk Assessment

Source Emission Rates: Routine Operating Year Without Startups and Shutdowns

April 2023

Morton Bay 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	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

Morton Bay Geothermal Project

Morton Bay Operational Health Risk Assessment

Source Emission Rates: Routine Operating Year Without Startups and Shutdowns

April 2023

Morton Bay 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	7.47E+04	8.53E+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	9.54E+06	1.09E+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	2.39E+04	2.72E+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

Morton Bay Geothermal Project

Morton Bay Operational Health Risk Assessment

Source Emission Rates: Routine Operating Year Without Startups and Shutdowns

April 2023

Morton Bay 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

Morton Bay Geothermal Project

Morton Bay Operational Health Risk Assessment

Source Emission Rates: Routine Operating Year Without Startups and Shutdowns

April 2023

Morton Bay 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

Morton Bay Geothermal Project

Morton Bay

Operational Health Risk Assessment

Health Risk Assessment Results

April 2023

Morton Bay 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	51	632,334.06	3,674,763.22	14.66	--
	MEIR	5,634	637,938.41	3,674,194.07	0.46	10.00
	MEIW	51	632,334.06	3,674,763.22	0.65	10.00
	Maximally Exposed Sensitive Receptor	5,634	637,938.41	3,674,194.07	0.46	10.00
Non-Cancer Chronic	PMI	51	632,334.06	3,674,763.22	0.87	--
	MEIR	5,634	637,938.41	3,674,194.07	0.02	1.00
	MEIW	51	632,334.06	3,674,763.22	0.87	1.00
	Maximally Exposed Sensitive Receptor	5,634	637,938.41	3,674,194.07	0.02	1.00
Non-Cancer Acute	PMI	2,664	631,550.00	3,675,300.00	0.44	--
	MEIR	5,631	629,310.70	3,674,439.02	0.15	1.00
	MEIW	2,664	631,550.00	3,675,300.00	0.44	1.00
	Maximally Exposed Sensitive Receptor	5,631	629,310.70	3,674,439.02	0.15	1.00
Facility Wide Impacts: Routine Operating Year without Startups and Shutdowns						
Cancer	PMI	51	632,334.06	3,674,763.22	16.44	--
	MEIR	5,634	637,938.41	3,674,194.07	0.47	10.00
	MEIW	51	632,334.06	3,674,763.22	0.73	10.00
	Maximally Exposed Sensitive Receptor	5,634	637,938.41	3,674,194.07	0.47	10.00
Non-Cancer Chronic	PMI	51	632,334.06	3,674,763.22	0.97	--
	MEIR	5,634	637,938.41	3,674,194.07	0.02	1.00
	MEIW	51	632,334.06	3,674,763.22	0.97	1.00
	Maximally Exposed Sensitive Receptor	5,634	637,938.41	3,674,194.07	0.02	1.00
Non-Cancer Acute	PMI	2,664	631,550.00	3,675,300.00	0.44	--
	MEIR	5,631	629,310.70	3,674,439.02	0.15	1.00
	MEIW	2,664	631,550.00	3,675,300.00	0.44	1.00
	Maximally Exposed Sensitive Receptor	5,631	629,310.70	3,674,439.02	0.15	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



Morton Bay Geothermal Project

Morton Bay Construction

Health Risk Assessment

Health Risk Assessment Results - Cancer

April 2023

Modeled Concentrations

Maximum annual impact of annualized project emissions

PMI	0.09058	µg/m ³	Diesel PM
MEIR	0.00323	µg/m ³	Diesel PM
Sensitive	0.00323	µg/m ³	Diesel PM
MEIW	0.09058	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)	3.14E-05	9.48E-05	9.48E-05	7.49E-05	7.49E-05	7.49E-05	7.49E-05	7.49E-05	7.49E-05	6.48E-05	6.48E-05	6.48E-05	6.48E-05	6.48E-05	6.48E-05	6.48E-05	2.91E-05	2.91E-05	2.91E-05	2.91E-05	2.91E-05	2.91E-05	2.91E-05	2.91E-05	2.91E-05	2.91E-05	2.91E-05	2.91E-05	2.91E-05	2.91E-05	
Risk	1.05E-06	1.27E-05	1.27E-05	2.54E-06	2.54E-06	2.54E-06	2.54E-06	2.54E-06	2.54E-06	2.20E-06	2.20E-06	2.20E-06	2.20E-06	2.20E-06	2.20E-06	2.20E-06	3.34E-07	3.34E-07	3.34E-07	3.34E-07	3.34E-07	3.34E-07	3.34E-07	3.34E-07	3.34E-07	3.34E-07	3.34E-07	3.34E-07	3.34E-07	3.34E-07	
Rolling 3-yr Risk ^a				2.89E-05	1.77E-05	7.62E-06	7.62E-06	7.62E-06	7.62E-06	7.28E-06	6.94E-06	6.60E-06	6.60E-06	6.60E-06	6.60E-06	6.60E-06	4.73E-06	2.87E-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 per Million				28.91	17.74	7.62	7.62	7.62	7.62	7.28	6.94	6.60	6.60	6.60	6.60	6.60	4.73	2.87	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

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)	1.12E-06	3.38E-06	3.38E-06	2.67E-06	2.67E-06	2.67E-06	2.67E-06	2.67E-06	2.67E-06	2.31E-06	2.31E-06	2.31E-06	2.31E-06	2.31E-06	2.31E-06	2.31E-06	1.04E-06	1.04E-06	1.04E-06	1.04E-06	1.04E-06	1.04E-06	1.04E-06	1.04E-06	1.04E-06	1.04E-06	1.04E-06	1.04E-06	1.04E-06	1.04E-06	
Risk	3.74E-08	4.51E-07	4.51E-07	9.06E-08	9.06E-08	9.06E-08	9.06E-08	9.06E-08	9.06E-08	7.84E-08	7.84E-08	7.84E-08	7.84E-08	7.84E-08	7.84E-08	7.84E-08	1.19E-08	1.19E-08	1.19E-08	1.19E-08	1.19E-08	1.19E-08	1.19E-08	1.19E-08	1.19E-08	1.19E-08	1.19E-08	1.19E-08	1.19E-08	1.19E-08	
Rolling 3-yr Risk ^a				1.03E-06	6.33E-07	2.72E-07	2.72E-07	2.72E-07	2.72E-07	2.60E-07	2.47E-07	2.35E-07	2.35E-07	2.35E-07	2.35E-07	2.35E-07	1.69E-07	1.02E-07	3.57E-08	3.57E-08	3.57E-08	3.57E-08	3.57E-08	3.57E-08	3.57E-08	3.57E-08	3.57E-08	3.57E-08	3.57E-08	3.57E-08	
Risk per Million				1.03	0.63	0.27	0.27	0.27	0.27	0.26	0.25	0.24	0.24	0.24	0.24	0.24	0.17	0.10	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	

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)	1.12E-06	3.38E-06	3.38E-06	2.67E-06	2.67E-06	2.67E-06	2.67E-06	2.67E-06	2.67E-06	2.31E-06	2.31E-06	2.31E-06	2.31E-06	2.31E-06	2.31E-06	2.31E-06	1.04E-06	1.04E-06	1.04E-06	1.04E-06	1.04E-06	1.04E-06	1.04E-06	1.04E-06	1.04E-06	1.04E-06	1.04E-06	1.04E-06	1.04E-06	1.04E-06	
Risk	3.74E-08	4.51E-07	4.51E-07	9.06E-08	9.06E-08	9.06E-08	9.06E-08	9.06E-08	9.06E-08	7.84E-08	7.84E-08	7.84E-08	7.84E-08	7.84E-08	7.84E-08	7.84E-08	1.19E-08	1.19E-08	1.19E-08	1.19E-08	1.19E-08	1.19E-08	1.19E-08	1.19E-08	1.19E-08	1.19E-08	1.19E-08	1.19E-08	1.19E-08	1.19E-08	
Rolling 3-yr Risk ^a				1.03E-06	6.33E-07	2.72E-07	2.72E-07	2.72E-07	2.72E-07	2.60E-07	2.47E-07	2.35E-07	2.35E-07	2.35E-07	2.35E-07	2.35E-07	1.69E-07	1.02E-07	3.57E-08	3.57E-08	3.57E-08	3.57E-08	3.57E-08	3.57E-08	3.57E-08	3.57E-08	3.57E-08	3.57E-08	3.57E-08	3.57E-08	
Risk per Million				1.03	0.63	0.27	0.27	0.27	0.27	0.26	0.25	0.24	0.24	0.24	0.24	0.24	0.17	0.10	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	

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)	1.42E-05	1.42E-05	1.42E-05	1.42E-05	1.42E-05	1.42E-05	1.42E-05	1.42E-05	1.42E-05	1.42E-05	1.42E-05	1.42E-05	1.42E-05	1.42E-05	1.42E-05	1.42E-05	1.42E-05	1.42E-05	1.42E-05	1.42E-05	1.42E-05	1.42E-05	1.42E-05	1.42E-05	
Risk	2.23E-07	2.23E-07	2.23E-07	2.23E-07	2.23E-07	2.23E-07	2.23E-07	2.23E-07	2.23E-07	2.23E-07	2.23E-07	2.23E-07	2.23E-07	2.23E-07	2.23E-07	2.23E-07	2.23E-07	2.23E-07	2.23E-07	2.23E-07	2.23E-07	2.23E-07	2.23E-07	2.23E-07	
Rolling 3-yr Risk ^a			6.68E-07	6.68E-07	6.68E-07	6.68E-07	6.68E-07	6.68E-07	6.68E-07	6.68E-07	6.68E-07	6.68E-07	6.68E-07	6.68E-07	6.68E-07	6.68E-07	6.68E-07	6.68E-07	6.68E-07	6.68E-07	6.68E-07	6.68E-07	6.68E-07	6.68E-07	
Risk per Million			0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	

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

Morton Bay Geothermal Project 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	0.091	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	0.091	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).

Morton Bay Geothermal Project

Morton Bay 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.