



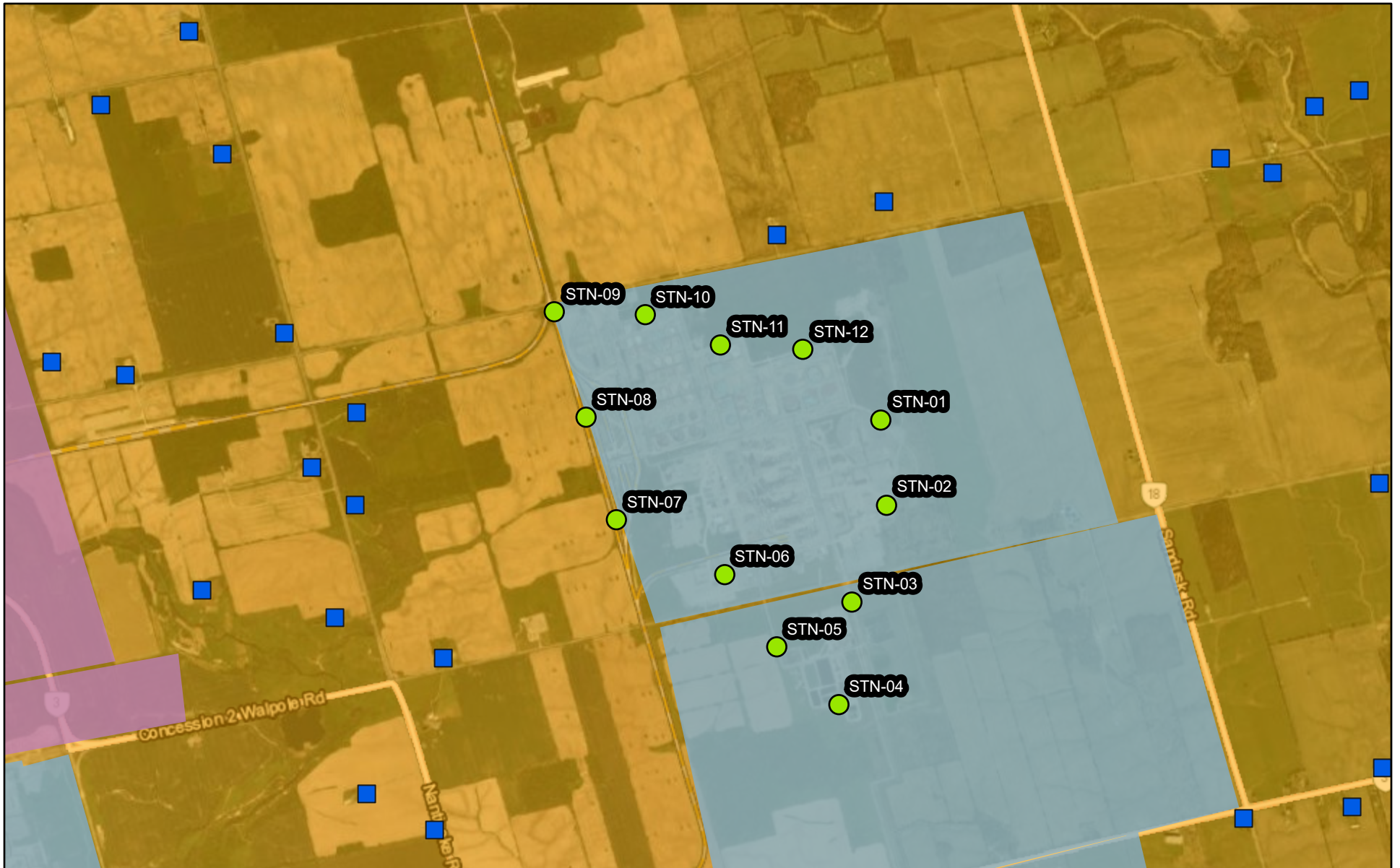
March 31, 2022

Subject: Annual Ambient Monitoring Report for Petroleum Refining – Industry Standard

As required by part X of the Petroleum Refining Industry Standard, under Ontario Regulation 419/05, Imperial's Nanticoke refinery is required to prepare and post an annual report of the fence line benzene air monitoring program.

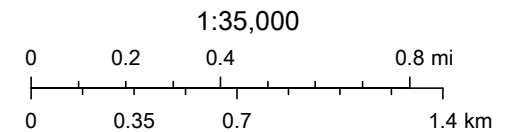
- i. The following map shows the location of each monitoring station required by subsection 60(1), the information required by clause 60(4)(d), and other topographical information including any nearby water bodies, roadways and adjacent land uses.

Nanticoke Refinery



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- Residences
- Industrial Land Use
- Monitoring Locations
- Industrial
- Heavy Industrial
- Agricultural Land Use



Esri, HERE, NRCAN, USDA FSA, GeoEye, Maxar

USDA FSA, GeoEye, Maxar | Esri, HERE, NRCAN |



i. A. Please see the table below with the benzene sampling results for the 2021 calendar year.

Station ID		1-FLARE	2-SPHERE	3-WWTP	4-WWTP	5-WWTP	6-FIREHALL	7-RAIL	8-RAIL	9-TERMINAL	10-TANKS	11-TANKS	12-TANKS
Location (Lat, Long)													
Date of Deployment/ Date of Retrieval/ Results (ug/m3)													
7 January 2021	21 January 2021	1.2	0.75	0.62	1.1	0.63	0.89	1.1	1.5	0.65	1.4	1.7	1.1
21 January 2021	4 February 2021	1.5	0.84	0.85	1.1	0.86	0.97	0.90	1.1	0.65	2.0	2.4	1.9
4 February 2021	18 February 2021	0.90	0.84	0.58	1.4	0.56	0.95	1.1	1.5	0.52	0.70	1.1	0.79
18 February 2021	4 March 2021	1.2	0.90	0.61	1.2	0.60	0.86	1.3	1.9	0.54	0.88	1.4	1.2
4 March 2021	18 March 2021	1.4	0.80	0.74	0.70	0.78	0.71	0.71	0.85	0.70	1.6	1.7	1.3
18 March 2021	1 April 2021	0.99	0.97	0.95	1.3	0.76	0.92	1.1	1.9	0.58	1.8	1.4	1.2
1 April 2021	15 April 2021	0.97	0.73	1.2	1.2	1.8	1.7	2.2	3.4	0.88	3.9	2	1.6
15 April 2021	29 April 2021	0.74	0.70	1	1.2	1.2	1.0	1.4	2.9	1.0	2.7	1.6	1.2
29 April 2021	13 May 2021	1.6	0.88	0.66	0.87	0.38	0.47	0.62	0.85	0.33	2.2	2.0	1.5
13 May 2021	27 May 2021	0.64	0.71	0.7	0.48	0.49	0.92	0.58	1.1	0.26	1.3	0.85	0.64
27 May 2021	10 June 2021	0.96	0.80	1.4	1.0	1.3	1.3	2.0	2.6	0.50	5.4	2.6	1.7
10 June 2021	24 June 2021	0.78	0.74	1.4	0.47	0.59	0.65	1.6	3.2	0.6	12	2.8	1.9
24 June 2021	8 July-2021	0.83	0.81	1.5	1.2	0.5	0.77	0.95	2.8	0.29	5.9	1.6	1.3
8 July 2021	22 July 2021	0.8	0.69	1.5	1.2	0.6	0.63	0.69	1.1	0.37	7.9	2.7	1.9
22 July 2021	5 August 2021	0.66	0.73	1.2	1.9	0.72	0.92	1.2	2.1	0.43	2.4	1.2	1.1
5 August 2021	19 August 2021	1.0	1.1	2.5	4.2	1.6	1.8	1.5	2.6	0.52	4.6	2.0	1.5
19 August 2021	2 September 2021	0.85	0.92	2.4	1.6	1.6	1.4	1.4	2.6	0.50	7.2	2.3	1.9
2 September 2021	16 September 2021	1.0	0.93	1.4	2.0	0.66	1.0	1.2	1.6	0.56	2.4	2.1	1.6
16 September 2021	30 September 2021	1.0	0.88	1.4	1.5	1.0	0.94	1.0	1.4	0.39	2.5	1.7	1.3
30 September 2021	14 October 2021	0.63	0.55	1.2	1.3	0.72	0.77	1.0	1.8	0.48	3.4	1.4	1.1
14 October 2021	28 October 2021	0.52	0.55	1.6	1.0	0.87	0.63	1.3	3.9	0.47	3.7	1.8	0.94
28 October 2021	11 November 2021	1.3	0.9	1.1	3	0.86	1	1.3	2.4	0.52	1.8	1.9	1.4
11 November 2021	25 November 2021	2.3	1.2	1.1	0.84	1.8	1.2	1.9	3.4	0.57	5.1	3.1	2.1
25 November 2021	9-December 2021	1.6	0.76	0.94	0.47	0.65	0.58	1.4	3.3	0.61	2.8	2.6	2.1
9-December 2021	23-December 2021	1.8	1.1	0.73	0.87	0.7	0.74	1.1	1.5	0.56	1.8	2.5	1.6

B. As per Section 61(1) of the standard, please see the below table for showing the 3-year (2018-2020) benzene measurement baseline:

Baseline Square of STD (S1):	1-FLARE	2-SPHERE	3-WWTP	4-WWTP	5-WWTP	6-FIREHALL	7-RAIL	8-RAIL	9-TERMINAL	10-TANKS	11-TANKS	12-TANKS
	0.22	0.13	0.24	0.20	0.14	0.10	0.12	0.08	0.12	0.20	0.09	0.14

C. Please see the table below for a summary showing the annual average benzene concentration results from the time that the monitor was first required by subsection 60(1).

Year/Results (ug/m3)	1-FLARE	2-SPHERE	3-WWTP	4-WWTP	5-WWTP	6-FIREHALL	7-RAIL	8-RAIL	9-TERMINAL	10-TANKS	11-TANKS	12-TANKS
2018	1.5	1.1	2.0	1.9	1.3	1.3	2.0	1.7	0.8	1.6	2.0	2.0
2019	1.6	1.3	1.8	1.3	1.2	1.2	1.8	1.7	0.7	1.9	2.0	2.1
2020	1.5	1.1	1.6	1.4	1.0	1.1	1.3	1.5	0.6	2.1	1.9	1.9
2021	1.1	0.8	1.2	1.3	0.9	1	1.2	2.1	0.6	3.5	2	1.5

