

ภาคผนวก

ภาคผนวก ก
รายงานผลการวิเคราะห์

คุณภาพอากาศในบรรยากาศ

ANALYSIS REPORT

CUSTOMER NAME : ESSO (THAILAND) PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : [REDACTED] e-mail : Phaisarn.Apiwatananon@bangchak.co.th
SAMPLING SOURCE : BAN AO UDOM
SAMPLE TYPE : AMBIENT
SAMPLING DATE : * ** ***
SAMPLING TIME : * ** ***
SAMPLING BY : MR SIRAPAT JONGPHADUNGKIET
ANALYZED BY : MISS JETJARIN TUMSA-AT
RECEIVED DATE : NOVEMBER 28, 2023
ANALYTICAL DATE : NOVEMBER 28-DECEMBER 1, 2023
REPORT NO. : 2023-U105540
WORK NO. : 2019-002022
ANALYSIS NO. : T23AX761-0008 - T23AX761-0010

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT		
			BAN AO UDOM		
			* T23AX761-0008	** T23AX761-0009	*** T23AX761-0010
TOTAL SUSPENDED PARTICULATE	mg/m ³	GRAVIMETRIC (HIGH VOLUME METHOD)	0.094	0.089	0.081
PARTICULATE MATTER (≤ 10 μm)	mg/m ³	GRAVIMETRIC (HIGH VOLUME METHOD)	0.052	0.042	0.032
SAMPLE CONDITION			COMPLETE	COMPLETE	COMPLETE

REMARK
TSP, PM10 : REFERENCE CONDITION IS 25 DEGREE CELSIUS AT 1 ATMOSPHERE.
TSP : US EPA, CODE OF FEDERAL REGULATIONS, 40 CFR CHAPTER I-PART 50 APPENDIX B, REFERENCE METHOD FOR THE DETERMINATION OF SUSPENDED PARTICULATE MATTER IN THE ATMOSPHERE (HIGH-VOLUME METHOD) REVISED AS OF JULY 1, 2021.
PM10 : US EPA, CODE OF FEDERAL REGULATIONS, 40 CFR CHAPTER I-PART 50 APPENDIX J, REFERENCE METHOD FOR THE DETERMINATION OF PARTICULATE MATTER AS PM10 IN THE ATMOSPHERE (HIGH-VOLUME METHOD) REVISED AS OF JULY 1, 2021.
* : SAMPLING FROM 09:00 HOUR ON NOVEMBER 18, 2023 TO 09:00 HOUR ON NOVEMBER 19, 2023.
** : SAMPLING FROM 09:00 HOUR ON NOVEMBER 19, 2023 TO 09:00 HOUR ON NOVEMBER 20, 2023.
*** : SAMPLING FROM 09:00 HOUR ON NOVEMBER 20, 2023 TO 09:00 HOUR ON NOVEMBER 21, 2023.



(MISS BUDSAKORN LERDPANUMAS)
LABORATORY SUPERVISOR

DECEMBER 7, 2023



ANALYSIS REPORT

CUSTOMER NAME : ESSO (THAILAND) PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : [REDACTED] e-mail : Phaisarn.Apiwatananon@bangchak.co.th
SAMPLING SOURCE : BAN AO UDOM
SAMPLE TYPE : AMBIENT
SAMPLING DATE : * * * * *
SAMPLING TIME : * * * * *
SAMPLING BY : MR SIRAPAT JONGPHADUNGKIET
ANALYZED BY : MISS JETJARIN TUMSA-AT
RECEIVED DATE : NOVEMBER 28, 2023
ANALYTICAL DATE : NOVEMBER 28-DECEMBER 1, 2023
REPORT NO. : 2023-U105541
WORK NO. : 2019-002022
ANALYSIS NO. : T23AX761-0011 - T23AX761-0014

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT			
			BAN AO UDOM			
			* T23AX761-0011	** T23AX761-0012	*** T23AX761-0013	**** T23AX761-0014
TOTAL SUSPENDED PARTICULATE	mg/m ³	GRAVIMETRIC (HIGH VOLUME METHOD)	0.090	0.084	0.072	0.096
PARTICULATE MATTER (≤ 10 µm)	mg/m ³	GRAVIMETRIC (HIGH VOLUME METHOD)	0.054	0.041	0.033	0.041
SAMPLE CONDITION			COMPLETE	COMPLETE	COMPLETE	COMPLETE

REMARK

TSP, PM10 : REFERENCE CONDITION IS 25 DEGREE CELSIUS AT 1 ATMOSPHERE.
TSP : US EPA, CODE OF FEDERAL REGULATIONS, 40 CFR CHAPTER I-PART 50 APPENDIX B, REFERENCE METHOD FOR THE DETERMINATION OF SUSPENDED PARTICULATE MATTER IN THE ATMOSPHERE (HIGH-VOLUME METHOD) REVISED AS OF JULY 1, 2021.
PM10 : US EPA, CODE OF FEDERAL REGULATIONS, 40 CFR CHAPTER I-PART 50 APPENDIX J, REFERENCE METHOD FOR THE DETERMINATION OF PARTICULATE MATTER AS PM10 IN THE ATMOSPHERE (HIGH-VOLUME METHOD) REVISED AS OF JULY 1, 2021.
* : SAMPLING FROM 09:00 HOUR ON NOVEMBER 21, 2023 TO 09:00 HOUR ON NOVEMBER 22, 2023.
** : SAMPLING FROM 09:00 HOUR ON NOVEMBER 22, 2023 TO 09:00 HOUR ON NOVEMBER 23, 2023.
*** : SAMPLING FROM 09:00 HOUR ON NOVEMBER 23, 2023 TO 09:00 HOUR ON NOVEMBER 24, 2023.
**** : SAMPLING FROM 09:00 HOUR ON NOVEMBER 24, 2023 TO 09:00 HOUR ON NOVEMBER 25, 2023.

[REDACTED]

(MISS BUDSAKORN LERDPANUMAS)
LABORATORY SUPERVISOR

DECEMBER 7, 2023



ANALYSIS REPORT

CUSTOMER NAME : BANGCHAK SRIRACHA PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : 0 3314 2891 e-mail : wanlop.boongor@bangchak.co.th
MEASURING PLACE : BAN AO UDOM
MEASURING TYPE : AMBIENT (AIR) **RECEIVED DATE** : NOVEMBER 18-25, 2023
MEASURING DATE : NOVEMBER 18-25, 2023 **ANALYTICAL DATE** : NOVEMBER 18-25, 2023
MEASURING TIME : * **REPORT NO.** : 2023-U104376
MEASURING METHOD : CHEMILUMINESCENCE **WORK NO.** : 2019-002022
MEASURED BY : MR SIRAPAT JONGPHADUNGKIET **ANALYSIS NO.** : T23AX761-0008 - T23AX761-0014

TIME *	RESULT (ppm)		
	NITROGEN DIOXIDE		
	BAN AO UDOM		
	NOVEMBER 18-19, 2023 T23AX761-0008	NOVEMBER 19-20, 2023 T23AX761-0009	NOVEMBER 20-21, 2023 T23AX761-0010
08:00-09:00 HOUR	0.0181	0.0181	0.0181
09:00-10:00 HOUR	0.0186	0.0180	0.0185
10:00-11:00 HOUR	0.0177	0.0191	0.0193
11:00-12:00 HOUR	0.0186	0.0194	0.0185
12:00-13:00 HOUR	0.0195	0.0186	0.0179
13:00-14:00 HOUR	0.0184	0.0185	0.0186
14:00-15:00 HOUR	0.0190	0.0179	0.0183
15:00-16:00 HOUR	0.0175	0.0179	0.0192
16:00-17:00 HOUR	0.0184	0.0184	0.0183
17:00-18:00 HOUR	0.0192	0.0189	0.0178
18:00-19:00 HOUR	0.0185	0.0182	0.0178
19:00-20:00 HOUR	0.0180	0.0181	0.0180
20:00-21:00 HOUR	0.0181	0.0180	0.0170
21:00-22:00 HOUR	0.0182	0.0172	0.0164
22:00-23:00 HOUR	0.0179	0.0163	0.0163
23:00-00:00 HOUR	0.0174	0.0159	0.0154
00:00-01:00 HOUR	0.0173	0.0154	0.0167
01:00-02:00 HOUR	0.0164	0.0168	0.0161
02:00-03:00 HOUR	0.0156	0.0154	0.0163
03:00-04:00 HOUR	0.0157	0.0160	0.0177
04:00-05:00 HOUR	0.0158	0.0168	0.0171
05:00-06:00 HOUR	0.0167	0.0164	0.0165
06:00-07:00 HOUR	0.0174	0.0169	0.0177
07:00-08:00 HOUR	0.0174	0.0177	0.0181



TIME *	RESULT (ppm)			
	NITROGEN DIOXIDE			
	BAN AO UDOM			
	NOVEMBER 21-22, 2023 T23AX761-0011	NOVEMBER 22-23, 2023 T23AX761-0012	NOVEMBER 23-24, 2023 T23AX761-0013	NOVEMBER 24-25, 2023 T23AX761-0014
08:00-09:00 HOUR	0.0187	0.0176	0.0177	0.0172
09:00-10:00 HOUR	0.0187	0.0181	0.0186	0.0182
10:00-11:00 HOUR	0.0186	0.0194	0.0191	0.0191
11:00-12:00 HOUR	0.0194	0.0184	0.0187	0.0181
12:00-13:00 HOUR	0.0179	0.0182	0.0194	0.0194
13:00-14:00 HOUR	0.0191	0.0192	0.0191	0.0186
14:00-15:00 HOUR	0.0184	0.0181	0.0182	0.0188
15:00-16:00 HOUR	0.0190	0.0184	0.0182	0.0179
16:00-17:00 HOUR	0.0179	0.0195	0.0194	0.0187
17:00-18:00 HOUR	0.0186	0.0188	0.0186	0.0189
18:00-19:00 HOUR	0.0183	0.0193	0.0188	0.0182
19:00-20:00 HOUR	0.0181	0.0181	0.0190	0.0182
20:00-21:00 HOUR	0.0174	0.0180	0.0187	0.0175
21:00-22:00 HOUR	0.0166	0.0177	0.0177	0.0173
22:00-23:00 HOUR	0.0154	0.0176	0.0164	0.0171
23:00-00:00 HOUR	0.0156	0.0170	0.0155	0.0164
00:00-01:00 HOUR	0.0168	0.0174	0.0169	0.0155
01:00-02:00 HOUR	0.0167	0.0168	0.0155	0.0153
02:00-03:00 HOUR	0.0170	0.0166	0.0160	0.0160
03:00-04:00 HOUR	0.0162	0.0174	0.0179	0.0163
04:00-05:00 HOUR	0.0155	0.0158	0.0163	0.0166
05:00-06:00 HOUR	0.0150	0.0162	0.0174	0.0168
06:00-07:00 HOUR	0.0165	0.0166	0.0158	0.0175
07:00-08:00 HOUR	0.0159	0.0174	0.0174	0.0177

(MR SILA BANJONGJAIKUK)
LABORATORY SUPERVISOR

DECEMBER 1, 2023

ANALYSIS REPORT

CUSTOMER NAME : BANGCHAK SRIRACHA PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : 0 3314 2891 e-mail : wanlop.boongor@bangchak.co.th
MEASURING PLACE : BAN AO UDOM
MEASURING TYPE : AMBIENT (AIR) **RECEIVED DATE** : NOVEMBER 18-25, 2023
MEASURING DATE : NOVEMBER 18-25, 2023 **ANALYTICAL DATE** : NOVEMBER 18-25, 2023
MEASURING TIME : * **REPORT NO.** : 2023-U104382
MEASURING METHOD : UV FLUORESCENCE **WORK NO.** : 2019-002022
MEASURED BY : MR SIRAPAT JONGPHADUNGKIET **ANALYSIS NO.** : T23AX761-0008 - T23AX761-0014

เวลา *	RESULT (ppm)		
	SULPHUR DIOXIDE		
	BAN AO UDOM		
	NOVEMBER 18-19, 2023 T23AX761-0008	NOVEMBER 19-20, 2023 T23AX761-0009	NOVEMBER 20-21, 2023 T23AX761-0010
08:00-09:00 HOUR	0.0033	0.0031	0.0033
09:00-10:00 HOUR	0.0030	0.0032	0.0031
10:00-11:00 HOUR	0.0031	0.0031	0.0030
11:00-12:00 HOUR	0.0033	0.0032	0.0033
12:00-13:00 HOUR	0.0033	0.0033	0.0031
13:00-14:00 HOUR	0.0030	0.0031	0.0032
14:00-15:00 HOUR	0.0031	0.0030	0.0030
15:00-16:00 HOUR	0.0032	0.0033	0.0031
16:00-17:00 HOUR	0.0032	0.0031	0.0032
17:00-18:00 HOUR	0.0031	0.0032	0.0030
18:00-19:00 HOUR	0.0030	0.0030	0.0029
19:00-20:00 HOUR	0.0029	0.0029	0.0026
20:00-21:00 HOUR	0.0028	0.0025	0.0026
21:00-22:00 HOUR	0.0027	0.0028	0.0025
22:00-23:00 HOUR	0.0027	0.0029	0.0029
23:00-00:00 HOUR	0.0025	0.0027	0.0025
00:00-01:00 HOUR	0.0028	0.0029	0.0025
01:00-02:00 HOUR	0.0025	0.0027	0.0027
02:00-03:00 HOUR	0.0025	0.0026	0.0027
03:00-04:00 HOUR	0.0025	0.0026	0.0028
04:00-05:00 HOUR	0.0027	0.0028	0.0027
05:00-06:00 HOUR	0.0028	0.0029	0.0028
06:00-07:00 HOUR	0.0029	0.0031	0.0029
07:00-08:00 HOUR	0.0030	0.0030	0.0030
AVERAGE 24 HOUR	0.0029	0.0030	0.0029



เวลา *	RESULT (ppm)			
	SULPHUR DIOXIDE			
	BAN AO UDOM			
	NOVEMBER 21-22, 2023 T23AX761-0011	NOVEMBER 22-23, 2023 T23AX761-0012	NOVEMBER 23-24, 2023 T23AX761-0013	NOVEMBER 24-25, 2023 T23AX761-0014
08:00-09:00 HOUR	0.0031	0.0031	0.0030	0.0030
09:00-10:00 HOUR	0.0032	0.0031	0.0031	0.0032
10:00-11:00 HOUR	0.0030	0.0032	0.0033	0.0031
11:00-12:00 HOUR	0.0031	0.0031	0.0030	0.0033
12:00-13:00 HOUR	0.0030	0.0033	0.0031	0.0031
13:00-14:00 HOUR	0.0033	0.0033	0.0032	0.0033
14:00-15:00 HOUR	0.0032	0.0030	0.0030	0.0030
15:00-16:00 HOUR	0.0031	0.0032	0.0031	0.0033
16:00-17:00 HOUR	0.0030	0.0033	0.0033	0.0032
17:00-18:00 HOUR	0.0033	0.0032	0.0030	0.0032
18:00-19:00 HOUR	0.0030	0.0031	0.0033	0.0030
19:00-20:00 HOUR	0.0029	0.0030	0.0032	0.0029
20:00-21:00 HOUR	0.0028	0.0028	0.0031	0.0028
21:00-22:00 HOUR	0.0025	0.0028	0.0030	0.0027
22:00-23:00 HOUR	0.0029	0.0029	0.0028	0.0025
23:00-00:00 HOUR	0.0028	0.0027	0.0026	0.0026
00:00-01:00 HOUR	0.0026	0.0028	0.0026	0.0028
01:00-02:00 HOUR	0.0029	0.0029	0.0028	0.0029
02:00-03:00 HOUR	0.0029	0.0025	0.0027	0.0028
03:00-04:00 HOUR	0.0025	0.0028	0.0027	0.0028
04:00-05:00 HOUR	0.0029	0.0029	0.0025	0.0027
05:00-06:00 HOUR	0.0028	0.0026	0.0026	0.0025
06:00-07:00 HOUR	0.0029	0.0027	0.0028	0.0026
07:00-08:00 HOUR	0.0030	0.0029	0.0030	0.0028
AVERAGE 24 HOUR	0.0029	0.0030	0.0030	0.0029

(MR SILA BANJONGJAIKUK)
LABORATORY SUPERVISOR

DECEMBER 1, 2023

ANALYSIS REPORT

CUSTOMER NAME : ESSO (THAILAND) PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : [REDACTED] e-mail : Phaisarn.Apiwatananon@bangchak.co.th
SAMPLING SOURCE : LAM CHABANG PORT'S G
SAMPLE TYPE : AMBIENT
SAMPLING DATE : *, **, ***
SAMPLING TIME : *, **, ***
SAMPLING BY : MR SIRAPAT JONGPHADUNGKIET
ANALYZED BY : MISS JETJARAN TUMSA-AT
RECEIVED DATE : NOVEMBER 28, 2023
ANALYTICAL DATE : NOVEMBER 28-DECEMBER 1, 2023
REPORT NO. : 2023-U105542
WORK NO. : 2019-002022
ANALYSIS NO. : T23AX761-0015 - T23AX761-0017

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT		
			LAM CHABANG PORT'S G		
			* T23AX761-0015	** T23AX761-0016	*** T23AX761-0017
TOTAL SUSPENDED PARTICULATE	mg/m ³	GRAVIMETRIC (HIGH VOLUME METHOD)	0.059	0.069	0.074
PARTICULATE MATTER (≤ 10 μm)	mg/m ³	GRAVIMETRIC (HIGH VOLUME METHOD)	0.029	0.036	0.022
SAMPLE CONDITION			COMPLETE	COMPLETE	COMPLETE

REMARK

TSP, PM10 : REFERENCE CONDITION IS 25 DEGREE CELSIUS AT 1 ATMOSPHERE.
TSP : US EPA, CODE OF FEDERAL REGULATIONS, 40 CFR CHAPTER I-PART 50 APPENDIX B, REFERENCE METHOD FOR THE DETERMINATION OF SUSPENDED PARTICULATE MATTER IN THE ATMOSPHERE (HIGH-VOLUME METHOD) REVISED AS OF JULY 1, 2021.
PM10 : US EPA, CODE OF FEDERAL REGULATIONS, 40 CFR CHAPTER I-PART 50 APPENDIX J, REFERENCE METHOD FOR THE DETERMINATION OF PARTICULATE MATTER AS PM10 IN THE ATMOSPHERE (HIGH-VOLUME METHOD) REVISED AS OF JULY 1, 2021.
* : SAMPLING FROM 09:30 HOUR ON NOVEMBER 18, 2023 TO 09:30 HOUR ON NOVEMBER 19, 2023.
** : SAMPLING FROM 09:30 HOUR ON NOVEMBER 19, 2023 TO 09:30 HOUR ON NOVEMBER 20, 2023.
*** : SAMPLING FROM 09:30 HOUR ON NOVEMBER 20, 2023 TO 09:30 HOUR ON NOVEMBER 21, 2023.

[REDACTED]

(MISS BUDSAKORN LERDPANUMAS)
LABORATORY SUPERVISOR

DECEMBER 7, 2023



ANALYSIS REPORT

CUSTOMER NAME : ESSO (THAILAND) PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : [REDACTED] e-mail : Phaisarn.Apiwatananon@bangchak.co.th
SAMPLING SOURCE : LAM CHABANG PORT'S G
SAMPLE TYPE : AMBIENT
SAMPLING DATE : *, **, ***, ****
SAMPLING TIME : *, **, ***, ****
SAMPLING BY : MR SIRAPAT JONGPHADUNGKIET
ANALYZED BY : MISS JETJARIN TUMSA-AT
RECEIVED DATE : NOVEMBER 28, 2023
ANALYTICAL DATE : NOVEMBER 28-DECEMBER 1, 2023
REPORT NO. : 2023-U105543
WORK NO. : 2019-002022
ANALYSIS NO. : T23AX761-0018 - T23AX761-0021

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT			
			LAM CHABANG PORT'S G			
			*	**	***	****
			T23AX761-0018	T23AX761-0019	T23AX761-0020	T23AX761-0021
TOTAL SUSPENDED PARTICULATE	mg/m ³	GRAVIMETRIC (HIGH VOLUME METHOD)	0.077	0.079	0.088	0.076
PARTICULATE MATTER (≤ 10 μm)	mg/m ³	GRAVIMETRIC (HIGH VOLUME METHOD)	0.036	0.030	0.026	0.032
SAMPLE CONDITION			COMPLETE	COMPLETE	COMPLETE	COMPLETE

REMARK
TSP, PM10 : REFERENCE CONDITION IS 25 DEGREE CELSIUS AT 1 ATMOSPHERE.
TSP : US EPA, CODE OF FEDERAL REGULATIONS, 40 CFR CHAPTER I-PART 50 APPENDIX B, REFERENCE METHOD FOR THE DETERMINATION OF SUSPENDED PARTICULATE MATTER IN THE ATMOSPHERE (HIGH-VOLUME METHOD) REVISED AS OF JULY 1, 2021.
PM10 : US EPA, CODE OF FEDERAL REGULATIONS, 40 CFR CHAPTER I-PART 50 APPENDIX J, REFERENCE METHOD FOR THE DETERMINATION OF PARTICULATE MATTER AS PM10 IN THE ATMOSPHERE (HIGH-VOLUME METHOD) REVISED AS OF JULY 1, 2021.
* : SAMPLING FROM 09:30 HOUR ON NOVEMBER 21, 2023 TO 09:30 HOUR ON NOVEMBER 22, 2023.
** : SAMPLING FROM 09:30 HOUR ON NOVEMBER 22, 2023 TO 09:30 HOUR ON NOVEMBER 23, 2023.
*** : SAMPLING FROM 09:30 HOUR ON NOVEMBER 23, 2023 TO 09:30 HOUR ON NOVEMBER 24, 2023.
**** : SAMPLING FROM 09:30 HOUR ON NOVEMBER 24, 2023 TO 09:30 HOUR ON NOVEMBER 25, 2023.

[REDACTED]

(MISS BUDSAKORN LERDPANUMAS)
LABORATORY SUPERVISOR

DECEMBER 7, 2023



ANALYSIS REPORT

CUSTOMER NAME : BANGCHAK SRIRACHA PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : [REDACTED] e-mail : wanlop.boongor@bangchak.co.th
MEASURING PLACE : LAM CHABANG PORT'S G
MEASURING TYPE : AMBIENT (AIR) **RECEIVED DATE** : NOVEMBER 18-25, 2023
MEASURING DATE : NOVEMBER 18-25, 2023 **ANALYTICAL DATE** : NOVEMBER 18-25, 2023
MEASURING TIME : * **REPORT NO.** : 2023-U104378
MEASURING METHOD : CHEMILUMINESCENCE **WORK NO.** : 2019-002022
MEASURED BY : MR SIRAPAT JONGPHADUNGKIET **ANALYSIS NO.** : T23AX761-0015 - T23AX761-0021

TIME *	RESULT (ppm)		
	NITROGEN DIOXIDE		
	LAM CHABANG PORT'S G		
	NOVEMBER 18-19, 2023 T23AX761-0015	NOVEMBER 19-20, 2023 T23AX761-0016	NOVEMBER 20-21, 2023 T23AX761-0017
08:00-09:00 HOUR	0.0192	0.0186	0.0193
09:00-10:00 HOUR	0.0194	0.0194	0.0194
10:00-11:00 HOUR	0.0196	0.0188	0.0195
11:00-12:00 HOUR	0.0188	0.0181	0.0182
12:00-13:00 HOUR	0.0184	0.0184	0.0195
13:00-14:00 HOUR	0.0192	0.0195	0.0187
14:00-15:00 HOUR	0.0192	0.0187	0.0193
15:00-16:00 HOUR	0.0192	0.0183	0.0188
16:00-17:00 HOUR	0.0177	0.0188	0.0189
17:00-18:00 HOUR	0.0180	0.0182	0.0197
18:00-19:00 HOUR	0.0195	0.0175	0.0193
19:00-20:00 HOUR	0.0182	0.0169	0.0186
20:00-21:00 HOUR	0.0195	0.0164	0.0179
21:00-22:00 HOUR	0.0179	0.0163	0.0176
22:00-23:00 HOUR	0.0173	0.0162	0.0175
23:00-00:00 HOUR	0.0166	0.0171	0.0175
00:00-01:00 HOUR	0.0176	0.0161	0.0161
01:00-02:00 HOUR	0.0169	0.0171	0.0174
02:00-03:00 HOUR	0.0159	0.0176	0.0161
03:00-04:00 HOUR	0.0178	0.0170	0.0167
04:00-05:00 HOUR	0.0166	0.0172	0.0167
05:00-06:00 HOUR	0.0174	0.0176	0.0160
06:00-07:00 HOUR	0.0176	0.0181	0.0170
07:00-08:00 HOUR	0.0179	0.0186	0.0176



TIME *	RESULT (ppm)			
	NITROGEN DIOXIDE			
	LAM CHABANG PORT'S G			
	NOVEMBER 21-22, 2023 T23AX761-0018	NOVEMBER 22-23, 2023 T23AX761-0019	NOVEMBER 23-24, 2023 T23AX761-0020	NOVEMBER 24-25, 2023 T23AX761-0021
08:00-09:00 HOUR	0.0184	0.0176	0.0195	0.0182
09:00-10:00 HOUR	0.0184	0.0179	0.0195	0.0186
10:00-11:00 HOUR	0.0192	0.0192	0.0188	0.0188
11:00-12:00 HOUR	0.0193	0.0195	0.0192	0.0178
12:00-13:00 HOUR	0.0188	0.0196	0.0192	0.0185
13:00-14:00 HOUR	0.0196	0.0195	0.0194	0.0190
14:00-15:00 HOUR	0.0189	0.0186	0.0195	0.0185
15:00-16:00 HOUR	0.0190	0.0190	0.0187	0.0197
16:00-17:00 HOUR	0.0185	0.0187	0.0196	0.0192
17:00-18:00 HOUR	0.0194	0.0180	0.0191	0.0195
18:00-19:00 HOUR	0.0181	0.0187	0.0194	0.0193
19:00-20:00 HOUR	0.0179	0.0184	0.0188	0.0187
20:00-21:00 HOUR	0.0178	0.0190	0.0178	0.0185
21:00-22:00 HOUR	0.0175	0.0177	0.0165	0.0177
22:00-23:00 HOUR	0.0161	0.0173	0.0171	0.0176
23:00-00:00 HOUR	0.0164	0.0165	0.0168	0.0166
00:00-01:00 HOUR	0.0177	0.0160	0.0166	0.0165
01:00-02:00 HOUR	0.0173	0.0172	0.0176	0.0175
02:00-03:00 HOUR	0.0169	0.0169	0.0174	0.0174
03:00-04:00 HOUR	0.0162	0.0175	0.0176	0.0170
04:00-05:00 HOUR	0.0168	0.0172	0.0162	0.0170
05:00-06:00 HOUR	0.0162	0.0182	0.0165	0.0166
06:00-07:00 HOUR	0.0170	0.0185	0.0176	0.0171
07:00-08:00 HOUR	0.0169	0.0190	0.0174	0.0178

(MR SILA BANJONGJAIKUK)
LABORATORY SUPERVISOR

DECEMBER 1, 2023

ANALYSIS REPORT

CUSTOMER NAME : BANGCHAK SRIRACHA PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : 0 3314 2891 e-mail : wanlop.boongor@bangchak.co.th
MEASURING PLACE : LAM CHABANG PORT'S G
MEASURING TYPE : AMBIENT (AIR) **RECEIVED DATE** : NOVEMBER 18-25, 2023
MEASURING DATE : NOVEMBER 18-25, 2023 **ANALYTICAL DATE** : NOVEMBER 18-25, 2023
MEASURING TIME : * **REPORT NO.** : 2023-U104384
MEASURING METHOD : UV FLUORESCENCE **WORK NO.** : 2019-002022
MEASURED BY : MR SIRAPAT JONGPHADUNGKIET **ANALYSIS NO.** : T23AX761-0015 - T23AX761-0021

เวลา *	RESULT (ppm)		
	SULPHUR DIOXIDE		
	LAM CHABANG PORT'S G		
	NOVEMBER 18-19, 2023 T23AX761-0015	NOVEMBER 19-20, 2023 T23AX761-0016	NOVEMBER 20-21, 2023 T23AX761-0017
08:00-09:00 HOUR	0.0031	0.0032	0.0031
09:00-10:00 HOUR	0.0033	0.0034	0.0034
10:00-11:00 HOUR	0.0034	0.0033	0.0033
11:00-12:00 HOUR	0.0031	0.0032	0.0032
12:00-13:00 HOUR	0.0031	0.0032	0.0031
13:00-14:00 HOUR	0.0032	0.0033	0.0032
14:00-15:00 HOUR	0.0032	0.0031	0.0034
15:00-16:00 HOUR	0.0031	0.0034	0.0033
16:00-17:00 HOUR	0.0032	0.0032	0.0032
17:00-18:00 HOUR	0.0033	0.0031	0.0031
18:00-19:00 HOUR	0.0032	0.0034	0.0031
19:00-20:00 HOUR	0.0031	0.0032	0.0029
20:00-21:00 HOUR	0.0030	0.0031	0.0029
21:00-22:00 HOUR	0.0029	0.0030	0.0030
22:00-23:00 HOUR	0.0032	0.0029	0.0031
23:00-00:00 HOUR	0.0032	0.0028	0.0029
00:00-01:00 HOUR	0.0032	0.0027	0.0028
01:00-02:00 HOUR	0.0032	0.0028	0.0027
02:00-03:00 HOUR	0.0029	0.0028	0.0028
03:00-04:00 HOUR	0.0032	0.0029	0.0028
04:00-05:00 HOUR	0.0030	0.0029	0.0029
05:00-06:00 HOUR	0.0028	0.0030	0.0030
06:00-07:00 HOUR	0.0032	0.0031	0.0030
07:00-08:00 HOUR	0.0032	0.0032	0.0031
AVERAGE 24 HOUR	0.0031	0.0031	0.0031



เวลา *	RESULT (ppm)			
	SULPHUR DIOXIDE			
	LAM CHABANG PORT'S G			
	NOVEMBER 21-22, 2023 T23AX761-0018	NOVEMBER 22-23, 2023 T23AX761-0019	NOVEMBER 23-24, 2023 T23AX761-0020	NOVEMBER 24-25, 2023 T23AX761-0021
08:00-09:00 HOUR	0.0031	0.0032	0.0030	0.0029
09:00-10:00 HOUR	0.0032	0.0034	0.0033	0.0031
10:00-11:00 HOUR	0.0034	0.0033	0.0032	0.0030
11:00-12:00 HOUR	0.0031	0.0034	0.0031	0.0030
12:00-13:00 HOUR	0.0031	0.0031	0.0033	0.0028
13:00-14:00 HOUR	0.0031	0.0032	0.0033	0.0031
14:00-15:00 HOUR	0.0032	0.0033	0.0032	0.0032
15:00-16:00 HOUR	0.0031	0.0031	0.0033	0.0032
16:00-17:00 HOUR	0.0033	0.0031	0.0034	0.0028
17:00-18:00 HOUR	0.0033	0.0032	0.0033	0.0029
18:00-19:00 HOUR	0.0034	0.0031	0.0034	0.0031
19:00-20:00 HOUR	0.0031	0.0034	0.0033	0.0028
20:00-21:00 HOUR	0.0030	0.0031	0.0032	0.0029
21:00-22:00 HOUR	0.0031	0.0028	0.0031	0.0030
22:00-23:00 HOUR	0.0032	0.0028	0.0028	0.0028
23:00-00:00 HOUR	0.0031	0.0032	0.0030	0.0029
00:00-01:00 HOUR	0.0032	0.0031	0.0029	0.0031
01:00-02:00 HOUR	0.0030	0.0031	0.0031	0.0032
02:00-03:00 HOUR	0.0031	0.0030	0.0030	0.0032
03:00-04:00 HOUR	0.0030	0.0029	0.0028	0.0031
04:00-05:00 HOUR	0.0031	0.0028	0.0032	0.0028
05:00-06:00 HOUR	0.0032	0.0029	0.0031	0.0030
06:00-07:00 HOUR	0.0031	0.0029	0.0029	0.0028
07:00-08:00 HOUR	0.0032	0.0029	0.0031	0.0030
AVERAGE 24 HOUR	0.0032	0.0031	0.0031	0.0030

[Redacted Signature]

(MR SILA BANJONGJAIKUK)
LABORATORY SUPERVISOR

DECEMBER 1, 2023

ANALYSIS REPORT

CUSTOMER NAME : ESSO (THAILAND) PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL [REDACTED] e-mail : Phaisarn.Apiwatananon@bangchak.co.th
SAMPLING SOURCE : K.U.STATION
SAMPLE TYPE : AMBIENT
SAMPLING DATE : * ** ***
SAMPLING TIME : * ** ***
SAMPLING BY : MR SIRAPAT JONGPHADUNGKIET
ANALYZED BY : MISS JETJARIN TUMSA-AT
RECEIVED DATE : NOVEMBER 28, 2023
ANALYTICAL DATE : NOVEMBER 28-DECEMBER 1, 2023
REPORT NO. : 2023-U105544
WORK NO. : 2019-002022
ANALYSIS NO. : T23AX761-0022 - T23AX761-0024

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT		
			K.U.STATION		
			* T23AX761-0022	** T23AX761-0023	*** T23AX761-0024
TOTAL SUSPENDED PARTICULATE	mg/m ³	GRAVIMETRIC (HIGH VOLUME METHOD)	0.041	0.058	0.050
PARTICULATE MATTER ($\leq 10 \mu\text{m}$)	mg/m ³	GRAVIMETRIC (HIGH VOLUME METHOD)	0.022	0.026	0.027
SAMPLE CONDITION			COMPLETE	COMPLETE	COMPLETE

REMARK

TSP, PM10 : REFERENCE CONDITION IS 25 DEGREE CELSIUS AT 1 ATMOSPHERE.
TSP : US EPA, CODE OF FEDERAL REGULATIONS, 40 CFR CHAPTER I-PART 50 APPENDIX B, REFERENCE METHOD FOR THE DETERMINATION OF SUSPENDED PARTICULATE MATTER IN THE ATMOSPHERE (HIGH-VOLUME METHOD) REVISED AS OF JULY 1, 2021.
PM10 : US EPA, CODE OF FEDERAL REGULATIONS, 40 CFR CHAPTER I-PART 50 APPENDIX J, REFERENCE METHOD FOR THE DETERMINATION OF PARTICULATE MATTER AS PM10 IN THE ATMOSPHERE (HIGH-VOLUME METHOD) REVISED AS OF JULY 1, 2021.
* : SAMPLING FROM 08:30 HOUR ON NOVEMBER 18, 2023 TO 08:30 HOUR ON NOVEMBER 19, 2023.
** : SAMPLING FROM 08:30 HOUR ON NOVEMBER 19, 2023 TO 08:30 HOUR ON NOVEMBER 20, 2023.
*** : SAMPLING FROM 08:30 HOUR ON NOVEMBER 20, 2023 TO 08:30 HOUR ON NOVEMBER 21, 2023.

[REDACTED]

(MISS BUDSAKORN LERDPANUMAS)
LABORATORY SUPERVISOR

DECEMBER 7, 2023



ANALYSIS REPORT

CUSTOMER NAME : ESSO (THAILAND) PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : [REDACTED] e-mail : Phaisarn.Apiwatananon@bangchak.co.th
SAMPLING SOURCE : K.U.STATION
SAMPLE TYPE : AMBIENT
SAMPLING DATE : *, **, ***, ****
SAMPLING TIME : *, **, ***, ****
SAMPLING BY : MR SIRAPAT JONGPHADUNGKIET
ANALYZED BY : MISS JETJARIN TUMSA-AT
RECEIVED DATE : NOVEMBER 28, 2023
ANALYTICAL DATE : NOVEMBER 28-DECEMBER 1, 2023
REPORT NO. : 2023-U105545
WORK NO. : 2019-002022
ANALYSIS NO. : T23AX761-0025 - T23AX761-0028

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT			
			K.U.STATION			
			*	**	***	****
			T23AX761-0025	T23AX761-0026	T23AX761-0027	T23AX761-0028
TOTAL SUSPENDED PARTICULATE	mg/m ³	GRAVIMETRIC (HIGH VOLUME METHOD)	0.036	0.051	0.045	0.058
PARTICULATE MATTER (≤ 10 µm)	mg/m ³	GRAVIMETRIC (HIGH VOLUME METHOD)	0.023	0.029	0.023	0.034
SAMPLE CONDITION			COMPLETE	COMPLETE	COMPLETE	COMPLETE

REMARK
TSP, PM10 : REFERENCE CONDITION IS 25 DEGREE CELSIUS AT 1 ATMOSPHERE.
TSP : US EPA, CODE OF FEDERAL REGULATIONS, 40 CFR CHAPTER I-PART 50 APPENDIX B, REFERENCE METHOD FOR THE DETERMINATION OF SUSPENDED PARTICULATE MATTER IN THE ATMOSPHERE (HIGH-VOLUME METHOD) REVISED AS OF JULY 1, 2021.
PM10 : US EPA, CODE OF FEDERAL REGULATIONS, 40 CFR CHAPTER I-PART 50 APPENDIX J, REFERENCE METHOD FOR THE DETERMINATION OF PARTICULATE MATTER AS PM10 IN THE ATMOSPHERE (HIGH-VOLUME METHOD) REVISED AS OF JULY 1, 2021.
* : SAMPLING FROM 08:30 HOUR ON NOVEMBER 21, 2023 TO 08:30 HOUR ON NOVEMBER 22, 2023.
** : SAMPLING FROM 08:30 HOUR ON NOVEMBER 22, 2023 TO 08:30 HOUR ON NOVEMBER 23, 2023.
*** : SAMPLING FROM 08:30 HOUR ON NOVEMBER 23, 2023 TO 08:30 HOUR ON NOVEMBER 24, 2023.
**** : SAMPLING FROM 08:30 HOUR ON NOVEMBER 24, 2023 TO 08:30 HOUR ON NOVEMBER 25, 2023.

(MISS BUDSAKORN LERDPANUMAS)
LABORATORY SUPERVISOR

DECEMBER 7, 2023



ANALYSIS REPORT

CUSTOMER NAME : BANGCHAK SRIRACHA PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : 0 3314 2891 e-mail : wanlop.boongor@bangchak.co.th
MEASURING PLACE : K.U.STATION
MEASURING TYPE : AMBIENT (AIR) **RECEIVED DATE** : NOVEMBER 18-25, 2023
MEASURING DATE : NOVEMBER 18-25, 2023 **ANALYTICAL DATE** : NOVEMBER 18-25, 2023
MEASURING TIME : * **REPORT NO.** : 2023-U104380
MEASURING METHOD : CHEMILUMINESCENCE **WORK NO.** : 2019-002022
MEASURED BY : MR SIRAPAT JONGPHADUNGKIET **ANALYSIS NO.** : T23AX761-0022 - T23AX761-0028

TIME *	RESULT (ppm)		
	NITROGEN DIOXIDE		
	K.U.STATION		
	NOVEMBER 18-19, 2023 T23AX761-0022	NOVEMBER 19-20, 2023 T23AX761-0023	NOVEMBER 20-21, 2023 T23AX761-0024
08:00-09:00 HOUR	0.0174	0.0177	0.0177
09:00-10:00 HOUR	0.0184	0.0187	0.0170
10:00-11:00 HOUR	0.0171	0.0189	0.0168
11:00-12:00 HOUR	0.0185	0.0180	0.0181
12:00-13:00 HOUR	0.0180	0.0173	0.0184
13:00-14:00 HOUR	0.0178	0.0179	0.0183
14:00-15:00 HOUR	0.0170	0.0180	0.0167
15:00-16:00 HOUR	0.0184	0.0177	0.0172
16:00-17:00 HOUR	0.0184	0.0171	0.0180
17:00-18:00 HOUR	0.0181	0.0169	0.0182
18:00-19:00 HOUR	0.0173	0.0163	0.0183
19:00-20:00 HOUR	0.0173	0.0163	0.0172
20:00-21:00 HOUR	0.0165	0.0149	0.0161
21:00-22:00 HOUR	0.0165	0.0156	0.0157
22:00-23:00 HOUR	0.0161	0.0142	0.0143
23:00-00:00 HOUR	0.0161	0.0155	0.0152
00:00-01:00 HOUR	0.0155	0.0139	0.0160
01:00-02:00 HOUR	0.0161	0.0150	0.0164
02:00-03:00 HOUR	0.0141	0.0159	0.0145
03:00-04:00 HOUR	0.0152	0.0146	0.0155
04:00-05:00 HOUR	0.0146	0.0164	0.0156
05:00-06:00 HOUR	0.0153	0.0165	0.0162
06:00-07:00 HOUR	0.0160	0.0172	0.0164
07:00-08:00 HOUR	0.0164	0.0172	0.0171



TIME *	RESULT (ppm)			
	NITROGEN DIOXIDE			
	K.U.STATION			
	NOVEMBER 21-22, 2023 T23AX761-0025	NOVEMBER 22-23, 2023 T23AX761-0026	NOVEMBER 23-24, 2023 T23AX761-0027	NOVEMBER 24-25, 2023 T23AX761-0028
08:00-09:00 HOUR	0.0183	0.0168	0.0182	0.0176
09:00-10:00 HOUR	0.0183	0.0178	0.0182	0.0177
10:00-11:00 HOUR	0.0186	0.0186	0.0166	0.0184
11:00-12:00 HOUR	0.0184	0.0185	0.0177	0.0185
12:00-13:00 HOUR	0.0171	0.0184	0.0177	0.0180
13:00-14:00 HOUR	0.0169	0.0163	0.0165	0.0178
14:00-15:00 HOUR	0.0185	0.0167	0.0173	0.0172
15:00-16:00 HOUR	0.0185	0.0170	0.0176	0.0175
16:00-17:00 HOUR	0.0181	0.0173	0.0178	0.0180
17:00-18:00 HOUR	0.0176	0.0183	0.0182	0.0179
18:00-19:00 HOUR	0.0180	0.0171	0.0173	0.0172
19:00-20:00 HOUR	0.0167	0.0164	0.0168	0.0166
20:00-21:00 HOUR	0.0168	0.0152	0.0166	0.0175
21:00-22:00 HOUR	0.0166	0.0148	0.0155	0.0166
22:00-23:00 HOUR	0.0155	0.0158	0.0141	0.0158
23:00-00:00 HOUR	0.0144	0.0142	0.0157	0.0161
00:00-01:00 HOUR	0.0141	0.0146	0.0160	0.0140
01:00-02:00 HOUR	0.0152	0.0143	0.0140	0.0166
02:00-03:00 HOUR	0.0149	0.0145	0.0164	0.0147
03:00-04:00 HOUR	0.0153	0.0155	0.0144	0.0153
04:00-05:00 HOUR	0.0153	0.0164	0.0144	0.0154
05:00-06:00 HOUR	0.0145	0.0163	0.0161	0.0155
06:00-07:00 HOUR	0.0150	0.0175	0.0157	0.0163
07:00-08:00 HOUR	0.0162	0.0167	0.0168	0.0165

(MR SILA BANJONGJAIKUK)
LABORATORY SUPERVISOR

DECEMBER 1, 2023

ANALYSIS REPORT

CUSTOMER NAME : BANGCHAK SRIRACHA PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : 0 3314 2891 e-mail : wanlop.boongor@bangchak.co.th
MEASURING PLACE : K.U.STATION
MEASURING TYPE : AMBIENT (AIR) **RECEIVED DATE** : NOVEMBER 18-25, 2023
MEASURING DATE : NOVEMBER 18-25, 2023 **ANALYTICAL DATE** : NOVEMBER 18-25, 2023
MEASURING TIME : * **REPORT NO.** : 2023-U104385
MEASURING METHOD : UV FLUORESCENCE **WORK NO.** : 2019-002022
MEASURED BY : MR SIRAPAT JONGPHADUNGKIET **ANALYSIS NO.** : T23AX761-0022 - T23AX761-0028

เวลา *	RESULT (ppm)		
	SULPHUR DIOXIDE		
	K.U.STATION		
	NOVEMBER 18-19, 2023 T23AX761-0022	NOVEMBER 19-20, 2023 T23AX761-0023	NOVEMBER 20-21, 2023 T23AX761-0024
08:00-09:00 HOUR	0.0031	0.0031	0.0033
09:00-10:00 HOUR	0.0032	0.0032	0.0033
10:00-11:00 HOUR	0.0033	0.0032	0.0034
11:00-12:00 HOUR	0.0034	0.0031	0.0032
12:00-13:00 HOUR	0.0031	0.0031	0.0034
13:00-14:00 HOUR	0.0034	0.0031	0.0032
14:00-15:00 HOUR	0.0034	0.0031	0.0034
15:00-16:00 HOUR	0.0034	0.0033	0.0033
16:00-17:00 HOUR	0.0033	0.0032	0.0032
17:00-18:00 HOUR	0.0033	0.0033	0.0031
18:00-19:00 HOUR	0.0033	0.0032	0.0030
19:00-20:00 HOUR	0.0031	0.0031	0.0028
20:00-21:00 HOUR	0.0029	0.0029	0.0027
21:00-22:00 HOUR	0.0028	0.0028	0.0029
22:00-23:00 HOUR	0.0027	0.0027	0.0029
23:00-00:00 HOUR	0.0027	0.0028	0.0030
00:00-01:00 HOUR	0.0028	0.0027	0.0027
01:00-02:00 HOUR	0.0027	0.0028	0.0029
02:00-03:00 HOUR	0.0027	0.0028	0.0028
03:00-04:00 HOUR	0.0028	0.0028	0.0029
04:00-05:00 HOUR	0.0029	0.0029	0.0030
05:00-06:00 HOUR	0.0030	0.0030	0.0030
06:00-07:00 HOUR	0.0030	0.0030	0.0031
07:00-08:00 HOUR	0.0031	0.0031	0.0031
AVERAGE 24 HOUR	0.0031	0.0030	0.0031



เวลา *	RESULT (ppm)			
	SULPHUR DIOXIDE			
	K.U.STATION			
	NOVEMBER 21-22, 2023 T23AX761-0025	NOVEMBER 22-23, 2023 T23AX761-0026	NOVEMBER 23-24, 2023 T23AX761-0027	NOVEMBER 24-25, 2023 T23AX761-0028
08:00-09:00 HOUR	0.0032	0.0030	0.0032	0.0030
09:00-10:00 HOUR	0.0033	0.0031	0.0031	0.0031
10:00-11:00 HOUR	0.0034	0.0031	0.0032	0.0034
11:00-12:00 HOUR	0.0034	0.0032	0.0033	0.0032
12:00-13:00 HOUR	0.0033	0.0031	0.0033	0.0034
13:00-14:00 HOUR	0.0034	0.0032	0.0032	0.0031
14:00-15:00 HOUR	0.0033	0.0031	0.0031	0.0033
15:00-16:00 HOUR	0.0032	0.0034	0.0032	0.0031
16:00-17:00 HOUR	0.0031	0.0032	0.0031	0.0031
17:00-18:00 HOUR	0.0030	0.0031	0.0030	0.0032
18:00-19:00 HOUR	0.0029	0.0030	0.0029	0.0032
19:00-20:00 HOUR	0.0029	0.0029	0.0028	0.0031
20:00-21:00 HOUR	0.0028	0.0028	0.0027	0.0029
21:00-22:00 HOUR	0.0027	0.0027	0.0027	0.0028
22:00-23:00 HOUR	0.0028	0.0030	0.0030	0.0030
23:00-00:00 HOUR	0.0027	0.0030	0.0027	0.0029
00:00-01:00 HOUR	0.0029	0.0028	0.0027	0.0030
01:00-02:00 HOUR	0.0027	0.0029	0.0029	0.0029
02:00-03:00 HOUR	0.0027	0.0030	0.0029	0.0029
03:00-04:00 HOUR	0.0029	0.0029	0.0027	0.0028
04:00-05:00 HOUR	0.0028	0.0028	0.0030	0.0030
05:00-06:00 HOUR	0.0029	0.0030	0.0028	0.0027
06:00-07:00 HOUR	0.0027	0.0030	0.0027	0.0028
07:00-08:00 HOUR	0.0030	0.0031	0.0029	0.0029
AVERAGE 24 HOUR	0.0030	0.0030	0.0030	0.0030

[Redacted Signature]

(MR SILA BANJONGJAIKUK)
LABORATORY SUPERVISOR

DECEMBER 1, 2023

ANALYSIS REPORT

CUSTOMER NAME : ESSO (THAILAND) PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : [REDACTED] e-mail : Phaisarn.Apiwatananon@bangchak.co.th
SAMPLING SOURCE : REFINERY GATE
SAMPLE TYPE : AMBIENT
SAMPLING DATE : *, **, ***
SAMPLING TIME : *, **, ***
SAMPLING BY : MR SIRAPAT JONGPHADUNGKIET
ANALYZED BY : MISS JETJARI TUMSA-AT
RECEIVED DATE : NOVEMBER 28, 2023
ANALYTICAL DATE : NOVEMBER 28-DECEMBER 1, 2023
REPORT NO. : 2023-U105535
WORK NO. : 2019-002022
ANALYSIS NO. : T23AX761-0001 - T23AX761-0003

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT		
			REFINERY GATE		
			* T23AX761-0001	** T23AX761-0002	*** T23AX761-0003
TOTAL SUSPENDED PARTICULATE	mg/m ³	GRAVIMETRIC (HIGH VOLUME METHOD)	0.063	0.056	0.057
PARTICULATE MATTER ($\leq 10 \mu\text{m}$)	mg/m ³	GRAVIMETRIC (HIGH VOLUME METHOD)	0.030	0.035	0.035
SAMPLE CONDITION			COMPLETE	COMPLETE	COMPLETE

REMARK

TSP, PM10 : REFERENCE CONDITION IS 25 DEGREE CELSIUS AT 1 ATMOSPHERE.
TSP : US EPA, CODE OF FEDERAL REGULATIONS, 40 CFR CHAPTER I-PART 50 APPENDIX B, REFERENCE METHOD FOR THE DETERMINATION OF SUSPENDED PARTICULATE MATTER IN THE ATMOSPHERE (HIGH-VOLUME METHOD) REVISED AS OF JULY 1, 2021.
PM10 : US EPA, CODE OF FEDERAL REGULATIONS, 40 CFR CHAPTER I-PART 50 APPENDIX J, REFERENCE METHOD FOR THE DETERMINATION OF PARTICULATE MATTER AS PM10 IN THE ATMOSPHERE (HIGH-VOLUME METHOD) REVISED AS OF JULY 1, 2021.
* : SAMPLING FROM 10:00 HOUR ON NOVEMBER 18, 2023 TO 10:00 HOUR ON NOVEMBER 19, 2023.
** : SAMPLING FROM 10:00 HOUR ON NOVEMBER 19, 2023 TO 10:00 HOUR ON NOVEMBER 20, 2023.
*** : SAMPLING FROM 10:00 HOUR ON NOVEMBER 20, 2023 TO 10:00 HOUR ON NOVEMBER 21, 2023.



(MISS BUDSAKORN LERDPANUMAS)
LABORATORY SUPERVISOR

DECEMBER 7, 2023



ANALYSIS REPORT

CUSTOMER NAME : ESSO (THAILAND) PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : [REDACTED] e-mail : Phaisarn.Apiwatananon@bangchak.co.th
SAMPLING SOURCE : REFINERY GATE
SAMPLE TYPE : AMBIENT
SAMPLING DATE : * ** *** ****
SAMPLING TIME : * ** *** ****
SAMPLING BY : MR SIRAPAT JONGPHADUNGKIET
ANALYZED BY : MISS JETJARIN TUMSA-AT
RECEIVED DATE : NOVEMBER 28, 2023
ANALYTICAL DATE : NOVEMBER 28-DECEMBER 1, 2023
REPORT NO. : 2023-U105538
WORK NO. : 2019-002022
ANALYSIS NO. : T23AX761-0004 - T23AX761-0007

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT			
			REFINERY GATE			
			* T23AX761-0004	** T23AX761-0005	*** T23AX761-0006	**** T23AX761-0007
TOTAL SUSPENDED PARTICULATE	mg/m ³	GRAVIMETRIC (HIGH VOLUME METHOD)	0.052	0.056	0.050	0.047
PARTICULATE MATTER (≤ 10 µm)	mg/m ³	GRAVIMETRIC (HIGH VOLUME METHOD)	0.029	0.034	0.028	0.023
SAMPLE CONDITION			COMPLETE	COMPLETE	COMPLETE	COMPLETE

REMARK
TSP, PM10 : REFERENCE CONDITION IS 25 DEGREE CELSIUS AT 1 ATMOSPHERE.
TSP : US EPA, CODE OF FEDERAL REGULATIONS, 40 CFR CHAPTER I-PART 50 APPENDIX B, REFERENCE METHOD FOR THE DETERMINATION OF SUSPENDED PARTICULATE MATTER IN THE ATMOSPHERE (HIGH-VOLUME METHOD) REVISED AS OF JULY 1, 2021.
PM10 : US EPA, CODE OF FEDERAL REGULATIONS, 40 CFR CHAPTER I-PART 50 APPENDIX J, REFERENCE METHOD FOR THE DETERMINATION OF PARTICULATE MATTER AS PM10 IN THE ATMOSPHERE (HIGH-VOLUME METHOD) REVISED AS OF JULY 1, 2021.
* : SAMPLING FROM 10:00 HOUR ON NOVEMBER 21, 2023 TO 10:00 HOUR ON NOVEMBER 22, 2023.
** : SAMPLING FROM 10:00 HOUR ON NOVEMBER 22, 2023 TO 10:00 HOUR ON NOVEMBER 23, 2023.
*** : SAMPLING FROM 10:00 HOUR ON NOVEMBER 23, 2023 TO 10:00 HOUR ON NOVEMBER 24, 2023.
**** : SAMPLING FROM 10:00 HOUR ON NOVEMBER 24, 2023 TO 10:00 HOUR ON NOVEMBER 25, 2023.

[REDACTED]

(MISS BUDSAKORN LERDPANUMAS)
LABORATORY SUPERVISOR

DECEMBER 7, 2023



ANALYSIS REPORT

CUSTOMER NAME : BANGCHAK SRIRACHA PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : 0 3314 2891 e-mail : wanlop.boongor@bangchak.co.th
MEASURING PLACE : REFINERY GATE
MEASURING TYPE : AMBIENT (AIR) **RECEIVED DATE** : NOVEMBER 18-25, 2023
MEASURING DATE : NOVEMBER 18-25, 2023 **ANALYTICAL DATE** : NOVEMBER 18-25, 2023
MEASURING TIME : * **REPORT NO.** : 2023-U104375
MEASURING METHOD : CHEMILUMINESCENCE **WORK NO.** : 2019-002022
MEASURED BY : MR SIRAPAT JONGPHADUNGKIET **ANALYSIS NO.** : T23AX761-0001 - T23AX761-0007

TIME *	RESULT (ppm)		
	NITROGEN DIOXIDE		
	REFINERY GATE		
	NOVEMBER 18-19, 2023 T23AX761-0001	NOVEMBER 19-20, 2023 T23AX761-0002	NOVEMBER 20-21, 2023 T23AX761-0003
08:00-09:00 HOUR	0.0220	0.0222	0.0228
09:00-10:00 HOUR	0.0226	0.0229	0.0236
10:00-11:00 HOUR	0.0228	0.0231	0.0225
11:00-12:00 HOUR	0.0231	0.0239	0.0237
12:00-13:00 HOUR	0.0246	0.0242	0.0230
13:00-14:00 HOUR	0.0226	0.0235	0.0233
14:00-15:00 HOUR	0.0239	0.0245	0.0245
15:00-16:00 HOUR	0.0224	0.0234	0.0241
16:00-17:00 HOUR	0.0243	0.0223	0.0232
17:00-18:00 HOUR	0.0229	0.0235	0.0226
18:00-19:00 HOUR	0.0231	0.0227	0.0215
19:00-20:00 HOUR	0.0246	0.0239	0.0208
20:00-21:00 HOUR	0.0244	0.0228	0.0200
21:00-22:00 HOUR	0.0240	0.0226	0.0209
22:00-23:00 HOUR	0.0225	0.0211	0.0211
23:00-00:00 HOUR	0.0217	0.0200	0.0220
00:00-01:00 HOUR	0.0199	0.0212	0.0206
01:00-02:00 HOUR	0.0205	0.0203	0.0205
02:00-03:00 HOUR	0.0220	0.0201	0.0201
03:00-04:00 HOUR	0.0203	0.0205	0.0202
04:00-05:00 HOUR	0.0211	0.0206	0.0210
05:00-06:00 HOUR	0.0213	0.0220	0.0214
06:00-07:00 HOUR	0.0206	0.0220	0.0217
07:00-08:00 HOUR	0.0216	0.0220	0.0228



TIME *	RESULT (ppm)			
	NITROGEN DIOXIDE			
	REFINERY GATE			
	NOVEMBER 21-22, 2023 T23AX761-0004	NOVEMBER 22-23, 2023 T23AX761-0005	NOVEMBER 23-24, 2023 T23AX761-0006	NOVEMBER 24-25, 2023 T23AX761-0007
08:00-09:00 HOUR	0.0223	0.0212	0.0231	0.0240
09:00-10:00 HOUR	0.0241	0.0213	0.0247	0.0233
10:00-11:00 HOUR	0.0224	0.0220	0.0239	0.0231
11:00-12:00 HOUR	0.0230	0.0225	0.0239	0.0235
12:00-13:00 HOUR	0.0243	0.0228	0.0238	0.0229
13:00-14:00 HOUR	0.0248	0.0233	0.0241	0.0242
14:00-15:00 HOUR	0.0222	0.0228	0.0231	0.0233
15:00-16:00 HOUR	0.0224	0.0228	0.0235	0.0235
16:00-17:00 HOUR	0.0217	0.0224	0.0238	0.0244
17:00-18:00 HOUR	0.0215	0.0231	0.0244	0.0240
18:00-19:00 HOUR	0.0205	0.0234	0.0246	0.0222
19:00-20:00 HOUR	0.0213	0.0233	0.0241	0.0211
20:00-21:00 HOUR	0.0210	0.0227	0.0223	0.0205
21:00-22:00 HOUR	0.0205	0.0242	0.0207	0.0219
22:00-23:00 HOUR	0.0196	0.0225	0.0215	0.0221
23:00-00:00 HOUR	0.0211	0.0213	0.0210	0.0202
00:00-01:00 HOUR	0.0202	0.0220	0.0218	0.0201
01:00-02:00 HOUR	0.0221	0.0209	0.0197	0.0206
02:00-03:00 HOUR	0.0211	0.0209	0.0202	0.0210
03:00-04:00 HOUR	0.0199	0.0216	0.0211	0.0207
04:00-05:00 HOUR	0.0223	0.0215	0.0222	0.0210
05:00-06:00 HOUR	0.0207	0.0220	0.0219	0.0214
06:00-07:00 HOUR	0.0201	0.0203	0.0227	0.0221
07:00-08:00 HOUR	0.0204	0.0218	0.0231	0.0227

(MR SILA BANJONGJAIKUK)
LABORATORY SUPERVISOR

DECEMBER 1, 2023

ANALYSIS REPORT

CUSTOMER NAME : BANGCHAK SRIRACHA PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : 0 3314 2891 e-mail : wanlop.boongor@bangchak.co.th
MEASURING PLACE : REFINERY GATE
MEASURING TYPE : AMBIENT (AIR) **RECEIVED DATE** : NOVEMBER 18-25, 2023
MEASURING DATE : NOVEMBER 18-25, 2023 **ANALYTICAL DATE** : NOVEMBER 18-25, 2023
MEASURING TIME : * **REPORT NO.** : 2023-U104381
MEASURING METHOD : UV FLUORESCENCE **WORK NO.** : 2019-002022
MEASURED BY : MR SIRAPAT JONGPHADUNGKIET **ANALYSIS NO.** : T23AX761-0001 - T23AX761-0007

เวลา *	RESULT (ppm)		
	SULPHUR DIOXIDE		
	REFINERY GATE		
	NOVEMBER 18-19, 2023 T23AX761-0001	NOVEMBER 19-20, 2023 T23AX761-0002	NOVEMBER 20-21, 2023 T23AX761-0003
08:00-09:00 HOUR	0.0035	0.0033	0.0034
09:00-10:00 HOUR	0.0039	0.0034	0.0036
10:00-11:00 HOUR	0.0036	0.0034	0.0039
11:00-12:00 HOUR	0.0037	0.0035	0.0037
12:00-13:00 HOUR	0.0036	0.0037	0.0037
13:00-14:00 HOUR	0.0039	0.0038	0.0037
14:00-15:00 HOUR	0.0036	0.0035	0.0039
15:00-16:00 HOUR	0.0037	0.0035	0.0039
16:00-17:00 HOUR	0.0036	0.0037	0.0039
17:00-18:00 HOUR	0.0037	0.0036	0.0035
18:00-19:00 HOUR	0.0035	0.0036	0.0038
19:00-20:00 HOUR	0.0036	0.0033	0.0038
20:00-21:00 HOUR	0.0035	0.0034	0.0038
21:00-22:00 HOUR	0.0036	0.0033	0.0037
22:00-23:00 HOUR	0.0035	0.0035	0.0035
23:00-00:00 HOUR	0.0033	0.0035	0.0035
00:00-01:00 HOUR	0.0035	0.0036	0.0034
01:00-02:00 HOUR	0.0036	0.0035	0.0033
02:00-03:00 HOUR	0.0033	0.0036	0.0031
03:00-04:00 HOUR	0.0033	0.0036	0.0031
04:00-05:00 HOUR	0.0036	0.0036	0.0032
05:00-06:00 HOUR	0.0036	0.0034	0.0034
06:00-07:00 HOUR	0.0035	0.0036	0.0035
07:00-08:00 HOUR	0.0035	0.0033	0.0037
AVERAGE 24 HOUR	0.0036	0.0035	0.0036



เวลา *	RESULT (ppm)			
	SULPHUR DIOXIDE			
	REFINERY GATE			
	NOVEMBER 21-22, 2023 T23AX761-0004	NOVEMBER 22-23, 2023 T23AX761-0005	NOVEMBER 23-24, 2023 T23AX761-0006	NOVEMBER 24-25, 2023 T23AX761-0007
08:00-09:00 HOUR	0.0036	0.0037	0.0036	0.0036
09:00-10:00 HOUR	0.0038	0.0036	0.0036	0.0039
10:00-11:00 HOUR	0.0039	0.0035	0.0037	0.0038
11:00-12:00 HOUR	0.0036	0.0038	0.0039	0.0037
12:00-13:00 HOUR	0.0035	0.0036	0.0036	0.0038
13:00-14:00 HOUR	0.0037	0.0038	0.0039	0.0039
14:00-15:00 HOUR	0.0037	0.0035	0.0037	0.0039
15:00-16:00 HOUR	0.0036	0.0035	0.0038	0.0035
16:00-17:00 HOUR	0.0036	0.0037	0.0035	0.0039
17:00-18:00 HOUR	0.0036	0.0039	0.0039	0.0036
18:00-19:00 HOUR	0.0037	0.0037	0.0036	0.0038
19:00-20:00 HOUR	0.0036	0.0036	0.0035	0.0036
20:00-21:00 HOUR	0.0035	0.0034	0.0036	0.0039
21:00-22:00 HOUR	0.0034	0.0035	0.0035	0.0038
22:00-23:00 HOUR	0.0036	0.0033	0.0034	0.0036
23:00-00:00 HOUR	0.0034	0.0035	0.0034	0.0034
00:00-01:00 HOUR	0.0032	0.0034	0.0035	0.0033
01:00-02:00 HOUR	0.0033	0.0034	0.0035	0.0033
02:00-03:00 HOUR	0.0033	0.0033	0.0034	0.0032
03:00-04:00 HOUR	0.0034	0.0032	0.0033	0.0034
04:00-05:00 HOUR	0.0035	0.0033	0.0035	0.0035
05:00-06:00 HOUR	0.0036	0.0034	0.0034	0.0035
06:00-07:00 HOUR	0.0035	0.0034	0.0035	0.0036
07:00-08:00 HOUR	0.0036	0.0035	0.0035	0.0037
AVERAGE 24 HOUR	0.0036	0.0035	0.0036	0.0036



(MR SILA BANJONGJAIKUK)
LABORATORY SUPERVISOR

DECEMBER 1, 2023

ทิศทางและความเร็วลม

ANALYSIS REPORT

CUSTOMER NAME : BANGCHAK SRIRACHA PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : 0 3314 2891 e-mail : wanlop.boongor@bangchak.co.th
MEASURING PLACE : BAN AO UDOM
MEASURING TYPE : AMBIENT (AIR) **RECEIVED DATE** : NOVEMBER 18-25, 2023
MEASURING DATE : NOVEMBER 18-25, 2023 **ANALYTICAL DATE** : NOVEMBER 18-25, 2023
MEASURING TIME : * **REPORT NO.** : 2023-U104389
MEASURING METHOD : WIND SPEED & WIND DIRECTION EQUIPMENT **WORK NO.** : 2019-002022
MEASURED BY : MR SIRAPAT JONGPHADUNGKIET **ANALYSIS NO.** : T23AX761-0008 - T23AX761-0014

TIME *	RESULT (m/s)					
	BAN AO UDOM					
	NOVEMBER 18-19, 2023 T23AX761-0008		NOVEMBER 19-20, 2023 T23AX761-0009		NOVEMBER 20-21, 2023 T23AX761-0010	
	WIND SPEED	WIND DIRECTION	WIND SPEED	WIND DIRECTION	WIND SPEED	WIND DIRECTION
08:00-09:00 HOUR	1.9	NE	2.5	NNE	2.6	E
09:00-10:00 HOUR	1.7	NNE	1.9	E	0.8	ESE
10:00-11:00 HOUR	3.4	E	1.0	NE	1.2	ESE
11:00-12:00 HOUR	1.0	NE	0.8	NNE	2.9	SE
12:00-13:00 HOUR	1.7	ENE	1.0	NNE	1.0	SE
13:00-14:00 HOUR	1.8	ENE	1.9	ENE	2.0	ESE
14:00-15:00 HOUR	0.9	ENE	2.3	NE	0.6	SE
15:00-16:00 HOUR	1.5	ENE	2.4	ENE	2.4	ESE
16:00-17:00 HOUR	1.8	ENE	1.6	NNE	2.3	ESE
17:00-18:00 HOUR	2.1	ENE	2.2	ENE	0.9	E
18:00-19:00 HOUR	2.3	NE	2.4	E	2.3	E
19:00-20:00 HOUR	2.2	ENE	1.0	ENE	1.0	E
20:00-21:00 HOUR	0.9	NE	3.0	E	1.7	E
21:00-22:00 HOUR	0.7	E	0.5	NNE	2.1	NNE
22:00-23:00 HOUR	2.1	NNE	2.7	NE	0.7	ENE
23:00-00:00 HOUR	3.2	E	1.4	E	2.4	E
00:00-01:00 HOUR	2.4	NE	1.7	ENE	2.8	ENE
01:00-02:00 HOUR	2.5	ENE	2.8	NE	2.0	E
02:00-03:00 HOUR	2.5	E	0.7	NE	3.1	ENE
03:00-04:00 HOUR	1.4	NE	2.4	NNE	2.6	NE
04:00-05:00 HOUR	2.3	NE	2.7	ENE	2.4	NNE
05:00-06:00 HOUR	2.2	ENE	2.0	NE	1.7	E
06:00-07:00 HOUR	0.8	E	2.7	NNE	1.2	E
07:00-08:00 HOUR	1.6	N	0.9	E	1.8	NNE



TIME *	RESULT (m/s)							
	BAN AO UDOM							
	NOVEMBER 21-22, 2023		NOVEMBER 22-23, 2023		NOVEMBER 23-24, 2023		NOVEMBER 24-25, 2023	
	T23AX761-0011		T23AX761-0012		T23AX761-0013		T23AX761-0014	
	WIND SPEED	WIND DIRECTION	WIND SPEED	WIND DIRECTION	WIND SPEED	WIND DIRECTION	WIND SPEED	WIND DIRECTION
08:00-09:00 HOUR	2.1	NNE	1.8	E	2.4	NNE	2.7	N
09:00-10:00 HOUR	1.8	NE	2.3	NE	1.9	NE	1.7	N
10:00-11:00 HOUR	1.5	E	2.0	NE	1.7	ENE	1.2	N
11:00-12:00 HOUR	2.2	NE	1.3	ENE	1.1	E	1.3	NNE
12:00-13:00 HOUR	0.9	NE	3.3	ENE	3.4	E	2.8	NNE
13:00-14:00 HOUR	2.2	E	1.5	NE	2.4	E	3.0	E
14:00-15:00 HOUR	1.8	NNE	2.1	E	2.9	NNE	2.7	NNE
15:00-16:00 HOUR	3.0	E	0.7	NNE	2.8	E	1.3	NNE
16:00-17:00 HOUR	1.4	E	3.1	NE	1.7	ENE	3.3	NE
17:00-18:00 HOUR	3.2	E	3.1	E	1.0	E	2.5	NE
18:00-19:00 HOUR	1.7	ENE	2.8	NNE	2.5	NNE	2.4	NE
19:00-20:00 HOUR	0.8	NE	0.5	NE	0.5	NNE	2.3	E
20:00-21:00 HOUR	2.3	E	2.5	E	3.2	NE	1.3	ENE
21:00-22:00 HOUR	3.1	NE	2.3	NE	2.4	ENE	1.1	NE
22:00-23:00 HOUR	2.7	NNE	1.5	NE	1.2	E	1.6	NNE
23:00-00:00 HOUR	2.8	ENE	2.3	NNE	1.2	NNE	1.7	NNE
00:00-01:00 HOUR	1.6	ENE	0.5	NE	2.4	NNE	1.8	NE
01:00-02:00 HOUR	2.3	E	2.7	NE	2.3	NE	1.4	ENE
02:00-03:00 HOUR	1.5	ENE	0.5	ENE	1.3	NNE	3.3	E
03:00-04:00 HOUR	1.3	ENE	1.8	E	0.9	E	2.5	ENE
04:00-05:00 HOUR	0.7	NE	1.0	E	2.6	NE	2.4	E
05:00-06:00 HOUR	1.6	E	0.7	NNE	2.3	NE	3.3	NNE
06:00-07:00 HOUR	2.6	ENE	1.1	NE	2.7	N	0.7	E
07:00-08:00 HOUR	2.9	ENE	1.5	ENE	0.6	N	1.4	E

(MR SILA BANJONGJAIKUK)
LABORATORY SUPERVISOR

DECEMBER 1, 2023

ANALYSIS REPORT

CUSTOMER NAME	: BANGCHAK SRIRACHA PUBLIC COMPANY LIMITED	RECEIVED DATE	: NOVEMBER 18-25, 2023
ADDRESS	: 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230	ANALYTICAL DATE	: NOVEMBER 18-25, 2023
CONTACT INFORMATION	: TEL : 0 3314 2891 e-mail : wanlop.boongor@bangchak.co.th	REPORT NO.	: 2023-U104390
MEASURING PLACE	: LAM CHABANG PORT'S G	WORK NO.	: 2019-002022
MEASURING TYPE	: AMBIENT (AIR)	ANALYSIS NO.	: T23AX761-0015 - T23AX761-0021
MEASURING DATE	: NOVEMBER 18-25, 2023		
MEASURING TIME	: *		
MEASURING METHOD	: WIND SPEED & WIND DIRECTION EQUIPMENT		
MEASURED BY	: MR SIRAPAT JONGPHADUNGKIET		

TIME *	RESULT (m/s)					
	LAM CHABANG PORT'S G					
	NOVEMBER 18-19, 2023 T23AX761-0015		NOVEMBER 19-20, 2023 T23AX761-0016		NOVEMBER 20-21, 2023 T23AX761-0017	
	WIND SPEED	WIND DIRECTION	WIND SPEED	WIND DIRECTION	WIND SPEED	WIND DIRECTION
08:00-09:00 HOUR	0.7	N	3.2	ENE	2.3	ESE
09:00-10:00 HOUR	1.9	E	1.5	E	2.7	E
10:00-11:00 HOUR	1.1	NE	1.2	E	0.9	E
11:00-12:00 HOUR	3.2	NE	2.5	NNE	3.2	NE
12:00-13:00 HOUR	1.0	ENE	2.8	NE	2.5	ENE
13:00-14:00 HOUR	1.1	ENE	1.6	N	2.1	ENE
14:00-15:00 HOUR	2.2	ENE	2.5	E	0.7	NNE
15:00-16:00 HOUR	1.3	NE	1.2	NNE	3.3	NE
16:00-17:00 HOUR	3.1	N	2.0	E	0.5	NE
17:00-18:00 HOUR	2.8	NE	3.3	NE	2.9	E
18:00-19:00 HOUR	2.4	NNE	0.7	NNE	1.1	NNE
19:00-20:00 HOUR	1.5	E	2.8	ENE	0.7	NE
20:00-21:00 HOUR	2.5	NNE	0.5	NNE	0.8	ENE
21:00-22:00 HOUR	3.5	ENE	2.5	NNE	3.0	NE
22:00-23:00 HOUR	2.0	NE	2.2	NNE	3.5	ENE
23:00-00:00 HOUR	1.8	NE	0.9	E	0.5	E
00:00-01:00 HOUR	2.3	NE	2.7	E	0.9	ENE
01:00-02:00 HOUR	2.7	ENE	3.1	E	1.3	NNE
02:00-03:00 HOUR	2.2	E	2.7	E	2.8	NE
03:00-04:00 HOUR	1.1	NE	2.3	ESE	1.1	ENE
04:00-05:00 HOUR	1.7	E	0.9	SE	3.0	NNE
05:00-06:00 HOUR	0.6	E	3.2	ESE	1.3	ENE
06:00-07:00 HOUR	2.2	NNE	3.1	ESE	1.2	E
07:00-08:00 HOUR	2.3	ENE	3.3	ESE	1.3	SE



TIME *	RESULT (m/s)							
	LAM CHABANG PORT'S G							
	NOVEMBER 21-22, 2023		NOVEMBER 22-23, 2023		NOVEMBER 23-24, 2023		NOVEMBER 24-25, 2023	
	T23AX761-0018		T23AX761-0019		T23AX761-0020		T23AX761-0021	
	WIND SPEED	WIND DIRECTION	WIND SPEED	WIND DIRECTION	WIND SPEED	WIND DIRECTION	WIND SPEED	WIND DIRECTION
08:00-09:00 HOUR	3.2	S	0.9	NE	2.8	E	1.1	NE
09:00-10:00 HOUR	2.4	SE	2.1	NNE	3.0	NNE	1.5	ENE
10:00-11:00 HOUR	2.6	ESE	3.2	NNE	1.6	E	1.2	NNE
11:00-12:00 HOUR	1.8	ESE	2.7	NNE	1.2	E	1.3	NE
12:00-13:00 HOUR	0.6	ENE	1.2	NE	2.9	NE	1.8	E
13:00-14:00 HOUR	1.2	ENE	3.5	ENE	3.1	E	0.9	NE
14:00-15:00 HOUR	1.8	ENE	1.6	ENE	1.3	E	1.1	NNE
15:00-16:00 HOUR	1.0	E	2.0	NE	3.1	NNE	1.8	ENE
16:00-17:00 HOUR	2.3	ENE	3.0	NNE	1.9	NE	3.0	NE
17:00-18:00 HOUR	0.9	NE	0.5	E	1.5	ENE	1.4	NNE
18:00-19:00 HOUR	3.4	NE	2.8	ENE	1.1	NNE	1.5	NNE
19:00-20:00 HOUR	1.4	E	0.9	NE	2.3	NE	1.1	NNE
20:00-21:00 HOUR	0.7	NNE	0.7	NNE	2.7	ENE	3.1	NE
21:00-22:00 HOUR	1.6	NNE	0.9	NE	3.1	ENE	2.4	ENE
22:00-23:00 HOUR	2.5	NNE	2.3	NNE	1.5	NE	1.6	NNE
23:00-00:00 HOUR	2.3	ENE	1.5	ENE	2.2	NE	3.2	ENE
00:00-01:00 HOUR	0.8	NNE	1.8	N	1.7	NNE	2.5	NNE
01:00-02:00 HOUR	0.6	N	2.7	NNE	1.7	E	3.0	ENE
02:00-03:00 HOUR	2.9	N	2.2	ENE	1.6	ENE	1.1	E
03:00-04:00 HOUR	1.2	N	0.6	NE	1.4	ENE	2.6	NNE
04:00-05:00 HOUR	1.7	N	1.2	E	1.3	NNE	2.4	ENE
05:00-06:00 HOUR	2.8	N	2.2	ENE	3.4	E	3.4	E
06:00-07:00 HOUR	0.5	N	0.7	ENE	2.2	NE	0.7	E
07:00-08:00 HOUR	3.0	NNE	0.7	ENE	2.3	E	2.0	NNE

(MR SILA BANJONGJAIKUK)
LABORATORY SUPERVISOR

DECEMBER 1, 2023

ANALYSIS REPORT

CUSTOMER NAME : BANGCHAK SRIRACHA PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : 0 3314 2891 e-mail : wanlop.boongor@bangchak.co.th
MEASURING PLACE : K.U.STATION
MEASURING TYPE : AMBIENT (AIR)
MEASURING DATE : NOVEMBER 18-25, 2023
MEASURING TIME : *
MEASURING METHOD : WIND SPEED & WIND DIRECTION EQUIPMENT
MEASURED BY : MR SIRAPAT JONGPHADUNGKIET

RECEIVED DATE : NOVEMBER 18-25, 2023
ANALYTICAL DATE : NOVEMBER 18-25, 2023
REPORT NO. : 2023-U104391
WORK NO. : 2019-002022
ANALYSIS NO. : T23AX761-0022 - T23AX761-0028

TIME *	RESULT (m/s)					
	K.U.STATION					
	NOVEMBER 18-19, 2023 T23AX761-0022		NOVEMBER 19-20, 2023 T23AX761-0023		NOVEMBER 20-21, 2023 T23AX761-0024	
	WIND SPEED	WIND DIRECTION	WIND SPEED	WIND DIRECTION	WIND SPEED	WIND DIRECTION
08:00-09:00 HOUR	1.2	NNE	2.9	N	0.6	ENE
09:00-10:00 HOUR	2.2	N	3.5	E	1.5	NE
10:00-11:00 HOUR	2.6	NNE	2.8	ENE	2.2	NNE
11:00-12:00 HOUR	1.8	N	1.5	N	2.3	ENE
12:00-13:00 HOUR	2.9	N	3.3	ENE	2.3	NE
13:00-14:00 HOUR	1.3	NNE	1.1	NNE	1.4	NNE
14:00-15:00 HOUR	2.0	NNE	3.2	ENE	1.2	N
15:00-16:00 HOUR	3.4	NE	3.2	E	2.7	ENE
16:00-17:00 HOUR	3.2	ENE	2.3	NE	3.5	ENE
17:00-18:00 HOUR	1.1	NE	1.4	ENE	1.3	NNE
18:00-19:00 HOUR	2.1	NE	1.2	NNE	1.1	E
19:00-20:00 HOUR	3.0	NE	2.6	NNE	0.6	NNE
20:00-21:00 HOUR	1.4	NE	1.9	E	1.5	ENE
21:00-22:00 HOUR	0.9	NE	1.2	N	0.6	E
22:00-23:00 HOUR	3.5	NE	2.4	NNE	2.4	E
23:00-00:00 HOUR	3.1	NNE	3.1	NNE	3.3	E
00:00-01:00 HOUR	2.6	E	2.7	NE	0.7	ESE
01:00-02:00 HOUR	1.8	E	1.0	ENE	2.5	SE
02:00-03:00 HOUR	1.5	ENE	1.0	ENE	2.3	SE
03:00-04:00 HOUR	2.5	ENE	2.0	E	0.7	ESE
04:00-05:00 HOUR	3.4	NE	3.1	NNE	1.6	SE
05:00-06:00 HOUR	2.1	ENE	3.0	E	2.7	SSE
06:00-07:00 HOUR	2.3	NNE	1.4	ENE	1.9	ESE
07:00-08:00 HOUR	0.9	NE	3.2	E	2.9	ESE



TIME *	RESULT (m/s)							
	K.U.STATION							
	NOVEMBER 21-22, 2023		NOVEMBER 22-23, 2023		NOVEMBER 23-24, 2023		NOVEMBER 24-25, 2023	
	T23AX761-0025		T23AX761-0026		T23AX761-0027		T23AX761-0028	
	WIND SPEED	WIND DIRECTION	WIND SPEED	WIND DIRECTION	WIND SPEED	WIND DIRECTION	WIND SPEED	WIND DIRECTION
08:00-09:00 HOUR	2.2	SSE	3.0	NE	0.5	NNE	1.8	NNE
09:00-10:00 HOUR	2.8	SE	2.9	ENE	3.5	NE	1.3	NNE
10:00-11:00 HOUR	2.8	SE	2.6	E	2.9	ENE	2.7	E
11:00-12:00 HOUR	2.1	ESE	2.0	NNE	1.7	ENE	2.1	NNE
12:00-13:00 HOUR	0.9	ESE	2.1	NE	0.9	E	3.2	ENE
13:00-14:00 HOUR	2.1	E	3.3	NNE	1.8	E	2.5	ENE
14:00-15:00 HOUR	1.6	E	2.4	NNE	3.0	NE	1.1	ENE
15:00-16:00 HOUR	2.6	E	2.7	E	1.1	NE	3.5	NE
16:00-17:00 HOUR	2.4	NE	1.0	NE	0.8	NE	1.1	NE
17:00-18:00 HOUR	2.7	NE	1.8	ENE	1.4	E	2.7	ENE
18:00-19:00 HOUR	1.0	NNE	2.9	E	1.7	NE	2.7	ENE
19:00-20:00 HOUR	0.7	NNE	3.2	NE	1.0	NE	3.4	E
20:00-21:00 HOUR	0.9	NNE	0.6	NE	0.9	E	3.4	ENE
21:00-22:00 HOUR	2.8	E	3.2	E	2.9	NNE	1.5	ENE
22:00-23:00 HOUR	0.7	ENE	1.4	ENE	0.9	ENE	0.6	NE
23:00-00:00 HOUR	3.4	ENE	3.2	ENE	1.3	NE	2.7	ENE
00:00-01:00 HOUR	1.2	NNE	1.8	E	1.4	ENE	0.9	ENE
01:00-02:00 HOUR	3.1	NNE	3.3	ENE	2.0	NNE	0.9	NE
02:00-03:00 HOUR	2.4	NE	2.6	NE	1.0	E	0.5	NNE
03:00-04:00 HOUR	2.9	N	1.4	ENE	1.3	ENE	2.3	NE
04:00-05:00 HOUR	3.3	E	3.5	ENE	2.8	ENE	1.2	E
05:00-06:00 HOUR	3.5	NNE	3.2	NNE	0.5	NE	2.8	NNE
06:00-07:00 HOUR	2.4	NE	2.2	NNE	2.4	E	0.5	ENE
07:00-08:00 HOUR	0.6	ENE	2.6	NNE	3.1	E	2.5	NE

(MR SILA BANJONGJAIKUK)
LABORATORY SUPERVISOR

DECEMBER 1, 2023

ANALYSIS REPORT

CUSTOMER NAME	: BANGCHAK SRIRACHA PUBLIC COMPANY LIMITED	RECEIVED DATE	: NOVEMBER 18-25, 2023
ADDRESS	: 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230	ANALYTICAL DATE	: NOVEMBER 18-25, 2023
CONTACT INFORMATION	: TEL : 0 3314 2891 e-mail : wanlop.boongor@bangchak.co.th	REPORT NO.	: 2023-U104387
MEASURING PLACE	: REFINERY GATE	WORK NO.	: 2019-002022
MEASURING TYPE	: AMBIENT (AIR)	ANALYSIS NO.	: T23AX761-0001 - T23AX761-0007
MEASURING DATE	: NOVEMBER 18-25, 2023		
MEASURING TIME	: *		
MEASURING METHOD	: WIND SPEED & WIND DIRECTION EQUIPMENT		
MEASURED BY	: MR SIRAPAT JONGPHADUNGKIET		

TIME *	RESULT (m/s)					
	REFINERY GATE					
	NOVEMBER 18-19, 2023 T23AX761-0001		NOVEMBER 19-20, 2023 T23AX761-0002		NOVEMBER 20-21, 2023 T23AX761-0003	
	WIND SPEED	WIND DIRECTION	WIND SPEED	WIND DIRECTION	WIND SPEED	WIND DIRECTION
08:00-09:00 HOUR	2.0	ENE	2.8	E	2.4	NE
09:00-10:00 HOUR	2.8	ENE	3.1	ENE	3.2	E
10:00-11:00 HOUR	3.4	ENE	2.7	NE	1.7	NE
11:00-12:00 HOUR	2.9	ENE	1.6	E	0.7	E
12:00-13:00 HOUR	1.6	NE	2.0	E	1.8	ENE
13:00-14:00 HOUR	1.6	NE	2.1	ENE	1.4	E
14:00-15:00 HOUR	1.9	ENE	2.4	NNE	1.4	NE
15:00-16:00 HOUR	1.7	NNE	3.3	ENE	0.6	NE
16:00-17:00 HOUR	3.5	ENE	3.2	NE	0.8	NNE
17:00-18:00 HOUR	1.6	NE	2.5	E	3.2	E
18:00-19:00 HOUR	2.2	NNE	1.2	ENE	1.3	ESE
19:00-20:00 HOUR	1.9	NE	2.8	ENE	1.7	ESE
20:00-21:00 HOUR	2.8	NE	1.2	ENE	3.5	SE
21:00-22:00 HOUR	2.5	ENE	1.3	E	0.7	SE
22:00-23:00 HOUR	1.7	NE	0.6	ENE	3.4	SE
23:00-00:00 HOUR	2.4	E	2.1	ENE	2.1	SSE
00:00-01:00 HOUR	1.8	ENE	3.2	NE	1.8	SSE
01:00-02:00 HOUR	3.3	NE	2.0	E	3.1	S
02:00-03:00 HOUR	0.6	NE	3.0	NNE	3.2	SSW
03:00-04:00 HOUR	2.0	NNE	2.2	NNE	1.0	SSW
04:00-05:00 HOUR	1.3	NNE	2.0	NNE	2.4	SW
05:00-06:00 HOUR	3.2	ENE	3.2	ENE	1.2	SSW
06:00-07:00 HOUR	1.7	E	0.9	ENE	1.1	SSW
07:00-08:00 HOUR	1.5	E	3.3	E	2.2	S



TIME *	RESULT (m/s)							
	REFINERY GATE							
	NOVEMBER 21-22, 2023		NOVEMBER 22-23, 2023		NOVEMBER 23-24, 2023		NOVEMBER 24-25, 2023	
	T23AX761-0004		T23AX761-0005		T23AX761-0006		T23AX761-0007	
	WIND SPEED	WIND DIRECTION	WIND SPEED	WIND DIRECTION	WIND SPEED	WIND DIRECTION	WIND SPEED	WIND DIRECTION
08:00-09:00 HOUR	1.1	SSE	1.9	NE	2.4	E	3.5	NE
09:00-10:00 HOUR	0.8	SE	1.1	NE	0.6	NNE	1.6	E
10:00-11:00 HOUR	2.7	ESE	1.0	NE	1.6	NNE	0.6	NE
11:00-12:00 HOUR	2.8	E	1.5	NNE	1.8	E	1.7	E
12:00-13:00 HOUR	2.0	E	1.7	E	1.8	NE	3.0	NNE
13:00-14:00 HOUR	2.0	E	1.6	NE	2.4	NNE	2.9	NNE
14:00-15:00 HOUR	1.1	E	3.2	E	1.5	NNE	2.1	NNE
15:00-16:00 HOUR	1.5	NNE	2.2	E	0.7	E	1.2	NNE
16:00-17:00 HOUR	3.3	ENE	1.1	NE	0.7	ENE	1.2	ENE
17:00-18:00 HOUR	1.8	NNE	1.0	ENE	3.4	E	0.9	NNE
18:00-19:00 HOUR	2.0	NNE	1.1	E	1.0	E	1.3	NNE
19:00-20:00 HOUR	2.9	ENE	1.5	ENE	1.7	NNE	3.2	E
20:00-21:00 HOUR	1.3	NE	1.0	ENE	2.8	NNE	1.5	NE
21:00-22:00 HOUR	3.1	NNE	1.7	ENE	0.8	NE	3.2	ENE
22:00-23:00 HOUR	0.6	NE	1.5	NE	1.8	E	3.1	NE
23:00-00:00 HOUR	0.9	NNE	1.6	E	3.3	NNE	3.2	ENE
00:00-01:00 HOUR	3.1	N	0.9	ENE	0.6	E	1.8	E
01:00-02:00 HOUR	1.6	N	2.6	NE	2.1	E	1.7	NE
02:00-03:00 HOUR	1.7	N	1.1	E	2.3	NE	3.2	ENE
03:00-04:00 HOUR	3.5	NE	2.4	NE	3.5	ENE	1.1	NE
04:00-05:00 HOUR	3.3	NNE	3.3	ENE	3.4	NNE	2.2	ENE
05:00-06:00 HOUR	1.9	NE	2.5	NE	1.0	E	3.4	ENE
06:00-07:00 HOUR	2.6	NE	1.9	NNE	2.3	ENE	1.7	NNE
07:00-08:00 HOUR	2.1	ENE	2.1	E	2.3	NE	1.2	E

(MR SILA BANJONGJAIKUK)
LABORATORY SUPERVISOR

DECEMBER 1, 2023

คุณภาพอากาศจากปล่องระบายอากาศ

ANALYSIS REPORT

CUSTOMER NAME : BANGCHAK SRIRACHA PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : [REDACTED] e-mail : Phaisarn.Apiwatananon@bangchak.co.th
SAMPLING SOURCE : BANGCHAK SRIRACHA PUBLIC COMPANY LIMITED
SAMPLE TYPE : STACK
SAMPLING DATE : NOVEMBER 24, 2023
SAMPLING TIME : 10:30-11:50 HOUR
SAMPLING BY : MR PARINYA KLOMKLIAO ๖-145-๖-0039
ANALYZED BY : MISS SUWAN KONGTHONG ๖-145-๖-0025

RECEIVED DATE : NOVEMBER 27, 2023
ANALYTICAL DATE : NOVEMBER 27-DECEMBER 1, 2023
REPORT NO. : 2023-U105735
WORK NO. : 2019-002022
ANALYSIS NO. : T23AX627-0001

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	
			CRUDE DISTILLATION FURNACE (F-101) T23AX627-0001	
			ACTUAL OXYGEN	7% OXYGEN
TOTAL SUSPENDED PARTICULATE	mg/m ³	ISOKINETIC, GRAVIMETRIC METHOD (US EPA METHOD 5)	2.85	2.54
SULPHUR DIOXIDE	ppm	ABSORPTION, BARIUM-THORIN TITRIMETRIC METHOD AT SITE (US EPA METHOD 6)	< 1.30	< 1.30
OXIDE OF NITROGEN AS NITROGEN DIOXIDE	ppm	ABSORPTION, PHENOLDISULFONIC ACID METHOD (US EPA METHOD 7)	62.2	55.5
SAMPLE CONDITION			COMPLETE	

DESCRIPTION	UNIT	RESULT
		CRUDE DISTILLATION FURNACE (F-101) T23AX627-0001
AMBIENT PRESSURE	mmHg	758
AMBIENT TEMPERATURE	°C	29.92
STACK TEMPERATURE	°C	375.5
DIAMETER	m	1.65
GAS VELOCITY	m/s	8.49
FLOW RATE	Nm ³ /hr	25,206.40
OXYGEN	%	5.32
MOISTURE	%	15.8
CARBONDIOXIDE	%	8.89
VOLUME OF DRY GAS AT STP	m ³	0.913493

REMARK

RESULT : REFERENCE CONDITION IS 25 DEGREE CELSIUS AT 1 ATMOSPHERE AND DRY BASIS.

(MISS BUDSAKORN LERDPANUMAS)
LABORATORY SUPERVISOR
๖-145-๖-0011
DECEMBER 7, 2023



ANALYSIS REPORT

CUSTOMER NAME : BANGCHAK SRIRACHA PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL [REDACTED] e-mail : Phaisarn.Apiwatananon@bangchak.co.th
SAMPLING SOURCE : BANGCHAK SRIRACHA PUBLIC COMPANY LIMITED
SAMPLE TYPE : STACK
SAMPLING DATE : NOVEMBER 24, 2023
SAMPLING TIME : 10:00-11:20 HOUR
SAMPLING BY : MR PARINYA KLOMKLIAO ๓-145-๓-0039
ANALYZED BY : MISS SUWAN KONGTHONG ๓-145-๓-0025

RECEIVED DATE : NOVEMBER 27, 2023
ANALYTICAL DATE : NOVEMBER 27-DECEMBER 1, 2023
REPORT NO. : 2023-U105736
WORK NO. : 2019-002022
ANALYSIS NO. : T23AX627-0002

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	
			CRUDE DISTILLATION FURNACE (F-102) T23AX627-0002	
			ACTUAL OXYGEN	7% OXYGEN
TOTAL SUSPENDED PARTICULATE	mg/m ³	ISOKINETIC, GRAVIMETRIC METHOD (US EPA METHOD 5)	1.39	1.16
SULPHUR DIOXIDE	ppm	ABSORPTION, BARIUM-THORIN TITRIMETRIC METHOD AT SITE (US EPA METHOD 6)	< 1.30	< 1.30
OXIDE OF NITROGEN AS NITROGEN DIOXIDE	ppm	ABSORPTION, PHENOLDISULFONIC ACID METHOD (US EPA METHOD 7)	46.5	38.8
SAMPLE CONDITION			COMPLETE	

DESCRIPTION	UNIT	RESULT
		CRUDE DISTILLATION FURNACE (F-102) T23AX627-0002
AMBIENT PRESSURE	mmHg	758
AMBIENT TEMPERATURE	°C	28
STACK TEMPERATURE	°C	232.25
DIAMETER	m	1.52
GAS VELOCITY	m/s	10.04
FLOW RATE	Nm ³ /hr	35,533.47
OXYGEN	%	4.27
MOISTURE	%	7.68
CARBONDIOXIDE	%	9.48
VOLUME OF DRY GAS AT STP	m ³	0.934184

REMARK

RESULT : REFERENCE CONDITION IS 25 DEGREE CELSIUS AT 1 ATMOSPHERE AND DRY BASIS.

(MISS BUDSAKORN LERDPANUMAS)
LABORATORY SUPERVISOR
๓-145-๓-0011
DECEMBER 7, 2023



ANALYSIS REPORT

CUSTOMER NAME : BANGCHAK SRIRACHA PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : [REDACTED] e-mail : Phaisarn.Apiwatananon@bangchak.co.th
SAMPLING SOURCE : BANGCHAK SRIRACHA PUBLIC COMPANY LIMITED
SAMPLE TYPE : STACK
RECEIVED DATE : NOVEMBER 27, 2023
SAMPLING DATE : NOVEMBER 21, 2023
ANALYTICAL DATE : NOVEMBER 27-DECEMBER 1, 2023
SAMPLING TIME : 10:45-12:00 HOUR
REPORT NO. : 2023-U105746
SAMPLING BY : MR PARINYA KLOMKLIAO ๓-145-๓-0039
WORK NO. : 2019-002022
ANALYZED BY : MISS SUWAN KONGTHONG ๓-145-๓-0025
ANALYSIS NO. : T23AX627-0010

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	
			COMMON STACK OF BOILER 3&4 T23AX627-0010	
			ACTUAL OXYGEN	7% OXYGEN
TOTAL SUSPENDED PARTICULATE	mg/m ³	ISOKINETIC, GRAVIMETRIC METHOD (US EPA METHOD 5)	2.79	4.47
SULPHUR DIOXIDE	ppm	ABSORPTION, BARIUM-THORIN TITRIMETRIC METHOD AT SITE (US EPA METHOD 6)	< 1.30	< 1.30
OXIDE OF NITROGEN AS NITROGEN DIOXIDE	ppm	ABSORPTION, PHENOLDISULFONIC ACID METHOD (US EPA METHOD 7)	32.4	51.9
SAMPLE CONDITION			COMPLETE	

DESCRIPTION	UNIT	RESULT
		COMMON STACK OF BOILER 3&4 T23AX627-0010
AMBIENT PRESSURE	mmHg	758
AMBIENT TEMPERATURE	°C	29.5
STACK TEMPERATURE	°C	285
DIAMETER	m	1.32
GAS VELOCITY	m/s	18.37
FLOW RATE	Nm ³ /hr	41,593.25
OXYGEN	%	12.22
MOISTURE	%	13.65
CARBONDIOXIDE	%	4.97
VOLUME OF DRY GAS AT STP	m ³	0.930134

REMARK

RESULT : REFERENCE CONDITION IS 25 DEGREE CELSIUS AT 1 ATMOSPHERE AND DRY BASIS.

(MISS BUDSAKORN LERDPANUMAS)
LABORATORY SUPERVISOR
๓-145-๓-0011
DECEMBER 7, 2023



ANALYSIS REPORT

CUSTOMER NAME : BANGCHAK SRIRACHA PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : [REDACTED] e-mail : Phaisarn.Apiwatananon@bangchak.co.th
SAMPLING SOURCE : BANGCHAK SRIRACHA PUBLIC COMPANY LIMITED
SAMPLE TYPE : STACK
SAMPLING DATE : NOVEMBER 23 2023
SAMPLING TIME : 10:30-12:00 HOUR
SAMPLING BY : MR PARINYA KLOMKLIAO ๓-145-๓-0039
ANALYZED BY : MISS SUWAN KONGTHONG ๓-145-๓-0025

RECEIVED DATE : NOVEMBER 27, 2023
ANALYTICAL DATE : NOVEMBER 27-DECEMBER 1, 2023
REPORT NO. : 2023-U105741
WORK NO. : 2019-002022
ANALYSIS NO. : T23AX627-0007

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	
			FCCU REGENERATOR T23AX627-0007	
			ACTUAL OXYGEN	7% OXYGEN
TOTAL SUSPENDED PARTICULATE	mg/m ³	ISOKINETIC, GRAVIMETRIC METHOD (US EPA METHOD 5)	23.2	17.3
SULPHUR DIOXIDE	ppm	ABSORPTION, BARIUM-THORIN TITRIMETRIC METHOD AT SITE (US EPA METHOD 6)	224	167
OXIDE OF NITROGEN AS NITROGEN DIOXIDE	ppm	ABSORPTION, PHENOLDISULFONIC ACID METHOD (US EPA METHOD 7)	31.2	23.3
SAMPLE CONDITION			COMPLETE	

DESCRIPTION	UNIT	RESULT
		FCCU REGENERATOR T23AX627-0007
AMBIENT PRESSURE	mmHg	758
AMBIENT TEMPERATURE	°C	28.67
STACK TEMPERATURE	°C	271.5
DIAMETER	m	1.58
GAS VELOCITY	m/s	38.59
FLOW RATE	Nm ³ /hr	127,213.67
OXYGEN	%	2.27
MOISTURE	%	14.96
CARBONDIOXIDE	%	13.37
VOLUME OF DRY GAS AT STP	m ³	0.931137

REMARK

RESULT : REFERENCE CONDITION IS 25 DEGREE CELSIUS AT 1 ATMOSPHERE AND DRY BASIS.

[REDACTED]
(MISS BUDSAKORN LERDPANUMAS)
LABORATORY SUPERVISOR
๓-145-๓-0011
DECEMBER 7, 2023



ANALYSIS REPORT

CUSTOMER NAME : BANGCHAK SRIRACHA PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : [REDACTED] e-mail : Phaisarn.Apiwatananon@bangchak.co.th
SAMPLING SOURCE : BANGCHAK SRIRACHA PUBLIC COMPANY LIMITED
SAMPLE TYPE : STACK
SAMPLING DATE : NOVEMBER 23, 2023
SAMPLING TIME : 10:40-11:10 HOUR
SAMPLING BY : MR PARINYA KLOMKLIAO
ANALYZED BY : MISS SUWAN KONGTHONG

RECEIVED DATE : NOVEMBER 27, 2023
ANALYTICAL DATE : NOVEMBER 27-DECEMBER 1, 2023
REPORT NO. : 2023-U105742
WORK NO. : 2019-002022
ANALYSIS NO. : T23AX627-0007

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	
			FCCU REGENERATOR T23AX627-0007	
			ACTUAL OXYGEN	7% OXYGEN
HYDROGEN CYANIDE	mg/m ³	FILTERING, ION-SPECIFIC ELECTRODE METHOD (OSHA METHOD ID120)	< 0.20	< 0.20
SAMPLE CONDITION			COMPLETE	

DESCRIPTION	UNIT	RESULT
		FCCU REGENERATOR T23AX627-0007
AMBIENT PRESSURE	mmHg	758
AMBIENT TEMPERATURE	°C	28.67
STACK TEMPERATURE	°C	271.5
DIAMETER	m	1.58
GAS VELOCITY	m/s	38.59
FLOW RATE	Nm ³ /hr	127,213.67
OXYGEN	%	2.27
MOISTURE	%	14.96
CARBONDIOXIDE	%	13.37
VOLUME OF DRY GAS AT STP	m ³	0.931137

REMARK

RESULT : REFERENCE CONDITION IS 25 DEGREE CELSIUS AT 1 ATMOSPHERE AND DRY BASIS.

(MISS BUDSAKORN LERDPANUMAS)
LABORATORY SUPERVISOR

DECEMBER 7, 2023



ANALYSIS REPORT

CUSTOMER NAME : BANGCHAK SRIRACHA PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : [REDACTED] e-mail : Phaisarn.Apiwatananon@bangchak.co.th
SAMPLING SOURCE : BANGCHAK SRIRACHA PUBLIC COMPANY LIMITED
SAMPLE TYPE : STACK
SAMPLING DATE : NOVEMBER 22, 2023
SAMPLING TIME : 10:20-11:40 HOUR
SAMPLING BY : MR PARINYA KLOMKLIAO ๖-145-๖-0039
ANALYZED BY : MISS SUWAN KONGTHONG ๖-145-๖-0025

RECEIVED DATE : NOVEMBER 27, 2023
ANALYTICAL DATE : NOVEMBER 27-DECEMBER 1, 2023
REPORT NO. : 2023-U105745
WORK NO. : 2019-002022
ANALYSIS NO. : T23AX627-0009

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	
			COMMON STACK OF PAREX FURNACE T23AX627-0009	
			ACTUAL OXYGEN	7% OXYGEN
TOTAL SUSPENDED PARTICULATE	mg/m ³	ISOKINETIC, GRAVIMETRIC METHOD (US EPA METHOD 5)	0.65	0.53
SULPHUR DIOXIDE	ppm	ABSORPTION, BARIUM-THORIN TITRIMETRIC METHOD AT SITE (US EPA METHOD 6)	< 1.30	< 1.30
OXIDE OF NITROGEN AS NITROGEN DIOXIDE	ppm	ABSORPTION, PHENOLDISULFONIC ACID METHOD (US EPA METHOD 7)	14.8	12.2
SAMPLE CONDITION			COMPLETE	

DESCRIPTION	UNIT	RESULT
		COMMON STACK OF PAREX FURNACE T23AX627-0009
AMBIENT PRESSURE	mmHg	758
AMBIENT TEMPERATURE	°C	29.58
STACK TEMPERATURE	°C	223.08
DIAMETER	m	3.65
GAS VELOCITY	m/s	7.44
FLOW RATE	Nm ³ /hr	144,064.69
OXYGEN	%	3.94
MOISTURE	%	14.05
CARBONDIOXIDE	%	9.66
VOLUME OF DRY GAS AT STP	m ³	0.928544

REMARK

RESULT : REFERENCE CONDITION IS 25 DEGREE CELSIUS AT 1 ATMOSPHERE AND DRY BASIS.

(MISS BUDSAKORN LERDPANUMAS)
LABORATORY SUPERVISOR
๖-145-๖-0011
DECEMBER 7, 2023



ANALYSIS REPORT

CUSTOMER NAME : BANGCHAK SRIRACHA PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : [REDACTED] e-mail : Phaisarn.Apiwatananon@bangchak.co.th
SAMPLING SOURCE : BANGCHAK SRIRACHA PUBLIC COMPANY LIMITED
SAMPLE TYPE : STACK
SAMPLING DATE : NOVEMBER 20, 2023
SAMPLING TIME : 10:40-11:30 HOUR
SAMPLING BY : MR PARINYA KLOMKLIAO ๓-145-๓-0039
ANALYZED BY : MISS SUWAN KONGTHONG ๓-145-๓-0025

RECEIVED DATE : NOVEMBER 27, 2023
ANALYTICAL DATE : NOVEMBER 27-DECEMBER 1, 2023
REPORT NO. : 2023-U105739
WORK NO. : 2019-002022
ANALYSIS NO. : T23AX627-0005

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	
			GTG-1+HRSG-1 (3001) T23AX627-0005	
			ACTUAL OXYGEN	7% OXYGEN
SULPHUR DIOXIDE	ppm	ABSORPTION, BARIUM-THORIN TITRIMETRIC METHOD AT SITE (US EPA METHOD 6)	< 1.30	< 1.30
OXIDE OF NITROGEN AS NITROGEN DIOXIDE	ppm	ABSORPTION, PHENOLDISULFONIC ACID METHOD (US EPA METHOD 7)	32.3	89.8
SAMPLE CONDITION			COMPLETE	

DESCRIPTION	UNIT	RESULT
		GTG-1+HRSG-1 (3001) T23AX627-0005
AMBIENT PRESSURE	mmHg	758
AMBIENT TEMPERATURE	°C	28.67
STACK TEMPERATURE	°C	208.58
DIAMETER	m	2.95
GAS VELOCITY	m/s	8.62
FLOW RATE	Nm³/hr	119,661.49
OXYGEN	%	15.9
MOISTURE	%	8.51
CARBONDIOXIDE	%	2.89
VOLUME OF DRY GAS AT STP	m³	0.584525

REMARK

RESULT : REFERENCE CONDITION IS 25 DEGREE CELSIUS AT 1 ATMOSPHERE AND DRY BASIS.

(MISS BUDSAKORN LERDPANUMAS)
LABORATORY SUPERVISOR
๓-145-๓-0011
DECEMBER 7, 2023



ANALYSIS REPORT

CUSTOMER NAME	: BANGCHAK SRIRACHA PUBLIC COMPANY LIMITED	RECEIVED DATE	: NOVEMBER 27, 2023
ADDRESS	: 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230	ANALYTICAL DATE	: NOVEMBER 27-DECEMBER 1, 2023
CONTACT INFORMATION	: TEL. [REDACTED] e-mail : Phaisarn.Apiwatananon@bangchak.co.th	REPORT NO.	: 2023-U105740
SAMPLING SOURCE	: BANGCHAK SRIRACHA PUBLIC COMPANY LIMITED	WORK NO.	: 2019-002022
SAMPLE TYPE	: STACK	ANALYSIS NO.	: T23AX627-0006
SAMPLING DATE	: NOVEMBER 20, 2023		
SAMPLING TIME	: 11:00-11:50 HOUR		
SAMPLING BY	: MR PARINYA KLOMKLIAO ๖-145-๖-0039		
ANALYZED BY	: MISS SUWAN KONGTHONG ๖-145-๖-0025		

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	
			GTG-2+HRSG-2 (4001) T23AX627-0006	
			ACTUAL OXYGEN	7% OXYGEN
SULPHUR DIOXIDE	ppm	ABSORPTION, BARIUM-THORIN TITRIMETRIC METHOD AT SITE (US EPA METHOD 6)	< 1.30	< 1.30
OXIDE OF NITROGEN AS NITROGEN DIOXIDE	ppm	ABSORPTION, PHENOLDISULFONIC ACID METHOD (US EPA METHOD 7)	11.7	35.6
SAMPLE CONDITION			COMPLETE	

DESCRIPTION	UNIT	RESULT
		GTG-2+HRSG-2 (4001) T23AX627-0006
AMBIENT PRESSURE	mmHg	758
AMBIENT TEMPERATURE	°C	26.42
STACK TEMPERATURE	°C	212.42
DIAMETER	m	2.95
GAS VELOCITY	m/s	10.69
FLOW RATE	Nm³/hr	143,830.74
OXYGEN	%	16.34
MOISTURE	%	10.64
CARBONDIOXIDE	%	2.64
VOLUME OF DRY GAS AT STP	m³	0.569769

REMARK

RESULT : REFERENCE CONDITION IS 25 DEGREE CELSIUS AT 1 ATMOSPHERE AND DRY BASIS.

(MISS BUDSAKORN LERDPANUMAS)
LABORATORY SUPERVISOR
๖-145-๖-0011
DECEMBER 7, 2023



ANALYSIS REPORT

CUSTOMER NAME	: ESSO (THAILAND) PUBLIC COMPANY LIMITED	RECEIVED DATE	: OCTOBER 9, 2023
ADDRESS	: 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230	ANALYTICAL DATE	: OCTOBER 9-12, 2023
CONTACT INFORMATION	: TEL : 0 3314 2416 e-mail : sitanun.chayochaichana@exxonmobil.com	REPORT NO.	: 2023-U088134
SAMPLING SOURCE	: ESSO (THAILAND) PUBLIC COMPANY LIMITED	WORK NO.	: 2019-002022
SAMPLE TYPE	: STACK	ANALYSIS NO.	: T23AU052-0001
SAMPLING DATE	: OCTOBER 9, 2023		
SAMPLING TIME	: 10:10-11:10 HOUR		
SAMPLING BY	: MR ATTHAPORN THEPTONG จ-145-จ-0008		
ANALYZED BY	: MISS SUWAN KONGTHONG จ-145-ค-0025		

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	
			GTG-3+HRSG-3 (5101) T23AU052-0001	
			ACTUAL OXYGEN	7% OXYGEN
SULPHUR DIOXIDE	ppm	ABSORPTION, BARIUM-THORIN TITRIMETRIC METHOD AT SITE (US EPA METHOD 6)	< 1.30	< 1.30
OXIDE OF NITROGEN AS NITROGEN DIOXIDE	ppm	ABSORPTION, PHENOLDISULFONIC ACID METHOD (US EPA METHOD 7)	29.4	104
SAMPLE CONDITION			COMPLETE	

DESCRIPTION	UNIT	RESULT
		GTG-3+HRSG-3 (5101) T23AU052-0001
AMBIENT PRESSURE	mmHg	758
AMBIENT TEMPERATURE	°C	30
STACK TEMPERATURE	°C	209.67
DIAMETER	m	3.8
GAS VELOCITY	m/s	12.58
FLOW RATE	Nm³/hr	285,638.99
OXYGEN	%	16.97
MOISTURE	%	9.59
CARBONDIOXIDE	%	2.28
VOLUME OF DRY GAS AT STP	m³	0.620236

REMARK
RESULT : REFERENCE CONDITION IS 25 DEGREE CELSIUS AT 1 ATMOSPHERE AND DRY BASIS.

(MISS BUDSAKORN LERDPANUMAS)
LABORATORY SUPERVISOR
จ-145-ค-0011
OCTOBER 18, 2023



ANALYSIS REPORT

CUSTOMER NAME	: BANGCHAK SRIRACHA PUBLIC COMPANY LIMITED	RECEIVED DATE	: NOVEMBER 27, 2023
ADDRESS	: 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230	ANALYTICAL DATE	: NOVEMBER 27-DECEMBER 1, 2023
CONTACT INFORMATION	: TEL : [REDACTED] e-mail : Phaisarn.Apiwatananon@bangchak.co.th	REPORT NO.	: 2023-U105738
SAMPLING SOURCE	: BANGCHAK SRIRACHA PUBLIC COMPANY LIMITED	WORK NO.	: 2019-002022
SAMPLE TYPE	: STACK	ANALYSIS NO.	: T23AX627-0004
SAMPLING DATE	: NOVEMBER 22, 2023		
SAMPLING TIME	: 10:10-11:00 HOUR		
SAMPLING BY	: MR PARINYA KLOMKLIAO ๖-145-๖-0039		
ANALYZED BY	: MISS SUWAN KONGTHONG ๖-145-๖-0025		

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	
			PLATFORMER FURNACE-1 (F-3401S) T23AX627-0004	
			ACTUAL OXYGEN	7% OXYGEN
SULPHUR DIOXIDE	ppm	ABSORPTION, BARIUM-THORIN TITRIMETRIC METHOD AT SITE (US EPA METHOD 6)	< 1.30	< 1.30
OXIDE OF NITROGEN AS NITROGEN DIOXIDE	ppm	ABSORPTION, PHENOLDISULFONIC ACID METHOD (US EPA METHOD 7)	24.9	25.3
SAMPLE CONDITION			COMPLETE	

DESCRIPTION	UNIT	RESULT
		PLATFORMER FURNACE-1 (F-3401S) T23AX627-0004
AMBIENT PRESSURE	mmHg	758
AMBIENT TEMPERATURE	°C	29.33
STACK TEMPERATURE	°C	200.5
DIAMETER	m	2.52
GAS VELOCITY	m/s	8.55
FLOW RATE	Nm³/hr	76,859.73
OXYGEN	%	7.21
MOISTURE	%	20.19
CARBONDIOXIDE	%	7.81
VOLUME OF DRY GAS AT STP	m³	0.560067

REMARK

RESULT : REFERENCE CONDITION IS 25 DEGREE CELSIUS AT 1 ATMOSPHERE AND DRY BASIS.

(MISS BUDSAKORN LERDPANUMAS)
LABORATORY SUPERVISOR
๖-145-๖-0011
DECEMBER 7, 2023



ANALYSIS REPORT

CUSTOMER NAME	: BANGCHAK SRIRACHA PUBLIC COMPANY LIMITED	RECEIVED DATE	: NOVEMBER 27, 2023
ADDRESS	: 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230	ANALYTICAL DATE	: NOVEMBER 27-DECEMBER 1, 2023
CONTACT INFORMATION	: TEL [REDACTED] e-mail : Phaisarn.Apiwatananon@bangchak.co.th	REPORT NO.	: 2023-U105737
SAMPLING SOURCE	: BANGCHAK SRIRACHA PUBLIC COMPANY LIMITED	WORK NO.	: 2019-002022
SAMPLE TYPE	: STACK	ANALYSIS NO.	: T23AX627-0003
SAMPLING DATE	: NOVEMBER 23, 2023		
SAMPLING TIME	: 11:40-12:30 HOUR		
SAMPLING BY	: MR PARINYA KLOMKLIAO จ-145-จ-0039		
ANALYZED BY	: MISS SUWAN KONGTHONG จ-145-ค-0025		

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	
			ACTUAL OXYGEN	7% OXYGEN
SULPHUR DIOXIDE	ppm	ABSORPTION, BARIUM-THORIN TITRIMETRIC METHOD AT SITE (US EPA METHOD 6)	< 1.30	< 1.30
OXIDE OF NITROGEN AS NITROGEN DIOXIDE	ppm	ABSORPTION, PHENOLDISULFONIC ACID METHOD (US EPA METHOD 7)	26.3	24.4
SAMPLE CONDITION			COMPLETE	

DESCRIPTION	UNIT	RESULT
		APS2/VPS2 : COMMON STACK OF CRUDE DISTILLATION FURNACE 2 & VACUUM DISTILLATION FURNACE-2 & NHF-2 FURNACE (F-3101 & F-3601 & F-3301) T23AX627-0003
AMBIENT PRESSURE	mmHg	758
AMBIENT TEMPERATURE	°C	26.83
STACK TEMPERATURE	°C	306.25
DIAMETER	m	3.2
GAS VELOCITY	m/s	10.37
FLOW RATE	Nm³/hr	119,845.95
OXYGEN	%	5.9
MOISTURE	%	21.86
CARBONDIOXIDE	%	8.5
VOLUME OF DRY GAS AT STP	m³	0.572849

REMARK

RESULT : REFERENCE CONDITION IS 25 DEGREE CELSIUS AT 1 ATMOSPHERE AND DRY BASIS.

(MISS BUDSAKORN LERDPANUMAS)
LABORATORY SUPERVISOR
จ-145-ค-0011
DECEMBER 7, 2023



ANALYSIS REPORT

CUSTOMER NAME : BANGCHAK SRIRACHA PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : [REDACTED] e-mail : Phaisarn.Apiwatananon@bangchak.co.th
SAMPLING SOURCE : BANGCHAK SRIRACHA PUBLIC COMPANY LIMITED
SAMPLE TYPE : STACK
RECEIVED DATE : NOVEMBER 27, 2023
SAMPLING DATE : NOVEMBER 21, 2023
ANALYTICAL DATE : NOVEMBER 27-DECEMBER 1, 2023
SAMPLING TIME : 10:40-11:50 HOUR
REPORT NO. : 2023-U105743
SAMPLING BY : MR PARINYA KLOMKLIAO ๓-145-๓-0039
WORK NO. : 2019-002022
ANALYZED BY : MISS SUWAN KONGTHONG ๓-145-๓-0025
ANALYSIS NO. : T23AX627-0008

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	
			SRU/TGCU INCINERATOR T23AX627-0008	
			ACTUAL OXYGEN	7% OXYGEN
SULPHUR DIOXIDE	ppm	ABSORPTION, BARIUM-THORIN TITRIMETRIC METHOD AT SITE (US EPA METHOD 6)	32.7	34.9
OXIDE OF NITROGEN AS NITROGEN DIOXIDE	ppm	ABSORPTION, PHENOLDISULFONIC ACID METHOD (US EPA METHOD 7)	7.97	8.52
HYDROGEN SULPHIDE	ppm	ABSORPTION, IODOMETRIC METHOD AT SITE (US EPA METHOD 11)	< 5.75	< 5.75
SAMPLE CONDITION			COMPLETE	

DESCRIPTION	UNIT	RESULT
		SRU/TGCU INCINERATOR T23AX627-0008
AMBIENT PRESSURE	mmHg	758
AMBIENT TEMPERATURE	°C	27.92
STACK TEMPERATURE	°C	591.17
DIAMETER	m	1.71
GAS VELOCITY	m/s	7.68
FLOW RATE	Nm³/hr	19,400.24
OXYGEN	%	7.89
MOISTURE	%	10.73
CARBONDIOXIDE	%	7.41
VOLUME OF DRY GAS AT STP	m³	0.564724

REMARK

RESULT : REFERENCE CONDITION IS 25 DEGREE CELSIUS AT 1 ATMOSPHERE AND DRY BASIS.

(MISS BUDSAKORN LERDPANUMAS)
LABORATORY SUPERVISOR
๓-145-๓-0011
DECEMBER 7, 2023



ระดับเสียงในบรรยากาศ

ANALYSIS REPORT

CUSTOMER NAME : BANGCHAK SRIRACHA PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : 0 3314 2891 e-mail : wanlop.boongor@bangchak.co.th
MEASURING SOURCE : BAN KON CHA-NANG
MEASURING TYPE : AMBIENT (NOISE) **RECEIVED DATE** : NOVEMBER 18-21, 2023
MEASURING DATE : NOVEMBER 18-21, 2023 **ANALYTICAL DATE** : NOVEMBER 18-21, 2023
MEASURING TIME : * **REPORT NO.** : 2023-U104392
MEASURING METHOD : INTEGRATED SOUND LEVEL METER **WORK NO.** : 2019-002022
MEASURED BY : MR SIRAPAT JONGPHADUNGKIET **ANALYSIS NO.** : T23AX762-0001 - T23AX762-0003

TIME*	RESULT dB(A)		
	BAN KON CHA-NANG		
	NOVEMBER 18-19, 2023		
	T23AX762-0001		
	L _{Aeq} 1 hour	L _{Amax} 1 hour	L _{A90} 1 hour
07:00-08:00 HOUR	54.5	60.0	52.5
08:00-09:00 HOUR	55.1	59.2	53.6
09:00-10:00 HOUR	55.0	59.8	53.6
10:00-11:00 HOUR	55.0	58.7	53.1
11:00-12:00 HOUR	56.5	80.6	53.1
12:00-13:00 HOUR	55.1	73.2	52.6
13:00-14:00 HOUR	54.6	58.6	52.8
14:00-15:00 HOUR	54.8	59.7	53.3
15:00-16:00 HOUR	54.5	63.2	53.1
16:00-17:00 HOUR	54.3	67.1	52.7
17:00-18:00 HOUR	55.0	66.5	53.1
18:00-19:00 HOUR	54.5	58.1	53.3
19:00-20:00 HOUR	54.2	62.5	52.6
20:00-21:00 HOUR	53.0	60.2	51.9
21:00-22:00 HOUR	52.8	59.4	51.8
22:00-23:00 HOUR	52.7	59.5	51.8
23:00-00:00 HOUR	53.1	58.3	51.8
00:00-01:00 HOUR	53.6	67.7	52.0
01:00-02:00 HOUR	53.0	64.5	51.9
02:00-03:00 HOUR	52.9	57.4	51.8
03:00-04:00 HOUR	53.5	56.8	52.2
04:00-05:00 HOUR	52.8	56.1	51.3
05:00-06:00 HOUR	52.8	57.7	51.6
06:00-07:00 HOUR	53.3	58.7	52.0
L _{Aeq} 24 hours	54.1		



TIME*	RESULT dB(A)		
	BAN KON CHA-NANG		
	NOVEMBER 19-20, 2023		
	T23AX762-0002		
	L _{Aeq} 1 hour	L _{Amax} 1 hour	L _{A90} 1 hour
07:00-08:00 HOUR	54.7	59.0	53.2
08:00-09:00 HOUR	54.8	58.5	53.6
09:00-10:00 HOUR	54.6	59.5	53.2
10:00-11:00 HOUR	55.3	60.1	53.8
11:00-12:00 HOUR	54.3	62.0	52.7
12:00-13:00 HOUR	55.3	60.0	53.6
13:00-14:00 HOUR	55.4	59.5	53.8
14:00-15:00 HOUR	54.5	59.7	53.2
15:00-16:00 HOUR	55.3	60.1	53.5
16:00-17:00 HOUR	55.6	63.6	53.8
17:00-18:00 HOUR	54.4	61.6	52.8
18:00-19:00 HOUR	54.6	59.3	53.0
19:00-20:00 HOUR	54.9	60.2	53.3
20:00-21:00 HOUR	53.0	72.8	50.3
21:00-22:00 HOUR	51.9	61.7	50.2
22:00-23:00 HOUR	52.1	64.5	50.2
23:00-00:00 HOUR	51.3	59.0	49.3
00:00-01:00 HOUR	53.6	67.4	50.4
01:00-02:00 HOUR	52.6	63.2	50.9
02:00-03:00 HOUR	53.0	60.9	50.1
03:00-04:00 HOUR	52.5	62.5	50.8
04:00-05:00 HOUR	52.8	59.3	50.9
05:00-06:00 HOUR	52.5	63.8	51.2
06:00-07:00 HOUR	53.4	57.4	52.0
L _{Aeq} 24 hours		54.0	

TIME*	RESULT dB(A)		
	BAN KON CHA-NANG		
	NOVEMBER 20-21, 2023		
	T23AX762-0003		
	L _{Aeq} 1 hour	L _{Amax} 1 hour	L _{A90} 1 hour
07:00-08:00 HOUR	53.7	57.3	52.5
08:00-09:00 HOUR	54.5	65.6	52.7
09:00-10:00 HOUR	53.7	57.9	52.2
10:00-11:00 HOUR	53.7	60.5	52.2
11:00-12:00 HOUR	54.9	62.4	53.2
12:00-13:00 HOUR	53.9	60.2	52.3
13:00-14:00 HOUR	53.9	59.7	52.6
14:00-15:00 HOUR	53.6	57.1	52.3
15:00-16:00 HOUR	54.7	71.6	52.1
16:00-17:00 HOUR	54.0	61.9	52.6
17:00-18:00 HOUR	53.9	60.6	52.6
18:00-19:00 HOUR	54.3	74.8	52.7
19:00-20:00 HOUR	53.8	63.1	52.4
20:00-21:00 HOUR	53.2	63.1	51.7
21:00-22:00 HOUR	52.9	58.0	51.8
22:00-23:00 HOUR	52.6	62.0	51.2
23:00-00:00 HOUR	52.0	61.8	49.7
00:00-01:00 HOUR	52.0	58.1	50.0
01:00-02:00 HOUR	52.9	60.5	51.5
02:00-03:00 HOUR	52.7	56.3	51.5
03:00-04:00 HOUR	52.4	59.0	50.8
04:00-05:00 HOUR	53.1	66.4	50.9
05:00-06:00 HOUR	53.3	65.4	51.2
06:00-07:00 HOUR	54.7	71.7	53.0
L _{Aeq} 24 hours		53.6	

(MR SILA BANJONGJAIKUK)
LABORATORY SUPERVISOR

DECEMBER 1, 2023

ANALYSIS REPORT

CUSTOMER NAME : BANGCHAK SRIRACHA PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : 0 3314 2891 e-mail : wanlop.boongor@bangchak.co.th
MEASURING SOURCE : BAN NHONG AUNG
MEASURING TYPE : AMBIENT (NOISE) **RECEIVED DATE** : NOVEMBER 18-21, 2023
MEASURING DATE : NOVEMBER 18-21, 2023 **ANALYTICAL DATE** : NOVEMBER 18-21, 2023
MEASURING TIME : * **REPORT NO.** : 2023-U104393
MEASURING METHOD : INTEGRATED SOUND LEVEL METER **WORK NO.** : 2019-002022
MEASURED BY : MR SIRAPAT JONGPHADUNGKIET **ANALYSIS NO.** : T23AX762-0004 - T23AX762-0006

TIME*	RESULT dB(A)		
	BAN NHONG AUNG		
	NOVEMBER 18-19, 2023		
	T23AX762-0004		
	L _{Aeq} 1 hour	L _{Amax} 1 hour	L _{A90} 1 hour
07:00-08:00 HOUR	52.7	55.9	51.4
08:00-09:00 HOUR	53.2	56.8	51.5
09:00-10:00 HOUR	53.1	60.6	51.3
10:00-11:00 HOUR	53.1	56.5	51.9
11:00-12:00 HOUR	53.3	56.2	52.4
12:00-13:00 HOUR	53.0	56.3	52.1
13:00-14:00 HOUR	53.8	58.7	52.6
14:00-15:00 HOUR	53.3	56.4	52.2
15:00-16:00 HOUR	54.3	75.3	52.3
16:00-17:00 HOUR	53.1	55.8	52.3
17:00-18:00 HOUR	53.0	58.7	51.7
18:00-19:00 HOUR	52.5	56.7	51.5
19:00-20:00 HOUR	52.3	55.0	51.2
20:00-21:00 HOUR	52.0	59.9	50.8
21:00-22:00 HOUR	51.8	58.3	50.8
22:00-23:00 HOUR	51.4	60.6	50.2
23:00-00:00 HOUR	51.3	72.8	47.1
00:00-01:00 HOUR	50.6	63.0	47.3
01:00-02:00 HOUR	49.3	62.9	47.4
02:00-03:00 HOUR	49.1	60.9	47.1
03:00-04:00 HOUR	49.4	61.5	47.2
04:00-05:00 HOUR	50.2	60.2	47.6
05:00-06:00 HOUR	49.8	60.8	47.7
06:00-07:00 HOUR	50.0	55.8	48.4
L _{Aeq} 24 hours	52.2		



TIME*	RESULT dB(A)		
	BAN NHONG AUNG		
	NOVEMBER 19-20, 2023		
	T23AX762-0005		
	L _{Aeq} 1 hour	L _{Amax} 1 hour	L _{A90} 1 hour
07:00-08:00 HOUR	50.6	60.9	49.0
08:00-09:00 HOUR	52.4	61.8	50.8
09:00-10:00 HOUR	53.1	55.2	52.2
10:00-11:00 HOUR	53.2	57.9	52.1
11:00-12:00 HOUR	53.2	56.0	52.2
12:00-13:00 HOUR	53.5	56.9	52.7
13:00-14:00 HOUR	53.1	66.3	52.3
14:00-15:00 HOUR	53.2	55.4	52.3
15:00-16:00 HOUR	53.2	55.8	52.4
16:00-17:00 HOUR	52.9	56.1	52.1
17:00-18:00 HOUR	51.2	66.3	48.5
18:00-19:00 HOUR	54.8	68.7	49.2
19:00-20:00 HOUR	51.1	65.5	48.3
20:00-21:00 HOUR	50.7	62.3	48.7
21:00-22:00 HOUR	51.2	65.3	48.0
22:00-23:00 HOUR	50.8	61.2	47.8
23:00-00:00 HOUR	50.5	61.3	48.1
00:00-01:00 HOUR	49.5	57.3	48.3
01:00-02:00 HOUR	50.0	55.8	47.9
02:00-03:00 HOUR	50.4	59.6	48.6
03:00-04:00 HOUR	51.8	70.4	48.8
04:00-05:00 HOUR	51.6	65.1	50.5
05:00-06:00 HOUR	52.3	65.2	50.5
06:00-07:00 HOUR	52.5	56.2	51.2
L _{Aeq} 24 hours		52.2	

TIME*	RESULT dB(A)		
	BAN NHONG AUNG		
	NOVEMBER 20-21, 2023		
	T23AX762-0006		
	L _{Aeq} 1 hour	L _{Amax} 1 hour	L _{A90} 1 hour
07:00-08:00 HOUR	52.8	56.2	51.4
08:00-09:00 HOUR	53.0	56.5	51.9
09:00-10:00 HOUR	52.7	56.9	51.6
10:00-11:00 HOUR	53.3	59.3	52.0
11:00-12:00 HOUR	52.4	56.2	51.1
12:00-13:00 HOUR	52.4	58.5	51.2
13:00-14:00 HOUR	52.3	56.3	51.1
14:00-15:00 HOUR	52.6	58.5	51.6
15:00-16:00 HOUR	52.3	57.4	51.0
16:00-17:00 HOUR	52.6	56.8	51.2
17:00-18:00 HOUR	52.5	65.0	51.1
18:00-19:00 HOUR	53.0	62.0	51.7
19:00-20:00 HOUR	52.7	57.1	51.3
20:00-21:00 HOUR	51.4	60.8	49.4
21:00-22:00 HOUR	51.0	70.0	48.6
22:00-23:00 HOUR	57.4	73.5	48.3
23:00-00:00 HOUR	53.6	69.8	49.0
00:00-01:00 HOUR	50.1	58.7	48.1
01:00-02:00 HOUR	50.0	56.6	48.3
02:00-03:00 HOUR	50.7	64.5	48.3
03:00-04:00 HOUR	49.4	63.4	47.6
04:00-05:00 HOUR	49.3	59.1	47.5
05:00-06:00 HOUR	49.4	59.0	47.3
06:00-07:00 HOUR	51.2	68.1	47.4
L _{Aeq} 24 hours		52.4	

(MR SILA BANJONGJAIKUK)
LABORATORY SUPERVISOR

DECEMBER 1, 2023

ISO 9001:2015 CERTIFIED

ISO 14001:2015 CERTIFIED

BY BSI GROUP (THAILAND) CO.,LTD.

- PROHIBITED TO PARTIALLY COPY ANALYSIS REPORT PRIOR TO WRITTEN PERMISSION BY THE LABORATORY.
- THIS ANALYSIS REPORT APPROVES ONLY FOR SUBMITTED SAMPLES.

คุณภาพน้ำทิ้ง และคุณภาพน้ำทะเล

ANALYSIS REPORT

PROJECT NAME : ENVIRONMENTAL & SOCIOECONOMIC SURVEY
CUSTOMER NAME : ESSO (THAILAND) PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : 0 3314 2891 e-mail : wanlop.boongor@exxonmobil.com
SAMPLING SOURCE : -
SAMPLE TYPE : WASTEWATER
SAMPLING DATE : JULY 6, 2023
SAMPLING TIME : 09:30 HOUR
SAMPLING METHOD ^c : GRAB
SAMPLING BY ^c : MR THANADET WANSANOR ๓-145-๓-0056
ANALYZED BY : MISS AKSARIN BUNKONG ๓-145-๓-0014

RECEIVED DATE : JULY 7, 2023
ANALYTICAL DATE : JULY 7-17, 2023
REPORT NO. : 2023-U058805
WORK NO. : 2019-002022
ANALYSIS NO. : T23AM982-0001

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW001 : INLET API T23AM982-0001	
pH ^a	-	ELECTROMETRIC METHOD (SM: PART 4500-H ⁺ B)	6.8 (25°C)	-
TEMPERATURE ^c	°C	THERMOMETER AT SITE (SM: PART 2550 B)	41	-
BIOCHEMICAL OXYGEN DEMAND ^a	mg/L	MEMBRANE ELECTRODE METHOD (SM: PART 5210 B AND PART 4500-O G)	594	2.0
CHEMICAL OXYGEN DEMAND ^c	mg/L	CLOSED REFLUX, TITRIMETRIC METHOD (SM: PART 5220 C)	345	25.0
TOTAL SUSPENDED SOLIDS ^a	mg/L	TOTAL SUSPENDED SOLIDS DRIED AT 103-105 °C (SM: PART 2540 D)	454	5.0
SULPHIDE ^c	mg/L	METHYLENE BLUE METHOD(SM: PART 4500-S ²⁻ D)	1.38	0.02
TOTAL DISSOLVED SOLIDS ^b	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	3,194	25
FAT, OIL AND GREASE ^c	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	380	3
CYANIDE ^c	mg/L CN ⁻	DISTILLATION, PYRIDINE-BARBITURIC ACID METHOD (SM: PART 4500-CN ⁻ C AND PART 4500-CN ⁻ E)	0.031	0.005
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			YELLOW/TURBID BROWN	

^a : ISO/IEC 17025 ACCREDITED BY THAI INDUSTRIAL STANDARDS INSTITUTE (TISI)

^b : ISO/IEC 17025 ACCREDITED BY DEPARTMENT OF SCIENCE SERVICE (DSS)

^c : VERIFIED BY OWN LABORATORY QUALITY SYSTEM, BUT STILL NOT ACCREDITED

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

REMARK : THE ANALYSIS RESULT WAS FOUND THAT BIOCHEMICAL OXYGEN DEMAND VALUE IS HIGHER THAN CHEMICAL OXYGEN DEMAND VALUE, THE WASTEWATER SAMPLE MAYBE INTERFERED FROM AROMATIC HYDROCARBONS OR PYRIDINES.

RELEASE ORDER NO. : EV-06-07-002



(MRS PIYAPAT SUTTAMANUTWONG)
LABORATORY SUPERVISOR
๓-145-๓-0004
JULY 18, 2023



ANALYSIS REPORT

PROJECT NAME : ENVIRONMENTAL & SOCIOECONOMIC SURVEY
CUSTOMER NAME : ESSO (THAILAND) PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : 0 3314 2891 e-mail : wanlop.boongor@exxonmobil.com
SAMPLING SOURCE : -
SAMPLE TYPE : WASTEWATER
SAMPLING DATE : AUGUST 3, 2023
SAMPLING TIME : 09:25 HOUR
SAMPLING METHOD ^c : GRAB
SAMPLING BY ^c : MR THANADET WANSANOR ๓-145-๓-0056
ANALYZED BY : MISS NAPAPORN KHUNNOKKHUM ๓-145-๓-0114

RECEIVED DATE : AUGUST 4, 2023
ANALYTICAL DATE : AUGUST 4-10, 2023
REPORT NO. : 2023-U066464
WORK NO. : 2019-002022
ANALYSIS NO. : T23A0873-0001

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW001 : INLET API T23A0873-0001	
pH ^a	-	ELECTROMETRIC METHOD (SM: PART 4500-H ⁺ B)	6.9 (25°C)	-
TEMPERATURE ^c	°C	THERMOMETER AT SITE (SM: PART 2550 B)	36	-
BIOCHEMICAL OXYGEN DEMAND ^a	mg/L	MEMBRANE ELECTRODE METHOD (SM: PART 5210 B AND PART 4500-O G)	229	2.0
CHEMICAL OXYGEN DEMAND ^c	mg/L	CLOSED REFLUX, TITRIMETRIC METHOD (SM: PART 5220 C)	221	25.0
TOTAL SUSPENDED SOLIDS ^a	mg/L	TOTAL SUSPENDED SOLIDS DRIED AT 103-105 °C (SM: PART 2540 D)	237	5.0
SULPHIDE ^c	mg/L	METHYLENE BLUE METHOD(SM: PART 4500-S ²⁻ D)	0.18	0.02
TOTAL DISSOLVED SOLIDS ^c	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	11,880	25
FAT, OIL AND GREASE ^a	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	109	3
CYANIDE ^c	mg/L CN ⁻	DISTILLATION, PYRIDINE-BARBITURIC ACID METHOD (SM: PART 4500-CN ⁻ C AND PART 4500-CN ⁻ E)	0.019	0.005
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			GREY/TURBID GREY	

^a : ISO/IEC 17025 ACCREDITED BY THAI INDUSTRIAL STANDARDS INSTITUTE (TISI)

^b : ISO/IEC 17025 ACCREDITED BY DEPARTMENT OF SCIENCE SERVICE (DSS)

^c : VERIFIED BY OWN LABORATORY QUALITY SYSTEM, BUT STILL NOT ACCREDITED

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

RELEASE ORDER NO. : EV-03-08-001

(MRS PIYAPAT SUTTAMANUTWONG)
LABORATORY SUPERVISOR
๓-145-๓-0004
AUGUST 16, 2023



ANALYSIS REPORT

PROJECT NAME	: ENVIRONMENTAL & SOCIOECONOMIC SURVEY		
CUSTOMER NAME	: ESSO (THAILAND) PUBLIC COMPANY LIMITED		
ADDRESS	: 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230		
CONTACT INFORMATION	: TEL : 0 3314 2891 e-mail : wanlop.boongor@bangchak.co.th		
SAMPLING SOURCE	: -		
SAMPLE TYPE	: WASTEWATER	RECEIVED DATE	: SEPTEMBER 8, 2023
SAMPLING DATE	: SEPTEMBER 7, 2023	ANALYTICAL DATE	: SEPTEMBER 8-15, 2023
SAMPLING TIME	: 09:10 HOUR	REPORT NO.	: 2023-U077925
SAMPLING METHOD ^c	: GRAB	WORK NO.	: 2019-002022
SAMPLING BY ^c	: MR THANADET WANSANOR ๓-145-๑-0056	ANALYSIS NO.	: T23AR664-0001
ANALYZED BY	: MISS NAPAPORN KHUNNOCKHUM ๓-145-๑-0114		

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW001 : INLET API T23AR664-0001	
pH ^a	-	ELECTROMETRIC METHOD (SM: PART 4500-H ⁺ B)	7.1 (25°C)	-
TEMPERATURE ^c	°C	THERMOMETER AT SITE (SM: PART 2550 B)	38	-
BIOCHEMICAL OXYGEN DEMAND ^a	mg/L	MEMBRANE ELECTRODE METHOD (SM: PART 5210 B AND PART 4500-O G)	244	2.0
CHEMICAL OXYGEN DEMAND ^c	mg/L	CLOSED REFLUX, TITRIMETRIC METHOD (SM: PART 5220 C)	400	25.0
TOTAL SUSPENDED SOLIDS ^a	mg/L	TOTAL SUSPENDED SOLIDS DRIED AT 103-105 °C (SM: PART 2540 D)	57.9	5.0
SULPHIDE ^c	mg/L	METHYLENE BLUE METHOD(SM: PART 4500-S ²⁻ D)	0.28	0.02
TOTAL DISSOLVED SOLIDS ^c	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	8,071	25
FAT, OIL AND GREASE ^a	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	13	3
CYANIDE ^c	mg/L CN ⁻	DISTILLATION, PYRIDINE-BARBITURIC ACID METHOD (SM: PART 4500-CN ⁻ C AND PART 4500-CN ⁻ E)	0.008	0.005
SAMPLE CONDITION				
WATER'S COLOUR/TURBID			GREY/TURBID	
SEDIMENT			GREY	

^a : ISO/IEC 17025 ACCREDITED BY THAI INDUSTRIAL STANDARDS INSTITUTE (TISI)

^b : ISO/IEC 17025 ACCREDITED BY DEPARTMENT OF SCIENCE SERVICE (DSS)

^c : VERIFIED BY OWN LABORATORY QUALITY SYSTEM, BUT STILL NOT ACCREDITED

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

RELEASE ORDER NO. : EV-07-09-002



(MRS PIYAPAT SUTTAMANUTWONG)
LABORATORY SUPERVISOR
๓-145-๑-0004
SEPTEMBER 20, 2023



ANALYSIS REPORT

PROJECT NAME : ENVIRONMENTAL & SOCIOECONOMIC SURVEY
CUSTOMER NAME : ESSO (THAILAND) PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : 0 3314 2891 e-mail : wanlop.boongor@bangchak.co.th
SAMPLING SOURCE : -
SAMPLE TYPE : WASTEWATER
SAMPLING DATE : SEPTEMBER 7, 2023
SAMPLING TIME : 09:10 HOUR
SAMPLING METHOD : GRAB
SAMPLING BY : MR THANADET WANSANOR
ANALYZED BY : MISS NAPAPORN KHUNNOKKHUM

RECEIVED DATE : SEPTEMBER 8, 2023
ANALYTICAL DATE : SEPTEMBER 8-12, 2023
REPORT NO. : 2023-U077926
WORK NO. : 2019-002022
ANALYSIS NO. : T23AR664-0002

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW001 : INLET API T23AR664-0002	
TOTAL SOLIDS	mg/L	TOTAL SOLIDS DRIED AT 103-105 °C (SM: PART 2540 B)	9,550	25
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			GREY/TURBID GREY	

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.
RELEASE ORDER NO. : EV-07-09-002

.....
(MRS PIYAPAT SUTTAMANUTWONG)
LABORATORY SUPERVISOR

SEPTEMBER 20, 2023



ANALYSIS REPORT

PROJECT NAME : ENVIRONMENTAL & SOCIOECONOMIC SURVEY
CUSTOMER NAME : ESSO (THAILAND) PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : 0 3314 2891 e-mail : wanlop.boongor@bangchak.co.th
SAMPLING SOURCE : -
SAMPLE TYPE : WASTEWATER
SAMPLING DATE : OCTOBER 19, 2023
SAMPLING TIME : 09:30 HOUR
SAMPLING METHOD ^c : GRAB
SAMPLING BY ^c : MR THANADET WANSANOR ๓-145-๓-0056
ANALYZED BY : MISS NAPAPORN KHUNNOKKHUM ๓-145-๓-0114

RECEIVED DATE : OCTOBER 19, 2023
ANALYTICAL DATE : OCTOBER 19-27, 2023
REPORT NO. : 2023-U091936
WORK NO. : 2019-002022
ANALYSIS NO. : T23AU783-0001

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW001 : INLET API T23AU783-0001	
pH ^a	-	ELECTROMETRIC METHOD (SM: PART 4500-H ⁺ B)	7.6 (25°C)	-
TEMPERATURE ^c	°C	THERMOMETER AT SITE (SM: PART 2550 B)	37	-
BIOCHEMICAL OXYGEN DEMAND ^a	mg/L	MEMBRANE ELECTRODE METHOD (SM: PART 5210 B AND PART 4500-O G)	222	2.0
CHEMICAL OXYGEN DEMAND ^c	mg/L	CLOSED REFLUX, TITRIMETRIC METHOD (SM: PART 5220 C)	314	25.0
TOTAL SUSPENDED SOLIDS ^a	mg/L	TOTAL SUSPENDED SOLIDS DRIED AT 103-105 °C (SM: PART 2540 D)	190	5.0
TOTAL DISSOLVED SOLIDS ^b	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	5,225	25
SULPHIDE ^c	mg/L	METHYLENE BLUE METHOD(SM: PART 4500-S ²⁻ D)	0.36	0.02
FAT, OIL AND GREASE ^a	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	33	3
CYANIDE ^c	mg/L CN ⁻	DISTILLATION, PYRIDINE-BARBITURIC ACID METHOD (SM: PART 4500-CN ⁻ C AND PART 4500-CN ⁻ E)	0.010	0.005
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			BROWN/TURBID BROWN	

^a : ISO/IEC 17025 ACCREDITED BY THAI INDUSTRIAL STANDARDS INSTITUTE (TISI)

^b : ISO/IEC 17025 ACCREDITED BY DEPARTMENT OF SCIENCE SERVICE (DSS)

^c : VERIFIED BY OWN LABORATORY QUALITY SYSTEM, BUT STILL NOT ACCREDITED

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

RELEASE ORDER NO. : EV-19-10-006

.....
(MRS PIYAPAT SUTTAMANUTWONG)
LABORATORY SUPERVISOR
๓-145-๓-0004
OCTOBER 31, 2023



ANALYSIS REPORT

PROJECT NAME : ENVIRONMENTAL & SOCIOECONOMIC SURVEY
CUSTOMER NAME : ESSO (THAILAND) PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : 0 3314 2891 e-mail : wanlop.boongor@bangchak.co.th
SAMPLING SOURCE : -
SAMPLE TYPE : WASTEWATER
SAMPLING DATE : NOVEMBER 2, 2023
SAMPLING TIME : 09:35 HOUR
SAMPLING METHOD ^c : GRAB
SAMPLING BY ^c : MR THANADET WANSANOR ๓-145-๓-0056
ANALYZED BY : MISS NAPAPORN KHUNNOKKHUM ๓-145-๓-0114

RECEIVED DATE : NOVEMBER 3, 2023
ANALYTICAL DATE : NOVEMBER 3-8, 2023
REPORT NO. : 2023-U097253
WORK NO. : 2019-002022
ANALYSIS NO. : T23AV859-0001

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW001 : INLET API T23AV859-0001	
pH ^a	-	ELECTROMETRIC METHOD (SM: PART 4500-H ⁺ B)	8.5 (25°C)	-
TEMPERATURE ^c	°C	THERMOMETER AT SITE (SM: PART 2550 B)	36	-
BIOCHEMICAL OXYGEN DEMAND ^a	mg/L	MEMBRANE ELECTRODE METHOD (SM: PART 5210 B AND PART 4500-O G)	204	2.0
CHEMICAL OXYGEN DEMAND ^c	mg/L	CLOSED REFLUX, TITRIMETRIC METHOD (SM: PART 5220 C)	384	25.0
TOTAL SUSPENDED SOLIDS ^a	mg/L	TOTAL SUSPENDED SOLIDS DRIED AT 103-105 °C (SM: PART 2540 D)	140	5.0
TOTAL DISSOLVED SOLIDS ^c	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	6,270	25
SULPHIDE ^c	mg/L	METHYLENE BLUE METHOD(SM: PART 4500-S ²⁻ D)	2.43	0.02
FAT, OIL AND GREASE ^a	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	49	3
CYANIDE ^c	mg/L CN ⁻	DISTILLATION, PYRIDINE-BARBITURIC ACID METHOD (SM: PART 4500-CN ⁻ C AND PART 4500-CN ⁻ E)	0.005	0.005
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			GREY/TURBID GREY	

^a : ISO/IEC 17025 ACCREDITED BY THAI INDUSTRIAL STANDARDS INSTITUTE (TISI)

^b : ISO/IEC 17025 ACCREDITED BY DEPARTMENT OF SCIENCE SERVICE (DSS)

^c : VERIFIED BY OWN LABORATORY QUALITY SYSTEM, BUT STILL NOT ACCREDITED

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

RELEASE ORDER NO. : EV-02-11-001

.....
(MRS PIYAPAT SUTTAMANUTWONG)
LABORATORY SUPERVISOR
๓-145-๓-0004
NOVEMBER 14, 2023



ANALYSIS REPORT

PROJECT NAME : ENVIRONMENTAL & SOCIOECONOMIC SURVEY
CUSTOMER NAME : ESSO (THAILAND) PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : 0 3314 2891 e-mail : wanlop.boongor@bangchak.co.th
SAMPLING SOURCE : -
SAMPLE TYPE : WASTEWATER
SAMPLING DATE : NOVEMBER 2, 2023
SAMPLING TIME : 09:35 HOUR
SAMPLING METHOD : GRAB
SAMPLING BY : MR THANADET WANSANOR ๓-145-๓-0056
ANALYZED BY : MISS NADNAPA KAMOLBOON ๓-145-๓-0066

RECEIVED DATE : NOVEMBER 3, 2023
ANALYTICAL DATE : NOVEMBER 3-13, 2023
REPORT NO. : 2023-U097254
WORK NO. : 2019-002022
ANALYSIS NO. : T23AV859-0002

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW001 : INLET API T23AV859-0002	
METALS				
MERCURY	mg/L Hg	COLD VAPOUR AAS METHOD (SM: PART 3112 B)	< 0.0005	0.0005
SAMPLE CONDITION				
WATER'S COLOUR/TURBID			YELLOW/TURBID	
SEDIMENT			BROWN	

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

RELEASE ORDER NO. : EV-02-11-001

(MR. BHUCHONK PANICHLERTUMPI)
LABORATORY SUPERVISOR
๓-145-๓-0020
NOVEMBER 14, 2023



ANALYSIS REPORT

PROJECT NAME : ENVIRONMENTAL & SOCIOECONOMIC SURVEY
CUSTOMER NAME : BANGCHAK SRIRACHA PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : 0 3314 2891 e-mail : wanlop.boongor@bangchak.co.th
SAMPLING SOURCE : -
SAMPLE TYPE : WASTEWATER
SAMPLING DATE : DECEMBER 7, 2023
SAMPLING TIME : 09:35 HOUR
SAMPLING METHOD : GRAB
SAMPLING BY : MR THANADET WANSANOR ๓-145-๓-0056
ANALYZED BY : MISS NAPAPORN KHUNNOKKHUM ๓-145-๓-0114

RECEIVED DATE : DECEMBER 8, 2023
ANALYTICAL DATE : DECEMBER 8-15, 2023
REPORT NO. : 2023-U108960
WORK NO. : 2019-002022
ANALYSIS NO. : T23AY516-0001

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW001 : INLET API T23AY516-0001	
pH ^a	-	ELECTROMETRIC METHOD (SM: PART 4500-H ⁺ B)	7.5 (25°C)	-
TEMPERATURE ^c	°C	THERMOMETER AT SITE (SM: PART 2550 B)	42	-
BIOCHEMICAL OXYGEN DEMAND ^a	mg/L	MEMBRANE ELECTRODE METHOD (SM: PART 5210 B AND PART 4500-O G)	284	2.0
CHEMICAL OXYGEN DEMAND ^c	mg/L	CLOSED REFLUX, TITRIMETRIC METHOD (SM: PART 5220 C)	487	25.0
TOTAL SUSPENDED SOLIDS ^a	mg/L	TOTAL SUSPENDED SOLIDS DRIED AT 103-105 °C (SM: PART 2540 D)	373	5.0
TOTAL DISSOLVED SOLIDS ^b	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	4,000	25
SULPHIDE ^c	mg/L	METHYLENE BLUE METHOD(SM: PART 4500-S ²⁻ D)	0.27	0.02
FAT, OIL AND GREASE ^a	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	65	3
CYANIDE ^c	mg/L CN ⁻	DISTILLATION, PYRIDINE-BARBITURIC ACID METHOD (SM: PART 4500-CN ⁻ C AND PART 4500-CN ⁻ E)	< 0.005	0.005
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			YELLOW/TURBID BROWN	

^a : ISO/IEC 17025 ACCREDITED BY THAI INDUSTRIAL STANDARDS INSTITUTE (TISI)

^b : ISO/IEC 17025 ACCREDITED BY DEPARTMENT OF SCIENCE SERVICE (DSS)

^c : VERIFIED BY OWN LABORATORY QUALITY SYSTEM, BUT STILL NOT ACCREDITED

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

RELEASE ORDER NO. : EV-07-12-002

(MRS PIYAPAT SUTTAMANUTWONG)
LABORATORY SUPERVISOR
๓-145-๓-0004
DECEMBER 19, 2023



ANALYSIS REPORT

PROJECT NAME : ENVIRONMENTAL & SOCIOECONOMIC SURVEY
CUSTOMER NAME : BANGCHAK SRIRACHA PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : 0 3314 2891 e-mail : wanlop.boongor@bangchak.co.th
SAMPLING SOURCE : -
SAMPLE TYPE : WASTEWATER
SAMPLING DATE : DECEMBER 7, 2023
SAMPLING TIME : 09:35 HOUR
SAMPLING METHOD : GRAB
SAMPLING BY : MR THANADET WANSANOR
ANALYZED BY : MISS NAPAPORN KHUNNOKKHUM

RECEIVED DATE : DECEMBER 8, 2023
ANALYTICAL DATE : DECEMBER 8-12, 2023
REPORT NO. : 2023-U108961
WORK NO. : 2019-002022
ANALYSIS NO. : T23AY516-0002

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW001 : INLET API T23AY516-0002	
TOTAL SOLIDS	mg/L	TOTAL SOLIDS DRIED AT 103-105 °C (SM: PART 2540 B)	5,462	25
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			YELLOW/TURBID BROWN	

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

RELEASE ORDER NO. : EV-07-12-002

[REDACTED]

(MRS PIYAPAT SUTTAMANUTWONG)
LABORATORY SUPERVISOR

DECEMBER 19, 2023



ANALYSIS REPORT

PROJECT NAME : ENVIRONMENTAL & SOCIOECONOMIC SURVEY
CUSTOMER NAME : ESSO (THAILAND) PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : 0 3314 2891 e-mail : wanlop.boongor@bangchak.co.th
SAMPLING SOURCE : -
SAMPLE TYPE : WASTEWATER
SAMPLING DATE : NOVEMBER 2, 2023
SAMPLING TIME : 10:00 HOUR
SAMPLING METHOD ^c : GRAB
SAMPLING BY ^c : MR THANADET WANSANOR
ANALYZED BY : MISS AKSARIN BUNKONG

RECEIVED DATE : NOVEMBER 3, 2023
ANALYTICAL DATE : NOVEMBER 3-10, 2023
REPORT NO. : 2023-U097257
WORK NO. : 2019-002022
ANALYSIS NO. : T23AV859-0005

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW016 : CLARIFIER (SUPERNATANT) T23AV859-0005	
pH ^a	-	ELECTROMETRIC METHOD (SM: PART 4500-H ⁺ B)	7.4 (25°C)	-
BIOCHEMICAL OXYGEN DEMAND ^a	mg/L	MEMBRANE ELECTRODE METHOD (SM: PART 5210 B AND PART 4500-O G)	5.5	2.0
CHEMICAL OXYGEN DEMAND ^c	mg/L	CLOSED REFLUX, TITRIMETRIC METHOD (SM: PART 5220 C)	69.7	25.0
TOTAL SUSPENDED SOLIDS ^a	mg/L	TOTAL SUSPENDED SOLIDS DRIED AT 103-105 °C (SM: PART 2540 D)	17.6	5.0
AMMONIA ^c	mg/L NH ₃	KJELDAHL (SM: PART 4500-NH ₃ B AND PART 4500-NH ₃ C) AND CALCULATION METHOD	26.6	1.8
PHOSPHATE ^c	mg/L	VANADOMOLYBDOPHOSPHORIC ACID COLOURIMETRIC METHOD (SM: PART 4500-P C)	0.89	0.03
FAT, OIL AND GREASE ^a	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	3	3
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			YELLOW/TURBID BROWN	

^a : ISO/IEC 17025 ACCREDITED BY THAI INDUSTRIAL STANDARDS INSTITUTE (TISI)

^b : ISO/IEC 17025 ACCREDITED BY DEPARTMENT OF SCIENCE SERVICE (DSS)

^c : VERIFIED BY OWN LABORATORY QUALITY SYSTEM, BUT STILL NOT ACCREDITED

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

RELEASE ORDER NO. : EV-02-11-001

[REDACTED]

(MRS PIYAPAT SUTTAMANUTWONG)
LABORATORY SUPERVISOR

NOVEMBER 14, 2023



ANALYSIS REPORT

PROJECT NAME : ENVIRONMENTAL & SOCIOECONOMIC SURVEY
CUSTOMER NAME : ESSO (THAILAND) PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : 0 3314 2891 e-mail : wanlop.boongor@bangchak.co.th
SAMPLING SOURCE : -
SAMPLE TYPE : WASTEWATER
SAMPLING DATE : NOVEMBER 2, 2023
SAMPLING TIME : 09:45 HOUR
SAMPLING METHOD ^c : GRAB
SAMPLING BY ^c : MR THANADET WANSANOR ๓-145-๓-0056
ANALYZED BY : MISS AKSARIN BUNKONG ๓-145-๓-0014

RECEIVED DATE : NOVEMBER 3, 2023
ANALYTICAL DATE : NOVEMBER 3-8, 2023
REPORT NO. : 2023-U097258
WORK NO. : 2019-002022
ANALYSIS NO. : T23AV859-0006

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW013 : SEDIMENTATION ZONE 2 T23AV859-0006	
BIOCHEMICAL OXYGEN DEMAND ^a	mg/L	MEMBRANE ELECTRODE METHOD (SM: PART 5210 B AND PART 4500-O G)	11.4	2.0
CHEMICAL OXYGEN DEMAND ^c	mg/L	CLOSED REFLUX, TITRIMETRIC METHOD (SM: PART 5220 C)	61.8	25.0
TOTAL SUSPENDED SOLIDS ^a	mg/L	TOTAL SUSPENDED SOLIDS DRIED AT 103-105 °C (SM: PART 2540 D)	15.4	5.0
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			YELLOW/TURBID GREEN	

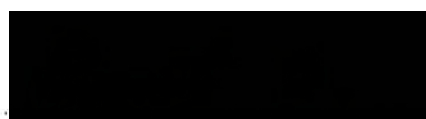
^a : ISO/IEC 17025 ACCREDITED BY THAI INDUSTRIAL STANDARDS INSTITUTE (TISI)

^b : ISO/IEC 17025 ACCREDITED BY DEPARTMENT OF SCIENCE SERVICE (DSS)

^c : VERIFIED BY OWN LABORATORY QUALITY SYSTEM, BUT STILL NOT ACCREDITED

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

RELEASE ORDER NO. : EV-02-11-001



(MRS PIYAPAT SUTTAMANUTWONG)
LABORATORY SUPERVISOR
๓-145-๓-0004
NOVEMBER 14, 2023



ANALYSIS REPORT

PROJECT NAME	: ENVIRONMENTAL & SOCIOECONOMIC SURVEY	RECEIVED DATE	: JULY 7, 2023
CUSTOMER NAME	: ESSO (THAILAND) PUBLIC COMPANY LIMITED	ANALYTICAL DATE	: JULY 7-17, 2023
ADDRESS	: 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230	REPORT NO.	: 2023-U058809
CONTACT INFORMATION	: TEL : 0 3314 2891 e-mail : wanlop.boongor@exxonmobil.com	WORK NO.	: 2019-002022
SAMPLING SOURCE	: -	ANALYSIS NO.	: T23AM982-0005
SAMPLE TYPE	: EFFLUENT		
SAMPLING DATE	: JULY 6, 2023		
SAMPLING TIME	: 10:05 HOUR		
SAMPLING METHOD ^c	: GRAB		
SAMPLING BY ^c	: MR THANADET WANSANOR ๓-145-๓-0056		
ANALYZED BY	: MISS KANNIKAR SUMLEETHA ๓-145-๓-0074		

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW004 : OP OUTLET T23AM982-0005	
pH ^a	-	ELECTROMETRIC METHOD (SM: PART 4500-H ⁺ B)	7.6 (25°C)	-
TEMPERATURE ^c	°C	THERMOMETER AT SITE (SM: PART 2550 B)	31	-
BIOCHEMICAL OXYGEN DEMAND ^c	mg/L	MEMBRANE ELECTRODE METHOD (SM: PART 5210 B AND PART 4500-O G)	< 2.0	2.0
CHEMICAL OXYGEN DEMAND ^c	mg/L	CLOSED REFLUX, TITRIMETRIC METHOD (SM: PART 5220 C)	77.6	25.0
TOTAL SUSPENDED SOLIDS ^a	mg/L	TOTAL SUSPENDED SOLIDS DRIED AT 103-105 °C (SM: PART 2540 D)	8.0	5.0
SULPHIDE ^c	mg/L	METHYLENE BLUE METHOD(SM: PART 4500-S ²⁻ D)	0.05	0.02
TOTAL DISSOLVED SOLIDS ^c	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	34,560	25
FAT, OIL AND GREASE ^c	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	0.7	3
CYANIDE ^c	mg/L CN ⁻	DISTILLATION, PYRIDINE-BARBITURIC ACID METHOD (SM: PART 4500-CN ⁻ C AND PART 4500-CN ⁻ E)	< 0.005	0.005
SAMPLE CONDITION				
WATER'S COLOUR/TURBID			YELLOW/CLEAR	
SEDIMENT			BROWN	

^a : ISO/IEC 17025 ACCREDITED BY THAI INDUSTRIAL STANDARDS INSTITUTE (TISI)

^b : ISO/IEC 17025 ACCREDITED BY DEPARTMENT OF SCIENCE SERVICE (DSS)

^c : VERIFIED BY OWN LABORATORY QUALITY SYSTEM, BUT STILL NOT ACCREDITED

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

FAT, OIL AND GREASE : THIS REPORTED VALUE IS BELOW LIMIT OF DETECTION. ITS USE IS SUBJECT TO CUSTOMER JUSTIFICATION.

RELEASE ORDER NO. : EV-06-07-002

(MRS PIYAPAT SUTTAMANUTWONG)
LABORATORY SUPERVISOR
๓-145-๓-0004
JULY 18, 2023



ANALYSIS REPORT

PROJECT NAME	: ENVIRONMENTAL & SOCIOECONOMIC SURVEY		
CUSTOMER NAME	: ESSO (THAILAND) PUBLIC COMPANY LIMITED		
ADDRESS	: 118 MOO 2 THUNG SUKHILA SI RACHA CHON BURI 20230		
CONTACT INFORMATION	: TEL : 0 3314 2891 e-mail : wanlop.boongor@exxonmobil.com		
SAMPLING SOURCE	: -		
SAMPLE TYPE	: EFFLUENT	RECEIVED DATE	: AUGUST 4, 2023
SAMPLING DATE	: AUGUST 3, 2023	ANALYTICAL DATE	: AUGUST 4-10, 2023
SAMPLING TIME	: 10:00 HOUR	REPORT NO.	: 2023-U066469
SAMPLING METHOD ^c	: GRAB	WORK NO.	: 2019-002022
SAMPLING BY ^c	: MR THANADET WANSANOR ๓-145-๓-0056	ANALYSIS NO.	: T23AO873-0005
ANALYZED BY	: MISS KANNIKAR SUMLEETHA ๓-145-๓-0074		

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW004 : OP OUTLET T23AO873-0005	
pH ^a	-	ELECTROMETRIC METHOD (SM: PART 4500-H ⁺ B)	7.5 (25°C)	-
TEMPERATURE ^c	°C	THERMOMETER AT SITE (SM: PART 2550 B)	31	-
BIOCHEMICAL OXYGEN DEMAND ^c	mg/L	MEMBRANE ELECTRODE METHOD (SM: PART 5210 B AND PART 4500-O G)	< 2.0	2.0
CHEMICAL OXYGEN DEMAND ^c	mg/L	CLOSED REFLUX, TITRIMETRIC METHOD (SM: PART 5220 C)	80.0	25.0
TOTAL SUSPENDED SOLIDS ^a	mg/L	TOTAL SUSPENDED SOLIDS DRIED AT 103-105 °C (SM: PART 2540 D)	6.9	5.0
SULPHIDE ^c	mg/L	METHYLENE BLUE METHOD(SM: PART 4500-S ²⁻ D)	< 0.02	0.02
TOTAL DISSOLVED SOLIDS ^c	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	38,182	25
FAT, OIL AND GREASE ^c	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	1.2	3
CYANIDE ^c	mg/L CN ⁻	DISTILLATION, PYRIDINE-BARBITURIC ACID METHOD (SM: PART 4500-CN ⁻ C AND PART 4500-CN ⁻ E)	< 0.005	0.005
SAMPLE CONDITION				
WATER'S COLOUR/TURBID			YELLOW/CLEAR	
SEDIMENT			BROWN	

^a : ISO/IEC 17025 ACCREDITED BY THAI INDUSTRIAL STANDARDS INSTITUTE (TISI)

^b : ISO/IEC 17025 ACCREDITED BY DEPARTMENT OF SCIENCE SERVICE (DSS)

^c : VERIFIED BY OWN LABORATORY QUALITY SYSTEM, BUT STILL NOT ACCREDITED

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

FAT, OIL AND GREASE : THIS REPORTED VALUE IS BELOW LIMIT OF DETECTION. ITS USE IS SUBJECT TO CUSTOMER JUSTIFICATION.

RELEASE ORDER NO. : EV-03-08-001

(MRS PIYAPAT SUTTAMANUTWONG)
LABORATORY SUPERVISOR
๓-145-๓-0004
AUGUST 16, 2023



ANALYSIS REPORT

PROJECT NAME	: ENVIRONMENTAL & SOCIOECONOMIC SURVEY	RECEIVED DATE	: SEPTEMBER 8, 2023
CUSTOMER NAME	: ESSO (THAILAND) PUBLIC COMPANY LIMITED	ANALYTICAL DATE	: SEPTEMBER 8-15, 2023
ADDRESS	: 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230	REPORT NO.	: 2023-U099670
CONTACT INFORMATION	: TEL : 0 3314 2891 e-mail : wanlop.boongor@bangchak.co.th	WORK NO.	: 2019-002022
SAMPLING SOURCE	: -	ANALYSIS NO.	: T23AR664-0006
SAMPLE TYPE	: EFFLUENT		
SAMPLING DATE	: SEPTEMBER 7, 2023		
SAMPLING TIME	: 09:55 HOUR		
SAMPLING METHOD ^c	: GRAB		
SAMPLING BY ^c	: MR THANADET WANSANOR ๓-145-๓-0056		
ANALYZED BY	: MISS KANNIKAR SUMLEETHA ๓-145-๓-0074		

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	REGULATORY STANDARD 1	REGULATORY STANDARD 2
			LBW004 : OP OUTLET T23AR664-0006		
pH ^a	-	ELECTROMETRIC METHOD (SM: PART 4500-H ⁺ B)	7.7 (25°C)	5.5-9.0	5.5-9.0
TEMPERATURE ^c	°C	THERMOMETER AT SITE (SM: PART 2550 B)	31	≤ 40	≤ 40
BIOCHEMICAL OXYGEN DEMAND ^c	mg/L	MEMBRANE ELECTRODE METHOD (SM: PART 5210 B AND PART 4500-O G)	< 2.0	≤ 20	≤ 20
SULPHIDE ^c	mg/L	METHYLENE BLUE METHOD (SM: PART 4500-S ²⁻ D)	< 0.02	≤ 1	≤ 1
CHEMICAL OXYGEN DEMAND ^c	mg/L	CLOSED REFLUX, TITRIMETRIC METHOD (SM: PART 5220 C)	60.2	≤ 120	≤ 120
TOTAL SUSPENDED SOLIDS ^a	mg/L	TOTAL SUSPENDED SOLIDS DRIED AT 103-105 °C (SM: PART 2540 D)	8.1	≤ 50	≤ 50
TOTAL DISSOLVED SOLIDS ^c	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	35,950	≤ 3,000 ^{1/}	≤ 3,000 ^{1/}
FAT, OIL AND GREASE ^c	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	0.6	≤ 5	≤ 5



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	REGULATORY STANDARD 1	REGULATORY STANDARD 2
			LBW004 : OP OUTLET T23AR664-0006		
CYANIDE ^c	mg/L CN ⁻	DISTILLATION, PYRIDINE-BARBITURIC ACID METHOD (SM: PART 4500-CN- C AND PART 4500-CN- E)	< 0.005	≤ 0.2	-
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			YELLOW/CLEAR BROWN		

^a : ISO/IEC 17025 ACCREDITED BY THAI INDUSTRIAL STANDARDS INSTITUTE (TISI)

^b : ISO/IEC 17025 ACCREDITED BY DEPARTMENT OF SCIENCE SERVICE (DSS)

^c : VERIFIED BY OWN LABORATORY QUALITY SYSTEM, BUT STILL NOT ACCREDITED

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

REGULATORY STANDARD 1 : INDUSTRIAL EFFLUENT STANDARDS, NOTIFICATION OF THE MINISTRY OF INDUSTRY, B.E. 2560,
PUBLISHED IN THE ROYAL GOVERNMENT GAZETTE, VOL 134, PART 153 D, DATED JUNE 7, 2017.

REGULATORY STANDARD 2 : STANDARD FOR CONTROL THE EFFLUENT FROM INDUSTRIAL PLANTS, INDUSTRIAL ESTATE AND INDUSTRIAL ZONES
ANNOUNCEMENT OF THE MINISTRY OF NATURAL RESOURCES AND ENVIRONMENT, PUBLISHED IN THE ROYAL
GOVERNMENT GAZETTE, VOL 133, PART 129 (SPECIAL ISSUED), DATED JUNE 6, B.E. 2559 (2016).

^{1/} : NOT MORE THAN 5,000 mg/L, IN CASE RECEIVING WATER HAVING TOTAL DISSOLVED SOLIDS
MORE THAN 3,000 mg/L.

FAT, OIL AND GREASE : THIS REPORTED VALUE IS BELOW LIMIT OF DETECTION. ITS USE IS SUBJECT TO CUSTOMER JUSTIFICATION.

RELEASE ORDER NO. : EV-07-09-002

THE REASON FOR ISSUING THE NEW REPORT IS DUE TO ADDITION REGULATORY STANDARD.

SUBSTITUTED REPORT FOR REPORT NO. 2023-U077930, DATED SEPTEMBER 20, 2023.

[REDACTED]

(MRS PIYAPAT SUTTAMANUTWONG)
LABORATORY SUPERVISOR
จ-145-ท-0004
NOVEMBER 21, 2023

ANALYSIS REPORT

PROJECT NAME : ENVIRONMENTAL & SOCIOECONOMIC SURVEY
CUSTOMER NAME : ESSO (THAILAND) PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : 0 3314 2891 e-mail : wanlop.boongor@bangchak.co.th
SAMPLING SOURCE : -
SAMPLE TYPE : WASTEWATER
SAMPLING DATE : SEPTEMBER 7, 2023
SAMPLING TIME : 09:55 HOUR
SAMPLING METHOD : GRAB
SAMPLING BY : MR THANADET WANSANOR
ANALYZED BY : MISS NAPAPORN KHUNNOKKHUM

RECEIVED DATE : SEPTEMBER 8, 2023
ANALYTICAL DATE : SEPTEMBER 8-12, 2023
REPORT NO. : 2023-U077933
WORK NO. : 2019-002022
ANALYSIS NO. : T23AR664-0007

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW004 : OP OUTLET T23AR664-0007	
TOTAL SOLIDS	mg/L	TOTAL SOLIDS DRIED AT 103-105 °C (SM: PART 2540 B)	42,800	25
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			YELLOW/CLEAR BROWN	

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

RELEASE ORDER NO. : EV-07-09-002

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(MRS PIYAPAT SUTTAMANUTWONG)
LABORATORY SUPERVISOR

SEPTEMBER 20, 2023



ANALYSIS REPORT

PROJECT NAME	: ENVIRONMENTAL & SOCIOECONOMIC SURVEY		
CUSTOMER NAME	: ESSO (THAILAND) PUBLIC COMPANY LIMITED		
ADDRESS	: 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230		
CONTACT INFORMATION	: TEL : 0 3314 2891 e-mail : wanlop.boongor@bangchak.co.th		
SAMPLING SOURCE	: -		
SAMPLE TYPE	: EFFLUENT	RECEIVED DATE	: OCTOBER 19, 2023
SAMPLING DATE	: OCTOBER 19, 2023	ANALYTICAL DATE	: OCTOBER 19-27, 2023
SAMPLING TIME	: 09:25 HOUR	REPORT NO.	: 2023-U091940
SAMPLING METHOD °	: GRAB	WORK NO.	: 2019-002022
SAMPLING BY °	: MR THANADET WANSANOR ๓-145-๓-0056	ANALYSIS NO.	: T23AU783-0005
ANALYZED BY	: MISS KANNIKAR SUMLEETHA ๓-145-๓-0074		

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW004 : OP OUTLET T23AU783-0005	
pH ^a	-	ELECTROMETRIC METHOD (SM: PART 4500-H ⁺ B)	7.6 (25°C)	-
TEMPERATURE °	°C	THERMOMETER AT SITE (SM: PART 2550 B)	31	-
BIOCHEMICAL OXYGEN DEMAND °	mg/L	MEMBRANE ELECTRODE METHOD (SM: PART 5210 B AND PART 4500-O G)	< 2.0	2.0
CHEMICAL OXYGEN DEMAND °	mg/L	CLOSED REFLUX, TITRIMETRIC METHOD (SM: PART 5220 C)	79.2	25.0
TOTAL SUSPENDED SOLIDS ^a	mg/L	TOTAL SUSPENDED SOLIDS DRIED AT 103-105 °C (SM: PART 2540 D)	16.8	5.0
SULPHIDE °	mg/L	METHYLENE BLUE METHOD(SM: PART 4500-S ²⁻ D)	< 0.02	0.02
TOTAL DISSOLVED SOLIDS °	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	35.933	25
FAT, OIL AND GREASE °	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	0.8	3
CYANIDE °	mg/L CN	DISTILLATION, PYRIDINE-BARBITURIC ACID METHOD (SM: PART 4500-CN ⁻ C AND PART 4500-CN ⁻ E)	< 0.005	0.005
SAMPLE CONDITION				
WATER'S COLOUR/TURBID			YELLOW/CLEAR	
SEDIMENT			BROWN	

^a : ISO/IEC 17025 ACCREDITED BY THAI INDUSTRIAL STANDARDS INSTITUTE (TISI)

^b : ISO/IEC 17025 ACCREDITED BY DEPARTMENT OF SCIENCE SERVICE (DSS)

^c : VERIFIED BY OWN LABORATORY QUALITY SYSTEM, BUT STILL NOT ACCREDITED

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

FAT, OIL AND GREASE : THIS REPORTED VALUE IS BELOW LIMIT OF DETECTION. ITS USE IS SUBJECT TO CUSTOMER JUSTIFICATION.

RELEASE ORDER NO. : EV-19-10-006



(MRS PIYAPAT SUTTAMANUTWONG)
LABORATORY SUPERVISOR
๓-145-๓-0004
OCTOBER 31, 2023



ANALYSIS REPORT

PROJECT NAME	: ENVIRONMENTAL & SOCIOECONOMIC SURVEY		
CUSTOMER NAME	: ESSO (THAILAND) PUBLIC COMPANY LIMITED		
ADDRESS	: 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230		
CONTACT INFORMATION	: TEL : 0 3314 2891 e-mail : wanlop.boongor@bangchak.co.th		
SAMPLING SOURCE	: -		
SAMPLE TYPE	: EFFLUENT	RECEIVED DATE	: NOVEMBER 3, 2023
SAMPLING DATE	: NOVEMBER 2, 2023	ANALYTICAL DATE	: NOVEMBER 3-8, 2023
SAMPLING TIME	: 09:55 HOUR	REPORT NO.	: 2023-U097259
SAMPLING METHOD ^c	: GRAB	WORK NO.	: 2019-002022
SAMPLING BY ^c	: MR THANADET WANSANOR ๓-145-๓-0056	ANALYSIS NO.	: T23AV859-0007
ANALYZED BY	: MISS KANNIKAR SUMLEETHA ๓-145-๓-0074		

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW004 : OP OUTLET T23AV859-0007	
pH ^a	-	ELECTROMETRIC METHOD (SM: PART 4500-H ⁺ B)	7.8 (25°C)	-
TEMPERATURE ^c	°C	THERMOMETER AT SITE (SM: PART 2550 B)	30	-
BIOCHEMICAL OXYGEN DEMAND ^c	mg/L	MEMBRANE ELECTRODE METHOD (SM: PART 5210 B AND PART 4500-O G)	< 2.0	2.0
CHEMICAL OXYGEN DEMAND ^c	mg/L	CLOSED REFLUX, TITRIMETRIC METHOD (SM: PART 5220 C)	66.5	25.0
TOTAL SUSPENDED SOLIDS ^a	mg/L	TOTAL SUSPENDED SOLIDS DRIED AT 103-105 °C (SM: PART 2540 D)	5.4	5.0
TOTAL DISSOLVED SOLIDS ^c	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	33,140	25
SULPHIDE ^c	mg/L	METHYLENE BLUE METHOD(SM: PART 4500-S ²⁻ D)	< 0.02	0.02
FAT, OIL AND GREASE ^c	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	0.4	3
CYANIDE ^c	mg/L CN ⁻	DISTILLATION, PYRIDINE-BARBITURIC ACID METHOD (SM: PART 4500-CN ⁻ C AND PART 4500-CN ⁻ E)	< 0.005	0.005
SAMPLE CONDITION				
WATER'S COLOUR/TURBID			YELLOW/CLEAR	
SEDIMENT			YELLOW	

^a : ISO/IEC 17025 ACCREDITED BY THAI INDUSTRIAL STANDARDS INSTITUTE (TISI)

^b : ISO/IEC 17025 ACCREDITED BY DEPARTMENT OF SCIENCE SERVICE (DSS)

^c : VERIFIED BY OWN LABORATORY QUALITY SYSTEM, BUT STILL NOT ACCREDITED

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

FAT, OIL AND GREASE : THIS REPORTED VALUE IS BELOW LIMIT OF DETECTION. ITS USE IS SUBJECT TO CUSTOMER JUSTIFICATION.

RELEASE ORDER NO. : EV-02-11-001

(MRS PIYAPAT SUTTAMANUTWONG)
LABORATORY SUPERVISOR
๓-145-๓-0004
NOVEMBER 14, 2023



ANALYSIS REPORT

PROJECT NAME : ENVIRONMENTAL & SOCIOECONOMIC SURVEY
CUSTOMER NAME : ESSO (THAILAND) PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : 0 3314 2891 e-mail : wanlop.boongor@bangchak.co.th
SAMPLING SOURCE : -
SAMPLE TYPE : EFFLUENT
SAMPLING DATE : NOVEMBER 2, 2023
SAMPLING TIME : 09:55 HOUR
SAMPLING METHOD : GRAB
SAMPLING BY : MR THANADET WANSANOR จ-145-จ-0056
ANALYZED BY : MISS NADNAPA KAMOLBOON จ-145-จ-0066

RECEIVED DATE : NOVEMBER 3, 2023
ANALYTICAL DATE : NOVEMBER 3-13, 2023
REPORT NO. : 2023-U097260
WORK NO. : 2019-002022
ANALYSIS NO. : T23AV859-0008

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW004 : OP OUTLET T23AV859-0008	
METALS				
MERCURY	mg/L Hg	COLD VAPOUR AAS METHOD (SM: PART 3112 B)	< 0.0005	0.0005
SAMPLE CONDITION				
WATER'S COLOUR/TURBID			COLOURLESS/CLEAR	
ASEDIMENT			YELLOW	

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

RELEASE ORDER NO. : EV-02-11-001

(MR BHUCHONK PANICHLERTUMPI)
LABORATORY SUPERVISOR
จ-145-ก-0020
NOVEMBER 14, 2023



ANALYSIS REPORT

PROJECT NAME	: ENVIRONMENTAL & SOCIOECONOMIC SURVEY		
CUSTOMER NAME	: BANGCHAK SRIRACHA PUBLIC COMPANY LIMITED		
ADDRESS	: 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230		
CONTACT INFORMATION	: TEL : 0 3314 2891 e-mail : wanlop.boongor@bangchak.co.th		
SAMPLING SOURCE	: -		
SAMPLE TYPE	: EFFLUENT	RECEIVED DATE	: DECEMBER 8, 2023
SAMPLING DATE	: DECEMBER 7, 2023	ANALYTICAL DATE	: DECEMBER 8-15, 2023
SAMPLING TIME	: 10:10 HOUR	REPORT NO.	: 2023-U108966
SAMPLING METHOD ^c	: GRAB	WORK NO.	: 2019-002022
SAMPLING BY ^c	: MR THANADET WANSANOR ๓-145-๓-0056	ANALYSIS NO.	: T23AY516-0006
ANALYZED BY	: MISS NAPAPORN KHUNNOKKHUM ๓-145-๓-0114		

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW004 : OP OUTLET T23AY516-0006	
pH ^a	-	ELECTROMETRIC METHOD (SM: PART 4500-H ⁺ B)	7.5 (25°C)	-
TEMPERATURE ^c	°C	THERMOMETER AT SITE (SM: PART 2550 B)	32	-
BIOCHEMICAL OXYGEN DEMAND ^c	mg/L	MEMBRANE ELECTRODE METHOD (SM: PART 5210 B AND PART 4500-O G)	< 2.0	2.0
CHEMICAL OXYGEN DEMAND ^c	mg/L	CLOSED REFLUX, TITRIMETRIC METHOD (SM: PART 5220 C)	59.2	25.0
TOTAL SUSPENDED SOLIDS ^a	mg/L	TOTAL SUSPENDED SOLIDS DRIED AT 103-105 °C (SM: PART 2540 D)	10.4	5.0
TOTAL DISSOLVED SOLIDS ^c	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	39,200	25
SULPHIDE ^c	mg/L	METHYLENE BLUE METHOD(SM: PART 4500-S ²⁻ D)	< 0.02	0.02
FAT, OIL AND GREASE ^c	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	0.4	3
CYANIDE ^c	mg/L CN ⁻	DISTILLATION, PYRIDINE-BARBITURIC ACID METHOD (SM: PART 4500-CN ⁻ C AND PART 4500-CN ⁻ E)	< 0.005	0.005
SAMPLE CONDITION				
WATER'S COLOUR/TURBID			YELLOW/CLEAR	
SEDIMENT			BROWN	

^a : ISO/IEC 17025 ACCREDITED BY THAI INDUSTRIAL STANDARDS INSTITUTE (TISI)

^b : ISO/IEC 17025 ACCREDITED BY DEPARTMENT OF SCIENCE SERVICE (DSS)

^c : VERIFIED BY OWN LABORATORY QUALITY SYSTEM, BUT STILL NOT ACCREDITED

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

FAT, OIL AND GREASE : THIS REPORTED VALUE IS BELOW LIMIT OF DETECTION. ITS USE IS SUBJECT TO CUSTOMER JUSTIFICATION.

RELEASE ORDER NO. : EV-07-12-002

(MRS PIYAPAT SUTTAMANUTWONG)
LABORATORY SUPERVISOR
๓-145-๓-0004
DECEMBER 19, 2023



ANALYSIS REPORT

PROJECT NAME : ENVIRONMENTAL & SOCIOECONOMIC SURVEY
CUSTOMER NAME : BANGCHAK SRIRACHA PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : 0 3314 2891 e-mail : wanlop.boongor@bangchak.co.th
SAMPLING SOURCE : -
SAMPLE TYPE : WASTEWATER
SAMPLING DATE : DECEMBER 7, 2023
SAMPLING TIME : 10:10 HOUR
SAMPLING METHOD : GRAB
SAMPLING BY : MR THANADET WANSANOR
ANALYZED BY : MISS NAPAPORN KHUNNOKKHUM

RECEIVED DATE : DECEMBER 8, 2023
ANALYTICAL DATE : DECEMBER 8-13, 2023
REPORT NO. : 2023-U108968
WORK NO. : 2019-002022
ANALYSIS NO. : T23AY516-0007

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW004 : OP OUTLET T23AY516-0007	
TOTAL SOLIDS	mg/L	TOTAL SOLIDS DRIED AT 103-105 °C (SM: PART 2540 B)	41,933	25
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			YELLOW/CLEAR BROWN	

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.
RELEASE ORDER NO. : EV-07-12-002

[REDACTED]

(MRS PIYAPAT SUTTAMANUTWONG)
LABORATORY SUPERVISOR

DECEMBER 19, 2023



ANALYSIS REPORT

PROJECT NAME	: ENVIRONMENTAL & SOCIOECONOMIC SURVEY		
CUSTOMER NAME	: ESSO (THAILAND) PUBLIC COMPANY LIMITED		
ADDRESS	: 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230		
CONTACT INFORMATION	: TEL : 0 3314 2891 e-mail : wanlop.boongor@exxonmobil.com		
SAMPLING SOURCE	: -		
SAMPLE TYPE	: EFFLUENT	RECEIVED DATE	: JULY 7, 2023
SAMPLING DATE	: JULY 6, 2023	ANALYTICAL DATE	: JULY 7-15, 2023
SAMPLING TIME	: 10:25 HOUR	REPORT NO.	: 2023-U058810
SAMPLING METHOD °	: GRAB	WORK NO.	: 2019-002022
SAMPLING BY °	: MR THANADET WANSANOR	ANALYSIS NO.	: T23AM982-0006
ANALYZED BY	: MISS NAPAPORN KHUNNOKKHUM		

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW005 : REFINERY MIX T23AM982-0006	
pH ^a	-	ELECTROMETRIC METHOD (SM: PART 4500-H ⁺ B)	7.7 (25°C)	-
TEMPERATURE °	°C	THERMOMETER AT SITE (SM: PART 2550 B)	35	-
BIOCHEMICAL OXYGEN DEMAND °	mg/L	MEMBRANE ELECTRODE METHOD (SM: PART 5210 B AND PART 4500-O G)	< 2.0	2.0
SALINITY °	ppt	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2520 B)	27.1	0.1
CHEMICAL OXYGEN DEMAND °	mg/L	CLOSED REFLUX, TITRIMETRIC METHOD (SM: PART 5220 C)	80.8	25.0
TOTAL SUSPENDED SOLIDS ^a	mg/L	TOTAL SUSPENDED SOLIDS DRIED AT 103-105 °C (SM: PART 2540 D)	11.5	5.0
NITRATE °	mg/L NO ₃ ⁻	CADMIUM REDUCTION METHOD (SM: PART 4500-NO ₃ ⁻ E)	11.6	0.09
SULPHIDE °	mg/L	METHYLENE BLUE METHOD(SM: PART 4500-S ²⁻ D)	0.04	0.02
TOTAL DISSOLVED SOLIDS °	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	36,625	25
FAT, OIL AND GREASE °	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	0.6	3



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW005 : REFINERY MIX T23AM982-0006	
METALS				
LEAD ^c	mg/L Pb	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	< 0.015	0.015
SAMPLE CONDITION				
WATER'S COLOUR/TURBID			YELLOW/CLEAR	
SEDIMENT			BROWN	

^a : ISO/IEC 17025 ACCREDITED BY THAI INDUSTRIAL STANDARDS INSTITUTE (TISI)

^b : ISO/IEC 17025 ACCREDITED BY DEPARTMENT OF SCIENCE SERVICE (DSS)

^c : VERIFIED BY OWN LABORATORY QUALITY SYSTEM, BUT STILL NOT ACCREDITED

IN-HOUSE : BASED ON STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

FAT, OIL AND GREASE : THIS REPORTED VALUE IS BELOW LIMIT OF DETECTION. ITS USE IS SUBJECT TO CUSTOMER JUSTIFICATION.

RELEASE ORDER NO. : EV-06-07-002

[REDACTED]

(MRS PIYAPAT SUTTAMANUTWONG)
LABORATORY SUPERVISOR

JULY 18, 2023

ANALYSIS REPORT

PROJECT NAME : ENVIRONMENTAL & SOCIOECONOMIC SURVEY
CUSTOMER NAME : ESSO (THAILAND) PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : 0 3314 2891 e-mail : wanlop.boongor@exxonmobil.com
SAMPLING SOURCE : -
SAMPLE TYPE : EFFLUENT
SAMPLING DATE : AUGUST 3, 2023
SAMPLING TIME : 10:20 HOUR
SAMPLING METHOD ° : GRAB
SAMPLING BY ° : MR THANADET WANSANOR
ANALYZED BY : MISS NAPAPORN KHUNNOKKHUM

RECEIVED DATE : AUGUST 4, 2023
ANALYTICAL DATE : AUGUST 4-14, 2023
REPORT NO. : 2023-U066471
WORK NO. : 2019-002022
ANALYSIS NO. : T23AO873-0006

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW005 : REFINERY MIX T23AO873-0006	
pH ^a	-	ELECTROMETRIC METHOD (SM: PART 4500-H ⁺ B)	7.6 (25°C)	-
TEMPERATURE °	°C	THERMOMETER AT SITE (SM: PART 2550 B)	34	-
BIOCHEMICAL OXYGEN DEMAND °	mg/L	MEMBRANE ELECTRODE METHOD (SM: PART 5210 B AND PART 4500-O G)	< 2.0	2.0
SALINITY °	ppt	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2520 B)	29.5	0.1
CHEMICAL OXYGEN DEMAND °	mg/L	CLOSED REFLUX, TITRIMETRIC METHOD (SM: PART 5220 C)	59.2	25.0
TOTAL SUSPENDED SOLIDS ^a	mg/L	TOTAL SUSPENDED SOLIDS DRIED AT 103-105 °C (SM: PART 2540 D)	29.6	5.0
NITRATE °	mg/L NO ₃ ⁻	CADMIUM REDUCTION METHOD (SM: PART 4500-NO ₃ ⁻ E)	5.89	0.09
SULPHIDE °	mg/L	METHYLENE BLUE METHOD (SM: PART 4500-S ²⁻ D)	< 0.02	0.02
TOTAL DISSOLVED SOLIDS °	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	38,200	25
FAT, OIL AND GREASE °	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	1.0	3



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW005 : REFINERY MIX T23A0873-0006	
METALS				
LEAD °	mg/L Pb	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	< 0.015	0.015
SAMPLE CONDITION				
WATER'S COLOUR/TURBID			YELLOW/CLEAR	
SEDIMENT			BROWN	

^a : ISO/IEC 17025 ACCREDITED BY THAI INDUSTRIAL STANDARDS INSTITUTE (TISI)

^b : ISO/IEC 17025 ACCREDITED BY DEPARTMENT OF SCIENCE SERVICE (DSS)

^c : VERIFIED BY OWN LABORATORY QUALITY SYSTEM, BUT STILL NOT ACCREDITED

IN-HOUSE : BASED ON STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITIONS, 2017.

FAT, OIL AND GREASE : THIS REPORTED VALUE IS BELOW LIMIT OF DETECTION. ITS USE IS SUBJECT TO CUSTOMER JUSTIFICATION.

RELEASE ORDER NO. : EV-03-08-001

[REDACTED]

(MRS PIYAPAT SUTTAMANUTWONG)
LABORATORY SUPERVISOR

AUGUST 16, 2023

ANALYSIS REPORT

PROJECT NAME : ENVIRONMENTAL & SOCIOECONOMIC SURVEY
CUSTOMER NAME : ESSO (THAILAND) PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : 0 3314 2891 e-mail : wanlop.boongor@bangchak.co.th
SAMPLING SOURCE : -
SAMPLE TYPE : EFFLUENT
SAMPLING DATE : SEPTEMBER 7, 2023
SAMPLING TIME : 10:10 HOUR
SAMPLING METHOD ° : GRAB
SAMPLING BY ° : MR THANADET WANSANOR
ANALYZED BY : MISS NAPAPORN KHUNNOKKHUM

RECEIVED DATE : SEPTEMBER 8, 2023
ANALYTICAL DATE : SEPTEMBER 8-17, 2023
REPORT NO. : 2023-U087567
WORK NO. : 2019-002022
ANALYSIS NO. : T23AR664-0008

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW005 : REFINERY MIX T23AR664-0008	
pH ^a	-	ELECTROMETRIC METHOD (SM: PART 4500-H ⁺ B)	7.5 (25°C)	-
SALINITY °	ppt	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2520 B)	29.7	0.1
TEMPERATURE °	°C	THERMOMETER AT SITE (SM: PART 2550 B)	34	-
BIOCHEMICAL OXYGEN DEMAND °	mg/L	MEMBRANE ELECTRODE METHOD (SM: PART 5210 B AND PART 4500-O G)	< 2.0	2.0
NITRATE °	mg/L NO ₃ ⁻	CADMIUM REDUCTION METHOD (SM: PART 4500-NO ₃ ⁻ E)	5.58	0.09
CHEMICAL OXYGEN DEMAND °	mg/L	CLOSED REFLUX, TITRIMETRIC METHOD (SM: PART 5220 C)	74.4	25.0
SULPHIDE °	mg/L	METHYLENE BLUE METHOD(SM: PART 4500-S ²⁻ D)	< 0.02	0.02
TOTAL SUSPENDED SOLIDS ^a	mg/L	TOTAL SUSPENDED SOLIDS DRIED AT 103-105 °C (SM: PART 2540 D)	8.9	5.0
TOTAL DISSOLVED SOLIDS °	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	36,700	25
FAT, OIL AND GREASE °	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	0.6	3



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW005 : REFINERY MIX T23AR664-0008	
METALS				
LEAD ^c	mg/L Pb	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	< 0.015	0.015
SAMPLE CONDITION				
WATER'S COLOUR/TURBID			YELLOW/CLEAR	
SEDIMENT			BROWN	

^a : ISO/IEC 17025 ACCREDITED BY THAI INDUSTRIAL STANDARDS INSTITUTE (TISI)

^b : ISO/IEC 17025 ACCREDITED BY DEPARTMENT OF SCIENCE SERVICE (DSS)

^c : VERIFIED BY OWN LABORATORY QUALITY SYSTEM, BUT STILL NOT ACCREDITED

IN-HOUSE : BASED ON STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

FAT, OIL AND GREASE : THIS REPORTED VALUE IS BELOW LIMIT OF DETECTION. ITS USE IS SUBJECT TO CUSTOMER JUSTIFICATION.

RELEASE ORDER NO. : EV-07-09-002

SUBSTITUTED REPORT FOR REPORT NO. 2023-U077935, DATED SEPTEMBER 20, 2023.

THE REASON FOR ISSUING THE NEW REPORT IS DUE TO THE CORRECTION OF SAMPLING TIME.

(MRS PIYAPAT SUTTAMANUTWONG)
LABORATORY SUPERVISOR

OCTOBER 16, 2023

ANALYSIS REPORT

PROJECT NAME : ENVIRONMENTAL & SOCIOECONOMIC SURVEY
CUSTOMER NAME : ESSO (THAILAND) PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : 0 3314 2891 e-mail : wanlop.boongor@bangchak.co.th
SAMPLING SOURCE : -
SAMPLE TYPE : EFFLUENT
MEASURING DATE : SEPTEMBER 7, 2023
MEASURING TIME : 10:10 HOUR
SAMPLING METHOD : GRAB
MEASURED BY : MR THANADET WANSANOR

RECEIVED DATE : -
ANALYTICAL DATE : -
REPORT NO. : 2023-U087568
WORK NO. : 2019-002022
ANALYSIS NO. : T23AR664-0009

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW005 : REFINERY MIX T23AR664-0009	
DISSOLVED OXYGEN	mg/L	MEMBRANE ELECTRODE METHOD AT SITE (SM: PART 4500-O G)	5.4	0.5
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			YELLOW/CLEAR BROWN	

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

RELEASE ORDER NO. : EV-07-09-002

SUBSTITUTED REPORT FOR REPORT NO. 2023-U077936, DATED SEPTEMBER 26, 2023.

THE REASON FOR ISSUING THE NEW REPORT IS DUE TO THE CORRECTION OF SAMPLING TIME.

(MR THEERAWAT CHOMMING)
LABORATORY SUPERVISOR

OCTOBER 16, 2023



ANALYSIS REPORT

PROJECT NAME	: ENVIRONMENTAL & SOCIOECONOMIC SURVEY			RECEIVED DATE	: OCTOBER 19, 2023
CUSTOMER NAME	: ESSO (THAILAND) PUBLIC COMPANY LIMITED			ANALYTICAL DATE	: OCTOBER 19-27, 2023
ADDRESS	: 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230			REPORT NO.	: 2023-U091941
CONTACT INFORMATION	: TEL : 0 3314 2891 e-mail : wanlop.boongor@bangchak.co.th			WORK NO.	: 2019-002022
SAMPLING SOURCE	: -			ANALYSIS NO.	: T23AU783-0006
SAMPLE TYPE	: EFFLUENT				
SAMPLING DATE	: OCTOBER 19, 2023				
SAMPLING TIME	: 09:15 HOUR				
SAMPLING METHOD °	: GRAB				
SAMPLING BY °	: MR THANADET WANSANOR				
ANALYZED BY	: MISS NAPAPORN KHUNNOKKHUM				

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW005 : REFINERY MIX T23AU783-0006	
pH ^a	-	ELECTROMETRIC METHOD (SM: PART 4500-H ⁺ B)	7.7 (25°C)	-
SALINITY ^c	ppt	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2520 B)	33.8	0.1
TEMPERATURE ^c	°C	THERMOMETER AT SITE (SM: PART 2550 B)	32	-
BIOCHEMICAL OXYGEN DEMAND ^c	mg/L	MEMBRANE ELECTRODE METHOD (SM: PART 5210 B AND PART 4500-O G)	< 2.0	2.0
NITRATE ^c	mg/L NO ₃ ⁻	CADMIUM REDUCTION METHOD (SM: PART 4500-NO ₃ ⁻ E)	5.14	0.09
CHEMICAL OXYGEN DEMAND ^c	mg/L	CLOSED REFLUX, TITRIMETRIC METHOD (SM: PART 5220 C)	92.1	25.0
SULPHIDE ^c	mg/L	METHYLENE BLUE METHOD(SM: PART 4500-S ²⁻ D)	< 0.02	0.02
TOTAL SUSPENDED SOLIDS ^a	mg/L	TOTAL SUSPENDED SOLIDS DRIED AT 103-105 °C (SM: PART 2540 D)	15.5	5.0
TOTAL DISSOLVED SOLIDS ^c	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	39,567	25
FAT, OIL AND GREASE ^c	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	0.7	3



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW005 : REFINERY MIX T23AU783-0006	
METALS				
LEAD ^c	mg/L Pb	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	< 0.015	0.015
SAMPLE CONDITION				
WATER'S COLOUR/TURBID			YELLOW/CLEAR	
SEDIMENT			BROWN	

^a : ISO/IEC 17025 ACCREDITED BY THAI INDUSTRIAL STANDARDS INSTITUTE (TISI)

^b : ISO/IEC 17025 ACCREDITED BY DEPARTMENT OF SCIENCE SERVICE (DSS)

^c : VERIFIED BY OWN LABORATORY QUALITY SYSTEM, BUT STILL NOT ACCREDITED

IN-HOUSE : BASED ON STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

FAT, OIL AND GREASE : THIS REPORTED VALUE IS BELOW LIMIT OF DETECTION. ITS USE IS SUBJECT TO CUSTOMER JUSTIFICATION.

RELEASE ORDER NO. : EV-19-10-006

(MRS PIYAPAT SUTTAMANTWONG)
LABORATORY SUPERVISOR

OCTOBER 31, 2023

ANALYSIS REPORT

PROJECT NAME	: ENVIRONMENTAL & SOCIOECONOMIC SURVEY		
CUSTOMER NAME	: ESSO (THAILAND) PUBLIC COMPANY LIMITED		
ADDRESS	: 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230		
CONTACT INFORMATION	: TEL : 0 3314 2891 e-mail : wanlop.boongor@bangchak.co.th		
SAMPLING SOURCE	: -		
SAMPLE TYPE	: EFFLUENT	RECEIVED DATE	: NOVEMBER 3, 2023
SAMPLING DATE	: NOVEMBER 2, 2023	ANALYTICAL DATE	: NOVEMBER 3-8, 2023
SAMPLING TIME	: 10:15 HOUR	REPORT NO.	: 2023-U097261
SAMPLING METHOD °	: GRAB	WORK NO.	: 2019-002022
SAMPLING BY °	: MR THANADET WANSANOR	ANALYSIS NO.	: T23AV859-0009
ANALYZED BY	: MISS NAPAPORN KHUNNOKKHUM		

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW005 : REFINERY MIX T23AV859-0009	
pH ^a	-	ELECTROMETRIC METHOD (SM: PART 4500-H ⁺ B)	7.9 (25°C)	-
TEMPERATURE °	°C	THERMOMETER AT SITE (SM: PART 2550 B)	33	-
SALINITY °	ppt	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2520 B)	25.4	0.1
BIOCHEMICAL OXYGEN DEMAND °	mg/L	MEMBRANE ELECTRODE METHOD (SM: PART 5210 B AND PART 4500-O G)	< 2.0	2.0
CHEMICAL OXYGEN DEMAND °	mg/L	CLOSED REFLUX, TITRIMETRIC METHOD (SM: PART 5220 C)	85.5	25.0
TOTAL SUSPENDED SOLIDS ^a	mg/L	TOTAL SUSPENDED SOLIDS DRIED AT 103-105 °C (SM: PART 2540 D)	5.3	5.0
TOTAL DISSOLVED SOLIDS °	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	31,040	25
SULPHIDE °	mg/L	METHYLENE BLUE METHOD(SM: PART 4500-S ²⁻ D)	< 0.02	0.02
NITRATE °	mg/L NO ₃ ⁻	CADMIUM REDUCTION METHOD (SM: PART 4500-NO ₃ ⁻ E)	5.58	0.09
FAT, OIL AND GREASE °	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	0.7	3



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW005 : REFINERY MIX T23AV859-0009	
METALS				
LEAD ^c	mg/L Pb	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	0.026	0.015
SAMPLE CONDITION				
WATER'S COLOUR/TURBID			YELLOW/CLEAR	
SEDIMENT			YELLOW	

^a : ISO/IEC 17025 ACCREDITED BY THAI INDUSTRIAL STANDARDS INSTITUTE (TISI)

^b : ISO/IEC 17025 ACCREDITED BY DEPARTMENT OF SCIENCE SERVICE (DSS)

^c : VERIFIED BY OWN LABORATORY QUALITY SYSTEM, BUT STILL NOT ACCREDITED

IN-HOUSE : BASED ON STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

FAT, OIL AND GREASE : THIS REPORTED VALUE IS BELOW LIMIT OF DETECTION. ITS USE IS SUBJECT TO CUSTOMER JUSTIFICATION.

RELEASE ORDER NO. : EV-02-11-001

[REDACTED]

(MR. T. P. AT. SUTHANONGWONG)
LABORATORY SUPERVISOR

NOVEMBER 14, 2023

ANALYSIS REPORT

PROJECT NAME : ENVIRONMENTAL & SOCIOECONOMIC SURVEY
CUSTOMER NAME : BANGCHAK SRIRACHA PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : 0 3314 2891 e-mail : wanlop.boongor@bangchak.co.th
SAMPLING SOURCE : -
SAMPLE TYPE : EFFLUENT
SAMPLING DATE : DECEMBER 7, 2023
SAMPLING TIME : 12:10 HOUR
SAMPLING METHOD ° : GRAB
SAMPLING BY ° : MR THANADET WANSANOR
ANALYZED BY : MISS NAPAPORN KHUNNOKKHUM

RECEIVED DATE : DECEMBER 8, 2023
ANALYTICAL DATE : DECEMBER 8-15, 2023
REPORT NO. : 2023-U108970
WORK NO. : 2019-002022
ANALYSIS NO. : T23AY516-0008

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW005 : REFINERY MIX T23AY516-0008	
pH ^a	-	ELECTROMETRIC METHOD (SM: PART 4500-H ⁺ B)	7.7 (25°C)	-
TEMPERATURE °	°C	THERMOMETER AT SITE (SM: PART 2550 B)	34	-
SALINITY °	ppt	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2520 B)	35.8	0.1
BIOCHEMICAL OXYGEN DEMAND °	mg/L	MEMBRANE ELECTRODE METHOD (SM: PART 5210 B AND PART 4500-O G)	< 2.0	2.0
CHEMICAL OXYGEN DEMAND °	mg/L	CLOSED REFLUX, TITRIMETRIC METHOD (SM: PART 5220 C)	57.6	25.0
TOTAL SUSPENDED SOLIDS ^a	mg/L	TOTAL SUSPENDED SOLIDS DRIED AT 103-105 °C (SM: PART 2540 D)	7.1	5.0
TOTAL DISSOLVED SOLIDS °	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	38,467	25
SULPHIDE °	mg/L	METHYLENE BLUE METHOD(SM: PART 4500-S ²⁻ D)	< 0.02	0.02
NITRATE °	mg/L NO ₃	CADMIUM REDUCTION METHOD (SM: PART 4500-NO ₃ E)	14.2	0.09
FAT, OIL AND GREASE °	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	0.4	3



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW005 : REFINERY MIX T23AY516-0008	
METALS				
LEAD ^c	mg/L Pb	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	< 0.015	0.015
SAMPLE CONDITION				
WATER'S COLOUR/TURBID			YELLOW/CLEAR	
SEDIMENT			BROWN	

^a : ISO/IEC 17025 ACCREDITED BY THAI INDUSTRIAL STANDARDS INSTITUTE (TISI)

^b : ISO/IEC 17025 ACCREDITED BY DEPARTMENT OF SCIENCE SERVICE (DSS)

^c : VERIFIED BY OWN LABORATORY QUALITY SYSTEM, BUT STILL NOT ACCREDITED

IN-HOUSE : BASED ON STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

FAT, OIL AND GREASE : THIS REPORTED VALUE IS BELOW LIMIT OF DETECTION. ITS USE IS SUBJECT TO CUSTOMER JUSTIFICATION.

RELEASE ORDER NO. : EV-07-12-002

[REDACTED]

(MRS PIYAPAT SUTTAMANUTWONG)
LABORATORY SUPERVISOR

DECEMBER 19, 2023

ANALYSIS REPORT

PROJECT NAME : ENVIRONMENTAL & SOCIOECONOMIC SURVEY
CUSTOMER NAME : BANGCHAK SRIRACHA PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : 0 3314 2891 e-mail : wanlop.boongor@bangchak.co.th
SAMPLING SOURCE : -
SAMPLE TYPE : EFFLUENT
MEASURING DATE : DECEMBER 7, 2023
MEASURING TIME : 12:20 HOUR
SAMPLING METHOD : GRAB
MEASURED BY : MR THANADET WANSANOR

RECEIVED DATE : -
ANALYTICAL DATE : -
REPORT NO. : 2023-U108972
WORK NO. : 2019-002022
ANALYSIS NO. : T23AY516-0009

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW005 : REFINERY MIX T23AY516-0009	
DISSOLVED OXYGEN	mg/L	MEMBRANE ELECTRODE METHOD AT SITE (SM: PART 4500-O G)	4.8	0.5
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			YELLOW/CLEAR BROWN	

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

RELEASE ORDER NO. : EV-07-12-002

(MR THEERAWAT CHOMMING)
LABORATORY SUPERVISOR

DECEMBER 19, 2023



ANALYSIS REPORT

PROJECT NAME	: ENVIRONMENTAL & SOCIOECONOMIC SURVEY	RECEIVED DATE	: JULY 7, 2023
CUSTOMER NAME	: ESSO (THAILAND) PUBLIC COMPANY LIMITED	ANALYTICAL DATE	: JULY 7-18, 2023
ADDRESS	: 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230	REPORT NO.	: 2023-U059406
CONTACT INFORMATION	: TEL : 0 3314 2891 e-mail : wanlop.boongor@exxonmobil.com	WORK NO.	: 2019-002022
SAMPLING SOURCE	: -	ANALYSIS NO.	: T23AM983-0001
SAMPLE TYPE	: SEAWATER		
SAMPLING DATE	: JULY 6, 2023		
SAMPLING TIME	: 10:45 HOUR		
SAMPLING METHOD	: COMPOSITE		
SAMPLING BY	: MR THANADET WANSANOR		
ANALYZED BY	: MISS KANNIKAR SUMLEETHA		

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW006. 500 M OFFSHORE (JETTY) T23AM983-0001	
pH	-	ELECTROMETRIC METHOD (SM: PART 4500-H ⁺ B)	7.7 (25°C)	-
PHENOLS	mg/L	DISTILLATION, 4-AMINOANTIPYRINE METHOD (SM: PART 5530 B AND PART 5530 C)	0.006	0.005
TEMPERATURE	°C	THERMOMETER AT SITE (SM: PART 2550 B)	32	-
SALINITY	ppt	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2520 B)	24.5	0.1
DISSOLVED OXYGEN	mg/L	MEMBRANE ELECTRODE METHOD AT SITE (SM: PART 4500-O G)	4.7	0.5
BIOCHEMICAL OXYGEN DEMAND	mg/L	MEMBRANE ELECTRODE METHOD (SM: PART 5210 B AND PART 4500-O G)	1.5	0.5
CHEMICAL OXYGEN DEMAND	mg/L	CLOSED REFLUX, TITRIMETRIC METHOD (SM: PART 5220 C)	82.4	25.0
SUSPENDED SOLIDS	mg/L	GRAVIMETRIC METHOD (SM: PART 2540 D)	11.5	1.0
TOTAL DISSOLVED SOLIDS	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	35,774	25
CYANIDE	µg/L CN ⁻	DISTILLATION, PYRIDINE-BARBITURIC ACID METHOD (SM: PART 4500-CN ⁻ C AND PART 4500-CN ⁻ E)	< 5	5
NITRATE-NITROGEN	µg/L N	CADMIUM REDUCTION AND COLOURIMETRIC METHOD (BASED ON PRACTICAL HANDBOOK OF SEAWATER ANALYSIS (STRICKLAND AND PARSON, 1972, II.6))	6.65	0.50
SULPHIDE	µg/L	METHYLENE BLUE COLOURIMETRIC METHOD (METHOD OF SEAWATER ANALYSIS, GRASSHOFF, 1999, CHAPTER 5)	< 10	10
FAT, OIL AND GREASE	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	0.8	3




PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW006. 500 M OFFSHORE (JETTY) T23AM983-0001	
METALS				
LEAD	µg/L Pb	PRE-CONCENTRATION AND INDUCTIVELY COUPLED PLASMA (ICP) METHOD (BASED ON METHOD OF SEAWATER ANALYSIS, GRASSHOFF, 1999, CHAPTER 12)	0.610	0.100
SAMPLE CONDITION				
WATER'S COLOUR/TURBID			YELLOW/CLEAR	
SEDIMENT			BROWN	

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

FAT, OIL AND GREASE : THIS REPORTED VALUE IS BELOW LIMIT OF DETECTION. ITS USE IS SUBJECT TO CUSTOMER JUSTIFICATION.

RELEASE ORDER NO. : EV-06-07-002



(MRS PIYAPAT SUTTAMANTWONG)
LABORATORY SUPERVISOR

JULY 24, 2023

ANALYSIS REPORT

PROJECT NAME	: ENVIRONMENTAL & SOCIOECONOMIC SURVEY	RECEIVED DATE	: AUGUST 4, 2023
CUSTOMER NAME	: ESSO (THAILAND) PUBLIC COMPANY LIMITED	ANALYTICAL DATE	: AUGUST 4-22, 2023
ADDRESS	: 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230	REPORT NO.	: 2023-U066643
CONTACT INFORMATION	: TEL : 0 3314 2891 e-mail : wanlop.boongor@exxonmobil.com	WORK NO.	: 2019-002022
SAMPLING SOURCE	: -	ANALYSIS NO.	: T23AO874-0001
SAMPLE TYPE	: SEAWATER		
SAMPLING DATE	: AUGUST 3, 2023		
SAMPLING TIME	: 10:25 HOUR		
SAMPLING METHOD	: COMPOSITE		
SAMPLING BY	: MR THANADET WANSANOR		
ANALYZED BY	: MISS KANNIKAR SUMLEETHA		

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW006. 500 M OFFSHORE (JETTY) T23AO874-0001	
pH	-	ELECTROMETRIC METHOD (SM: PART 4500-H ⁺ B)	7.6 (25°C)	-
PHENOLS	mg/L	DISTILLATION, 4-AMINOANTIPYRINE METHOD (SM: PART 5530 B AND PART 5530 C)	< 0.005	0.005
TEMPERATURE	°C	THERMOMETER AT SITE (SM: PART 2550 B)	30	-
SALINITY	ppt	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2520 B)	27.5	0.1
DISSOLVED OXYGEN	mg/L	MEMBRANE ELECTRODE METHOD AT SITE (SM: PART 4500-O G)	4.7	0.5
BIOCHEMICAL OXYGEN DEMAND	mg/L	MEMBRANE ELECTRODE METHOD (SM: PART 5210 B AND PART 4500-O G)	1.1	0.5
CHEMICAL OXYGEN DEMAND	mg/L	CLOSED REFLUX, TITRIMETRIC METHOD (SM: PART 5220 C)	65.6	25.0
SUSPENDED SOLIDS	mg/L	GRAVIMETRIC METHOD (SM: PART 2540 D)	35.7	1.0
TOTAL DISSOLVED SOLIDS	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	33,947	25
CYANIDE	µg/L CN ⁻	DISTILLATION, PYRIDINE-BARBITURIC ACID METHOD (SM: PART 4500-CN ⁻ C AND PART 4500-CN ⁻ E)	< 5	5
NITRATE-NITROGEN	µg/L N	CADMIUM REDUCTION AND COLOURIMETRIC METHOD (BASED ON PRACTICAL HANDBOOK OF SEAWATER ANALYSIS (STRICKLAND AND PARSON, 1972, II.6))	10.3	0.50
SULPHIDE	µg/L	METHYLENE BLUE COLOURIMETRIC METHOD (METHOD OF SEAWATER ANALYSIS, GRASSHOFF, 1999, CHAPTER 5)	< 10	10
FAT, OIL AND GREASE	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	1.2	3



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW006. 500 M OFFSHORE (JETTY) T23A0874-0001	
METALS				
LEAD	µg/L Pb	PRE-CONCENTRATION AND INDUCTIVELY COUPLED PLASMA (ICP) METHOD (BASED ON METHOD OF SEAWATER ANALYSIS, GRASSHOFF, 1999, CHAPTER 12)	< 0.100	0.100
SAMPLE CONDITION				
WATER'S COLOUR/TURBID			COLOURLESS/CLEAR	
SEDIMENT			YELLOW	

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

FAT, OIL AND GREASE : THIS REPORTED VALUE IS BELOW LIMIT OF DETECTION. ITS USE IS SUBJECT TO CUSTOMER JUSTIFICATION.

RELEASE ORDER NO. : EV-03-08-001

(MRS PIYAPAT SUTTAMANUTWONG)
LABORATORY SUPERVISOR

AUGUST 24, 2023

ANALYSIS REPORT

PROJECT NAME : ENVIRONMENTAL & SOCIOECONOMIC SURVEY
CUSTOMER NAME : ESSO (THAILAND) PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : 0 3314 2891 e-mail : wanlop.boongor@bangchak.co.th
SAMPLING SOURCE : -
SAMPLE TYPE : SEAWATER
SAMPLING DATE : SEPTEMBER 7, 2023
SAMPLING TIME : 10:40 HOUR
SAMPLING METHOD : COMPOSITE
SAMPLING BY : MR THANADET WANSANOR
ANALYZED BY : MISS KANNIKAR SUMLEETHA

RECEIVED DATE : SEPTEMBER 8, 2023
ANALYTICAL DATE : SEPTEMBER 8-24, 2023
REPORT NO. : 2023-U078930
WORK NO. : 2019-002022
ANALYSIS NO. : T23AR666-0001

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW006. 500 M OFFSHORE (JETTY) T23AR666-0001	
pH	-	ELECTROMETRIC METHOD (SM: PART 4500-H ⁺ B)	7.7 (25°C)	-
PHENOLS	mg/L	DISTILLATION, 4-AMINOANTIPYRINE METHOD (SM: PART 5530 B AND PART 5530 C)	< 0.005	0.005
TEMPERATURE	°C	THERMOMETER AT SITE (SM: PART 2550 B)	31	-
SALINITY	ppt	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2520 B)	28.1	0.1
DISSOLVED OXYGEN	mg/L	MEMBRANE ELECTRODE METHOD AT SITE (SM: PART 4500-O G)	5.0	0.5
BIOCHEMICAL OXYGEN DEMAND	mg/L	MEMBRANE ELECTRODE METHOD (SM: PART 5210 B AND PART 4500-O G)	0.9	0.5
CHEMICAL OXYGEN DEMAND	mg/L	CLOSED REFLUX, TITRIMETRIC METHOD (SM: PART 5220 C)	84.0	25.0
SUSPENDED SOLIDS	mg/L	GRAVIMETRIC METHOD (SM: PART 2540 D)	4.7	1.0
TOTAL DISSOLVED SOLIDS	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	35,080	25
CYANIDE	µg/L CN ⁻	DISTILLATION, PYRIDINE-BARBITURIC ACID METHOD (SM: PART 4500-CN ⁻ C AND PART 4500-CN ⁻ E)	< 5	5
NITRATE-NITROGEN	µg/L N	CADMIUM REDUCTION AND COLOURIMETRIC METHOD (BASED ON PRACTICAL HANDBOOK OF SEAWATER ANALYSIS (STRICKLAND AND PARSON, 1972, II.6))	12.2	0.50
SULPHIDE	µg/L	METHYLENE BLUE COLOURIMETRIC METHOD (METHOD OF SEAWATER ANALYSIS, GRASSHOFF, 1999, CHAPTER 5)	< 10	10
FAT, OIL AND GREASE	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	0.8	3



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW006. 500 M OFFSHORE (JETTY) T23AR666-0001	
METALS				
LEAD	µg/L Pb	PRE-CONCENTRATION AND INDUCTIVELY COUPLED PLASMA (ICP) METHOD (BASED ON METHOD OF SEAWATER ANALYSIS, GRASSHOFF, 1999, CHAPTER 12)	0.680	0.100
SAMPLE CONDITION				
WATER'S COLOUR/TURBID			YELLOW/CLEAR	
SEDIMENT			BROWN	

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

FAT, OIL AND GREASE : THIS REPORTED VALUE IS BELOW LIMIT OF DETECTION. ITS USE IS SUBJECT TO CUSTOMER JUSTIFICATION.

RELEASE ORDER NO. : EV-07-09-002

[REDACTED]

(MRS PIYAPAT SUTTAMANUTWONG)
LABORATORY SUPERVISOR

SEPTEMBER 26, 2023

ANALYSIS REPORT

PROJECT NAME	: ENVIRONMENTAL & SOCIOECONOMIC SURVEY		
CUSTOMER NAME	: ESSO (THAILAND) PUBLIC COMPANY LIMITED		
ADDRESS	: 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230		
CONTACT INFORMATION	: TEL : 0 3314 2891 e-mail : wanlop.boongor@bangchak.co.th		
SAMPLING SOURCE	: -		
SAMPLE TYPE	: SEAWATER	RECEIVED DATE	: OCTOBER 19, 2023
SAMPLING DATE	: OCTOBER 19, 2023	ANALYTICAL DATE	: OCTOBER 19-27, 2023
SAMPLING TIME	: 08:25 HOUR	REPORT NO.	: 2023-U092280
SAMPLING METHOD	: COMPOSITE	WORK NO.	: 2019-002022
SAMPLING BY	: MR NAPASIT SRIPIM	ANALYSIS NO.	: T23AU785-0001
ANALYZED BY	: MISS KANNIKAR SUMLEETHA		

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW006. 500 M OFFSHORE (JETTY) T23AU785-0001	
pH	-	ELECTROMETRIC METHOD (SM: PART 4500-H ⁺ B)	7.8 (25°C)	-
PHENOLS	mg/L	DISTILLATION, 4-AMINOANTIPYRINE METHOD (SM: PART 5530 B AND PART 5530 C)	< 0.005	0.005
TEMPERATURE	°C	THERMOMETER AT SITE (SM: PART 2550 B)	30	-
SALINITY	ppt	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2520 B)	31.1	0.1
DISSOLVED OXYGEN	mg/L	MEMBRANE ELECTRODE METHOD AT SITE (SM: PART 4500-O G)	3.7	0.5
BIOCHEMICAL OXYGEN DEMAND	mg/L	MEMBRANE ELECTRODE METHOD (SM: PART 5210 B AND PART 4500-O G)	1.3	0.5
CHEMICAL OXYGEN DEMAND	mg/L	CLOSED REFLUX, TITRIMETRIC METHOD (SM: PART 5220 C)	88.9	25.0
SUSPENDED SOLIDS	mg/L	GRAVIMETRIC METHOD (SM: PART 2540 D)	5.1	1.0
TOTAL DISSOLVED SOLIDS	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	35,750	25
CYANIDE	µg/L CN	DISTILLATION, PYRIDINE-BARBITURIC ACID METHOD (SM: PART 4500-CN C AND PART 4500-CN E)	< 5	5
NITRATE-NITROGEN	µg/L N	CADMIUM REDUCTION AND COLOURIMETRIC METHOD (BASED ON PRACTICAL HANDBOOK OF SEAWATER ANALYSIS (STRICKLAND AND PARSON, 1972, II.6))	22.6	0.50
SULPHIDE	µg/L	METHYLENE BLUE COLOURIMETRIC METHOD (METHOD OF SEAWATER ANALYSIS, GRASSHOFF, 1999, CHAPTER 5)	< 10	10
FAT, OIL AND GREASE	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	0.6	3



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW006. 500 M OFFSHORE (JETTY) T23AU785-0001	
METALS				
LEAD	µg/L Pb	PRE-CONCENTRATION AND INDUCTIVELY COUPLED PLASMA (ICP) METHOD (BASED ON METHOD OF SEAWATER ANALYSIS, GRASSHOFF, 1999, CHAPTER 12)	0.110	0.100
SAMPLE CONDITION				
WATER'S COLOUR/TURBID			YELLOW/CLEAR	
SEDIMENT			BROWN	

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

FAT, OIL AND GREASE : THIS REPORTED VALUE IS BELOW LIMIT OF DETECTION. ITS USE IS SUBJECT TO CUSTOMER JUSTIFICATION.

RELEASE ORDER NO. : EV-19-10-006



(MRS PIYAPAT SUTTAMANTWONG)
LABORATORY SUPERVISOR

OCTOBER 31, 2023

ANALYSIS REPORT

PROJECT NAME : ENVIRONMENTAL & SOCIOECONOMIC SURVEY
CUSTOMER NAME : ESSO (THAILAND) PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : 0 3314 2891 e-mail : wanlop.boongor@bangchak.co.th
SAMPLING SOURCE : -
SAMPLE TYPE : SEAWATER
SAMPLING DATE : NOVEMBER 2, 2023
SAMPLING TIME : 10:35 HOUR
SAMPLING METHOD : COMPOSITE
SAMPLING BY : MR THANADET WANSANOR
ANALYZED BY : MISS KANNIKAR SUMLEETHA

RECEIVED DATE : NOVEMBER 3, 2023
ANALYTICAL DATE : NOVEMBER 3-10, 2023
REPORT NO. : 2023-U097316
WORK NO. : 2019-002022
ANALYSIS NO. : T23AV861-0001

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW006 : 500 M OFFSHORE (JETTY) T23AV861-0001	
pH	-	ELECTROMETRIC METHOD (SM: PART 4500-H ⁺ B)	7.8 (25°C)	-
PHENOLS	mg/L	DISTILLATION, 4-AMINOANTIPYRINE METHOD (SM: PART 5530 B AND PART 5530 C)	< 0.005	0.005
TEMPERATURE	°C	THERMOMETER AT SITE (SM: PART 2550 B)	30	-
SALINITY	ppt	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2520 B)	28.5	0.1
DISSOLVED OXYGEN	mg/L	MEMBRANE ELECTRODE METHOD AT SITE (SM: PART 4500-O G)	4.6	0.5
BIOCHEMICAL OXYGEN DEMAND	mg/L	MEMBRANE ELECTRODE METHOD (SM: PART 5210 B AND PART 4500-O G)	0.9	0.5
CHEMICAL OXYGEN DEMAND	mg/L	CLOSED REFLUX, TITRIMETRIC METHOD (SM: PART 5220 C)	57.0	25.0
SUSPENDED SOLIDS	mg/L	GRAVIMETRIC METHOD (SM: PART 2540 D)	5.0	1.0
TOTAL DISSOLVED SOLIDS	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	33,980	25
CYANIDE	µg/L CN ⁻	DISTILLATION, PYRIDINE-BARBITURIC ACID METHOD (SM: PART 4500-CN ⁻ C AND PART 4500-CN ⁻ E)	< 5	5
NITRATE-NITROGEN	µg/L N	CADMIUM REDUCTION AND COLOURIMETRIC METHOD (BASED ON PRACTICAL HANDBOOK OF SEAWATER ANALYSIS (STRICKLAND AND PARSON, 1972, II.6))	4.78	0.50
SULPHIDE	µg/L	METHYLENE BLUE COLOURIMETRIC METHOD (METHOD OF SEAWATER ANALYSIS, GRASSHOFF, 1999, CHAPTER 5)	< 10	10
FAT, OIL AND GREASE	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	0.5	3



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW006 : 500 M OFFSHORE (JETTY) T23AV861-0001	
METALS				
LEAD	µg/L Pb	PRE-CONCENTRATION AND INDUCTIVELY COUPLED PLASMA (ICP) METHOD (BASED ON METHOD OF SEAWATER ANALYSIS, GRASSHOFF, 1999, CHAPTER 12)	0.840	0.100
SAMPLE CONDITION				
WATER'S COLOUR/TURBID			COLOURLESS/CLEAR	
SEDIMENT			YELLOW	

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

FAT, OIL AND GREASE : THIS REPORTED VALUE IS BELOW LIMIT OF DETECTION. ITS USE IS SUBJECT TO CUSTOMER JUSTIFICATION.

RELEASE ORDER NO. : EV-02-11-001

[REDACTED]

(MRS PIYAPAT SUTTAMANUTWONG)
LABORATORY SUPERVISOR

NOVEMBER 20, 2023

ANALYSIS REPORT

PROJECT NAME : ENVIRONMENTAL & SOCIOECONOMIC SURVEY
CUSTOMER NAME : ESSO (THAILAND) PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : 0 3314 2891 e-mail : wanlop.boongor@bangchak.co.th
SAMPLING SOURCE : -
SAMPLE TYPE : SEAWATER
SAMPLING DATE : NOVEMBER 2, 2023
SAMPLING TIME : 10:35 HOUR
SAMPLING METHOD : COMPOSITE
SAMPLING BY : MR THANADET WANSANOR
ANALYZED BY : MR KORNVIT CHIASIRISAKUL

RECEIVED DATE : NOVEMBER 3, 2023
ANALYTICAL DATE : NOVEMBER 3-10, 2023
REPORT NO. : 2023-U097317
WORK NO. : 2019-002022
ANALYSIS NO. : T23AV861-0002

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW006 : 500 M OFFSHORE (JETTY) T23AV861-0002	
METALS				
MERCURY	µg/L Hg	COLD-VAPOUR ATOMIC FLUORESCENCE SPECTROMETRIC METHOD (US EPA 2005: 245.7)	< 0.020	0.020
SAMPLE CONDITION				
WATER'S COLOUR/TURBID			COLOURLESS/CLEAR	
SEDIMENT			BROWN	

RELEASE ORDER NO. : EV-02-11-001

(MR BHUCHONK PANICHLERTUMPI)
LABORATORY SUPERVISOR

NOVEMBER 20, 2023



ANALYSIS REPORT

PROJECT NAME	: ENVIRONMENTAL & SOCIOECONOMIC SURVEY		
CUSTOMER NAME	: BANGCHAK SRIRACHA PUBLIC COMPANY LIMITED		
ADDRESS	: 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230		
CONTACT INFORMATION	: TEL : 0 3314 2891 e-mail : wanlop.boongor@bangchak.co.th		
SAMPLING SOURCE	: -		
SAMPLE TYPE	: SEAWATER	RECEIVED DATE	: DECEMBER 8, 2023
SAMPLING DATE	: DECEMBER 7, 2023	ANALYTICAL DATE	: DECEMBER 8-18, 2023
SAMPLING TIME	: 11:50 HOUR	REPORT NO.	: 2023-U109006
SAMPLING METHOD	: COMPOSITE	WORK NO.	: 2019-002022
SAMPLING BY	: MR THANADET WANSANOR	ANALYSIS NO.	: T23AY513-0001
ANALYZED BY	: MISS KANNIKAR SUMLEETHA		

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW006 : 500 M OFFSHORE (JETTY) T23AY513-0001	
pH	-	ELECTROMETRIC METHOD (SM: PART 4500-H ⁺ B)	7.7 (25°C)	-
PHENOLS	mg/L	DISTILLATION, 4-AMINOANTIPYRINE METHOD (SM: PART 5530 B AND PART 5530 C)	< 0.005	0.005
TEMPERATURE	°C	THERMOMETER AT SITE (SM: PART 2550 B)	29	-
SALINITY	ppt	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2520 B)	30.0	0.1
DISSOLVED OXYGEN	mg/L	MEMBRANE ELECTRODE METHOD AT SITE (SM: PART 4500-O G)	5.0	0.5
BIOCHEMICAL OXYGEN DEMAND	mg/L	MEMBRANE ELECTRODE METHOD (SM: PART 5210 B AND PART 4500-O G)	1.1	0.5
CHEMICAL OXYGEN DEMAND	mg/L	CLOSED REFLUX, TITRIMETRIC METHOD (SM: PART 5220 C)	44.8	25.0
SUSPENDED SOLIDS	mg/L	GRAVIMETRIC METHOD (SM: PART 2540 D)	3.7	1.0
TOTAL DISSOLVED SOLIDS	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	35,433	25
CYANIDE	µg/L CN ⁻	DISTILLATION, PYRIDINE-BARBITURIC ACID METHOD (SM: PART 4500-CN ⁻ C AND PART 4500-CN ⁻ E)	< 5	5
NITRATE-NITROGEN	µg/L N	CADMIUM REDUCTION AND COLOURIMETRIC METHOD (BASED ON PRACTICAL HANDBOOK OF SEAWATER ANALYSIS (STRICKLAND AND PARSON, 1972, II.6))	2.42	0.50
SULPHIDE	µg/L	METHYLENE BLUE COLOURIMETRIC METHOD (METHOD OF SEAWATER ANALYSIS, GRASSHOFF, 1999, CHAPTER 5)	< 10	10
FAT, OIL AND GREASE	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	0.4	3



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW006 : 500 M OFFSHORE (JETTY) T23AY513-0001	
METALS				
LEAD	µg/L Pb	PRE-CONCENTRATION AND INDUCTIVELY COUPLED PLASMA (ICP) METHOD (BASED ON METHOD OF SEAWATER ANALYSIS, GRASSHOFF, 1999, CHAPTER 12)	< 0.100	0.100
SAMPLE CONDITION				
WATER'S COLOUR/TURBID			COLOURLESS/CLEAR	
SEDIMENT			YELLOW	

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

FAT, OIL AND GREASE : THIS REPORTED VALUE IS BELOW LIMIT OF DETECTION. ITS USE IS SUBJECT TO CUSTOMER JUSTIFICATION.

RELEASE ORDER NO. : EV-07-12-002

[REDACTED]

(MRS PIYAPAT SUTTAMANUTWONG)
LABORATORY SUPERVISOR

DECEMBER 20, 2023

เบนซีน และไฮโดรคาร์บอนรวม



Your Project #: SRT-RF-2023 05

Attention: Tanaphorn Taweeyat

ESSO SRIRACHA REFINERY
118, Moo 2, Sukhapiban 7 Rd
Sriracha, Chonburi
Thailand 20230

Report Date: 08/03/2023

Report #: R7748050

Version: 1 - Final

ANALYTICAL REPORT

BV LABS JOB #: C3M8708

Received: 07/31/2023, 00:00

Sample Matrix: Passive Monitor
Samples Received: 6

Analyses	Quantity	Date Analyzed	Laboratory Method	Analytical Method
Naphthas by NIOSH 1550 - Monitor	6	08/02/2023	NOV4SOP-00001	NIOSH 1550 / 1551
Volatiles (VOC) - List 1 -GC/FID-Monitor	6	08/02/2023	NOV SOP-00005	NOV SOP-00005

This report shall not be reproduced except in full, without the written approval of the laboratory.

Results relate only to the items tested.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

Encryption Key

Please direct all questions regarding this Analytical Report to your Project Manager.

Wendy Lesniak, CS

Email: Wendy.Lesniak@bureauveritas.com

Phone# (248) 344-1770

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Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. This report is authorized by Jason Forbes, Director of Operations responsible for Michigan Industrial Hygiene laboratory operations.



BV Labs Job #: C3M8708
Report Date: 08/03/2023

ESSO SRIRACHA REFINERY
Client Project #: SRT-RF-2023 05

ANALYTICAL RESULTS

Client ID:	SRT-RF-2023-05-004				Matrix:	Passive Monitor		
BV Labs ID:	WNY943				Sample Media:	AT 566/3M3500+Monitor Charcoal		
Date Sampled:	07/13/2023				Sampling Time (Minutes):	480		
ANALYTE	Samp Rate cc/min	Mass ug	Concentration mg/m3	ppm	RL ug	Test Method	Date Analyzed	QC Batch
Benzene	9.7	<0.50	<0.11	<0.034	0.50	NOV SOP-00005	08/02/2023	8828956
THCs as n-Hexane	9.9	<30	<6.3	<1.8	30	NIOSH 1550 / 1551	08/02/2023	8828962
Toluene	9.5	<3.0	<0.66	<0.17	3.0	NOV SOP-00005	08/02/2023	8828956
Xylenes	7.5	<6.0	<1.7	<0.38	6.0	NOV SOP-00005	08/02/2023	8828956
QC Batch = Quality Control Batch								
RL = Reporting Limit								

Client ID:	SRT-RF-2023-05-005				Matrix:	Passive Monitor		
BV Labs ID:	WNY944				Sample Media:	AT 566/3M3500+Monitor Charcoal		
Date Sampled:	07/13/2023				Sampling Time (Minutes):	480		
ANALYTE	Samp Rate cc/min	Mass ug	Concentration mg/m3	ppm	RL ug	Test Method	Date Analyzed	QC Batch
Benzene	9.7	<0.50	<0.11	<0.034	0.50	NOV SOP-00005	08/02/2023	8828956
THCs as n-Hexane	9.9	<30	<6.3	<1.8	30	NIOSH 1550 / 1551	08/02/2023	8828962
Toluene	9.5	<3.0	<0.66	<0.17	3.0	NOV SOP-00005	08/02/2023	8828956
Xylenes	7.5	<6.0	<1.7	<0.38	6.0	NOV SOP-00005	08/02/2023	8828956
QC Batch = Quality Control Batch								
RL = Reporting Limit								

Client ID:	SRT-RF-2023-05-006				Matrix:	Passive Monitor		
BV Labs ID:	WNY945				Sample Media:	AT 566/3M3500+Monitor Charcoal		
Date Sampled:	07/13/2023				Sampling Time (Minutes):	480		
ANALYTE	Samp Rate cc/min	Mass ug	Concentration mg/m3	ppm	RL ug	Test Method	Date Analyzed	QC Batch
Benzene	9.7	<0.50	<0.11	<0.034	0.50	NOV SOP-00005	08/02/2023	8828956
THCs as n-Hexane	9.9	<30	<6.3	<1.8	30	NIOSH 1550 / 1551	08/02/2023	8828962
Toluene	9.5	<3.0	<0.66	<0.17	3.0	NOV SOP-00005	08/02/2023	8828956
Xylenes	7.5	<6.0	<1.7	<0.38	6.0	NOV SOP-00005	08/02/2023	8828956
QC Batch = Quality Control Batch								
RL = Reporting Limit								



BV Labs Job #: C3M8708
Report Date: 08/03/2023

ESSO SRIRACHA REFINERY
Client Project #: SRT-RF-2023 05

ANALYTICAL RESULTS

Client ID:	SRT-RF-2023-05-007				Matrix:	Passive Monitor		
BV Labs ID:	WNY946				Sample Media:	AT 566/3M3500+Monitor Charcoal		
Date Sampled:	07/20/2023				Sampling Time (Minutes):	480		

Client ID:	SRT-RF-2023-05-008				Matrix:	Passive Monitor		
BV Labs ID:	WNY947				Sample Media:	AT 566/3M3500+Monitor Charcoal		
Date Sampled:	07/20/2023				Sampling Time (Minutes):	480		
ANALYTE	Samp Rate cc/min	Mass ug	Concentration mg/m3	ppm	RL ug	Test Method	Date Analyzed	QC Batch
Benzene	9.7	<0.50	<0.11	<0.034	0.50	NOV SOP-00005	08/02/2023	8828956
THCs as n-Hexane	9.9	<30	<6.3	<1.8	30	NIOSH 1550 / 1551	08/02/2023	8828962
Toluene	9.5	<3.0	<0.66	<0.17	3.0	NOV SOP-00005	08/02/2023	8828956
Xylenes	7.5	<6.0	<1.7	<0.38	6.0	NOV SOP-00005	08/02/2023	8828956
QC Batch = Quality Control Batch								
RL = Reporting Limit								

Client ID:	SRT-RF-2023-05-BLANK					Matrix:	Passive Monitor	
BV Labs ID:	WNY948					Sample Media:	AT 566/3M3500+Monitor Charcoal	
Date Sampled:								
	Samp Rate	Mass	Concentration		RL		Date	
ANALYTE	cc/min	ug	mg/m3	ppm	ug	Test Method	Analyzed	QC Batch
Benzene	9.7	<0.50	N/A	N/A	0.50	NOV SOP-00005	08/02/2023	8828956
THCs as n-Hexane	9.9	<30	N/A	N/A	30	NIOSH 1550 / 1551	08/02/2023	8828962
Toluene	9.5	<3.0	N/A	N/A	3.0	NOV SOP-00005	08/02/2023	8828956
Xylenes	7.5	<6.0	N/A	N/A	6.0	NOV SOP-00005	08/02/2023	8828956
QC Batch = Quality Control Batch								
RL = Reporting Limit								



BV Labs Job #: C3M8708
Report Date: 08/03/2023

ESSO SRIRACHA REFINERY
Client Project #: SRT-RF-2023 05

GENERAL COMMENTS

Unless otherwise noted below the following statements apply: 1) all samples were received in acceptable condition, 2) all quality control results associated with this sample set were within acceptable limits and /or do not adversely affect the reported results and 3) the industrial hygiene results have not been blank corrected.

The client provided their pertinent field sampling data on the analysis request paperwork submitted with the samples. Results apply to the sample as received.

Results relate only to the items tested.



BUREAU
VERITAS

BV Labs Job #: C3M8708

Report Date: 08/03/2023

ESSO SRIRACHA REFINERY

Client Project #: SRT-RF-2023 05

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
8828956	CWX	LCS	Benzene	08/02/2023		99	%	80 - 120
			Toluene	08/02/2023		97	%	80 - 120
			Xylenes	08/02/2023		95	%	80 - 120
8828956	CWX	LCS DUP	Benzene	08/02/2023		97	%	80 - 120
			Toluene	08/02/2023		96	%	80 - 120
			Xylenes	08/02/2023		93	%	80 - 120
8828956	CWX	LCS/LCSD RPD	Benzene	08/02/2023	1.4		%	20
			Toluene	08/02/2023	0.99		%	20
			Xylenes	08/02/2023	1.9		%	20
8828956	CWX	Method Blank	Benzene	08/02/2023	<1.0		ug	
			Toluene	08/02/2023	<3.0		ug	
			Xylenes	08/02/2023	<6.0		ug	

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

LCS: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Bureau Veritas North America, Inc.

E-mail Address: (responsible IH technician)

Lab Project No.

C3 M8708

copy: gthompson@maxxamlabs.com / ckapsanis@maxxamlabs.com

City, State, Zip Spring, TX 77389

Enter a "P" here if
preservative added.

Special instructions and/or specific regulatory requirements:
(method, limit of detection, etc.)

[illegible]

(Explain)

Detroit (IH, Environmental & Asbestos)
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