ภาคผนวก ข-16

เอกสารใบรับรอง ISO 14001 ISO45001 TIS18001

Management System Certification Institute (Thailand)

Certificate Number EMS10014/330M

certification

ISO 14001

ENVIRONMENTAL MANAGEMENT SYSTEM

Certificate of Approval

This is to certify that

CHEMEMAN PUBLIC COMPANY LIMITED
KANGKOI PLANT

Address of premises : Tubkwang Mine and Tubkwang Dressing Plant
71 Moo 10,
Tubkwang, Kangkoi District,
Saraburi 18260, Thailand

has been assessed and found to be conforming to the requirements of
TIS 14001-2559 (ISO 14001:2015)

for the scope :

Limestone Mining and Limestone Dressing

by
Management System Certification Institute (Thailand),
Foundation for Industrial Development

Date of Issue	24th May 2021
Valid Until	23rd May 2024
First Issued Date	27th May 2010

[redacted]

President
Management System Certification Institute (Thailand)

MASCI

Management System Certification Institute (Thailand), Foundation for Industrial Development
1025, 2nd, 11th, 18th Floor, Yakult Building, Phaholyothin Road, Phayathai, Bangkok 10400 Thailand
Tel. (+662) 617-1727-36 Fax (+662) 617-1707 www.masci.or.th

Management System Certification Institute (Thailand)

Certificate Number OHSMS19039/056M

certification

ISO 45001

OCCUPATIONAL HEALTH AND SAFETY MANAGEMENT SYSTEM

Certificate of Approval

This is to certify that

CHEMEMAN PUBLIC COMPANY LIMITED
KANGKOI PLANT

Address of premises : Tubkwang Mine and Tubkwang Dressing Plant
71 Moo 10,
Tubkwang, Kangkoi District,
Saraburi 18260, Thailand

has been assessed and found to be conforming to the requirements of TIS 45001-2561 (ISO 45001:2018)

for the scope :

Limestone mining and limestone dressing

by
Management System Certification Institute (Thailand),
Foundation for Industrial Development

Date of Issue 2nd September 2022

Valid Until 1st September 2025

Migration from
BS OHSAS 18001:2007
First Issued Date 27th May 2010

[redacted]

President
Management System Certification Institute (Thailand)

MASCI

Management System Certification Institute (Thailand), Foundation for Industrial Development
1025, 2, 11, 18 Floor Yakult Building, Phaholyothin Road, Phayathai, Bangkok 10400, Thailand
Tel. (+662) 617-1727-36 Fax (+662) 617-1707 www.masci.or.th

Management System Certification Institute (Thailand)

Certificate Number OHS10007/261M

certification

TIS 18001

OCCUPATIONAL HEALTH AND SAFETY MANAGEMENT SYSTEM

Certificate of Approval

This is to certify that

CHEMEMAN PUBLIC COMPANY LIMITED
KANGKOI PLANT

Address of premises : Tubkwang Mine and Tubkwang Dressing Plant
71 Moo 10,
Tubkwang, Kangkoi District,
Saraburi 18260, Thailand

has been assessed and found to be conforming to the requirements of
TIS 18001-2554 Occupational Health and Safety Management System

for the scope :

Limestone mining and limestone dressing

[redacted]

President
Management System Certification Institute (Thailand)

by
Management System Certification Institute (Thailand),
Foundation for Industrial Development

Date of Issue 27th May 2022

Valid Until 26th May 2025

First Issued Date 27th May 2010

MASCI

Management System Certification Institute (Thailand), Foundation for Industrial Development
1025 2, 11, 18 Floor, Yakult Building, Phaholyothin Road, Phayathai, Bangkok 10400, Thailand
Tel. (+662) 617-1727-36 Fax (+662) 617-1707 www.masci.or.th

ภาคผนวก ค

ใบรายงานผลการวิเคราะห์

ภาคผนวก ค-1

ใบรายงานผลการตรวจวัดคุณภาพอากาศในบรรยากาศโดยทั่วไป

United Analyst and Engineering Consultant Co., Ltd.
3 Soi Udomsuk 41, Sukhumvit Road, Bangchak, Phrakhanong, Bangkok 10260
Tel.0 2763 2828 Fax 0 2763 2800 www.uaeconsultant.com E-mail: uae@uaeconsultant.com

NSC -TISI -TIS 17025
TESTING 0207

ANALYSIS REPORT

CUSTOMER NAME : CHEMEMAN PUBLIC COMPANY LIMITED
ADDRESS : 71 MOO 10 TABKWANG KAENGKOI SARABURI 18260
CONTACT INFORMATION [redacted]
SAMPLING SOURCE : TUBKWANG MINE 71 MOO 10, TUBKWANG, KAENGKHOI, SARABURI 18260.
SAMPLE TYPE : AMBIENT
SAMPLING DATE : *, **, ***
SAMPLING TIME : *, **, ***
SAMPLING BY [redacted]
ANALYZED BY

RECEIVED DATE : DECEMBER 18, 2023
ANALYTICAL DATE : DECEMBER 18-22, 2023
REPORT NO. : 2023-U111233
WORK NO. : 2023-000549
ANALYSIS NO. : T23AZ304-0001 - T23AZ304-0003

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT		
			บริเวณหน้าสำนักงานโรงแต่งแร่หับกวาง		
			* T23AZ304-0001	** T23AZ304-0002	*** T23AZ304-0003
TOTAL SUSPENDED PARTICULATE	mg/m^3	GRAVIMETRIC (HIGH VOLUME METHOD)	0.069	0.085	0.070
PARTICULATE MATTER (≤ 10 µm)	mg/m^3	GRAVIMETRIC (HIGH VOLUME METHOD)	0.048	0.052	0.049
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 DECEMBER 14, 2023 TO 10:00 HOUR ON DECEMBER 15, 2023.
** : SAMPLING FROM 10:00 HOUR ON DECEMBER 15, 2023 TO 10:00 HOUR ON DECEMBER 16, 2023.
*** : SAMPLING FROM 10:00 HOUR ON DECEMBER 16, 2023 TO 10:00 HOUR ON DECEMBER 17, 2023.

[redacted]

DECEMBER 26, 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.

- End of Analysis Report -

United Analyst and Engineering Consultant Co., Ltd.
3 Soi Udomsuk 41, Sukhumvit Road, Bangchak, Phrakhanong, Bangkok 10260
Tel.0 2763 2828 Fax 0 2763 2800 www.uaeconsultant.com E-mail: uae@uaeconsultant.com

NSC -TISI -TIS 17025
TESTING 0207

ANALYSIS REPORT

CUSTOMER NAME : CHEMEMAN PUBLIC COMPANY LIMITED
ADDRESS : 71 MOO 10 TABKWANG KAENGKOI SARABURI 18260
CONTACT INFORMATION [redacted]
SAMPLING SOURCE : TUBKWANG MINE 71 MOO 10, TUBKWANG, KAENGKHOI, SARABURI 18260.
SAMPLE TYPE : AMBIENT
SAMPLING DATE : *, **, ***
SAMPLING TIME : *, **, ***
SAMPLING BY [redacted]
ANALYZED BY

RECEIVED DATE : DECEMBER 18, 2023
ANALYTICAL DATE : DECEMBER 18-22, 2023
REPORT NO. : 2023-U111234
WORK NO. : 2023-000549
ANALYSIS NO. : T23AZ304-0004 - T23AZ304-0006

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT สถาบันวิจัยหับกวาง		
			* T23AZ304-0004	** T23AZ304-0005	*** T23AZ304-0006
TOTAL SUSPENDED PARTICULATE	mg/m^3	GRAVIMETRIC (HIGH VOLUME METHOD)	0.143	0.234	0.183
PARTICULATE MATTER (≤ 10 µm)	mg/m^3	GRAVIMETRIC (HIGH VOLUME METHOD)	0.090	0.112	0.101
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 DECEMBER 14, 2023 TO 09:30 HOUR ON DECEMBER 15, 2023.
** : SAMPLING FROM 09:30 HOUR ON DECEMBER 15, 2023 TO 09:30 HOUR ON DECEMBER 16, 2023.
*** : SAMPLING FROM 09:30 HOUR ON DECEMBER 16, 2023 TO 09:30 HOUR ON DECEMBER 17, 2023.

[redacted]

DECEMBER 26, 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.

- End of Analysis Report -

United Analyst and Engineering Consultant Co., Ltd.
3 Soi Udomsuk 41, Sukhumvit Road, Bangchak, Phrakhanong, Bangkok 10260
Tel.0 2763 2828 Fax 0 2763 2800 www.uaeconsultant.com E-mail: uae@uaeconsultant.com

NSC -TISI -TIS 17025
TESTING 0207

ANALYSIS REPORT

CUSTOMER NAME : CHEMEMAN PUBLIC COMPANY LIMITED
ADDRESS : 71 MOO 10 TABKWANG KAENGKOI SARABURI 18260
CONTACT INFORMATION [redacted]
SAMPLING SOURCE : TUBKWANG MINE 71 MOO 10, TUBKWANG, KAENGKHOI, SARABURI 18260.
SAMPLE TYPE : AMBIENT
SAMPLING DATE : *, **, ***
SAMPLING TIME : *, **, ***
SAMPLING BY [redacted]
ANALYZED BY [redacted]

RECEIVED DATE : DECEMBER 18, 2023
ANALYTICAL DATE : DECEMBER 18-22, 2023
REPORT NO. : 2023-U111235
WORK NO. : 2023-000549
ANALYSIS NO. : T23AZ304-0007 - T23AZ304-0009

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT		
			ชุมชนบ้านถ้ำพัฒนา		
			* T23AZ304-0007	** T23AZ304-0008	*** T23AZ304-0009
TOTAL SUSPENDED PARTICULATE	mg/m^3	GRAVIMETRIC (HIGH VOLUME METHOD)	0.032	0.051	0.072
PARTICULATE MATTER (≤ 10 µm)	mg/m^3	GRAVIMETRIC (HIGH VOLUME METHOD)	0.019	0.030	0.039
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 10:30 HOUR ON DECEMBER 14, 2023 TO 10:30 HOUR ON DECEMBER 15, 2023.
** : SAMPLING FROM 10:30 HOUR ON DECEMBER 15, 2023 TO 10:30 HOUR ON DECEMBER 16, 2023.
*** : SAMPLING FROM 10:30 HOUR ON DECEMBER 16, 2023 TO 10:30 HOUR ON DECEMBER 17, 2023.

[redacted]

DECEMBER 26, 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.

- End of Analysis Report -

United Analyst and Engineering Consultant Co., Ltd.
3 Soi Udomsuk 41, Sukhumvit Road, Bangchak, Phrakhanong, Bangkok 10260
Tel.0 2763 2828 Fax 0 2763 2800 www.uaeconsultant.com E-mail: uae@uaeconsultant.com

NSC -TISI -TIS 17025
TESTING 0207

ANALYSIS REPORT

CUSTOMER NAME : CHEMEMAN PUBLIC COMPANY LIMITED
ADDRESS : 71 MOO 10 TABKWANG KAENGKOI SARABURI 18260
CONTACT INFORMATION [redacted]
SAMPLING SOURCE : TUBKWANG MINE 71 MOO 10, TUBKWANG, KAENGKHOI, SARABURI 18260.
SAMPLE TYPE : AMBIENT
SAMPLING DATE : *, **, ***
SAMPLING TIME : *, **, ***
SAMPLING BY [redacted]
ANALYZED BY

RECEIVED DATE : DECEMBER 18, 2023
ANALYTICAL DATE : DECEMBER 18-22, 2023
REPORT NO. : 2023-U111236
WORK NO. : 2023-000549
ANALYSIS NO. : T23AZ304-0010 - T23AZ304-0012

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT		
			ชุมชนบ้านไทย		
			* T23AZ304-0010	** T23AZ304-0011	*** T23AZ304-0012
TOTAL SUSPENDED PARTICULATE	mg/m^3	GRAVIMETRIC (HIGH VOLUME METHOD)	0.059	0.057	0.056
PARTICULATE MATTER (≤ 10 µm)	mg/m^3	GRAVIMETRIC (HIGH VOLUME METHOD)	0.025	0.027	0.026
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 DECEMBER 14, 2023 TO 09:00 HOUR ON DECEMBER 15, 2023.
** : SAMPLING FROM 09:00 HOUR ON DECEMBER 15, 2023 TO 09:00 HOUR ON DECEMBER 16, 2023.
*** : SAMPLING FROM 09:00 HOUR ON DECEMBER 16, 2023 TO 09:00 HOUR ON DECEMBER 17, 2023.

[redacted]

DECEMBER 26, 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.

- End of Analysis Report -

ภาคผนวก ค-2

ใบรายงานผลการตรวจวัดระดับเสียงโดยทั่วไป

United Analyst and Engineering Consultant Co., Ltd.
3 Soi Udomsuk 41, Sukhumvit Road, Bangchak, Phrakhanong, Bangkok 10260
Tel.0 2763 2828 Fax 0 2763 2800 www.uaeconsultant.com E-mail: uae@uaeconsultant.com

ANALYSIS REPORT

CUSTOMER NAME : CHEMEMAN PUBLIC COMPANY LIMITED
ADDRESS : 195/11-12 LAKE RAJADA OFFICE COMPLEX 2 TENTH-ELEVENTH FLOOR RATCHADAPHISEK ROAD KHLONG TOEI KHLONG TOEI BANGKOK 10110
CONTACT INFORMATION : [redacted]
MEASURING SOURCE : บริเวณหน้าสำนักงานโรงแต่งแร่ทับกวาง
MEASURING TYPE : AMBIENT (NOISE)
MEASURING DATE : DECEMBER 14-17, 2023
MEASURING TIME : *
MEASURING METHOD : INTEGRATED SOUND LEVEL METER
MEASURED BY : [redacted]

RECEIVED DATE : DECEMBER 14-17, 2023
ANALYTICAL DATE : DECEMBER 14-17, 2023
REPORT NO. : 2023-U111733
WORK NO. : 2023-000549
ANALYSIS NO. : T23AZ305-0001 - T23AZ305-0003

TIME*	RESULT dB(A) บริเวณหน้าสำนักงานโรงแต่งแร่ทับกวาง DECEMBER 14-15, 2023 T23AZ305-0001		
	$L_{Aeq\ 1\ hour}$	$L_{Amax\ 1\ hour}$	$L_{A90\ 1\ hour}$
07:00-08:00 HOUR	67.9	82.6	65.2
08:00-09:00 HOUR	68.4	89.7	66.0
09:00-10:00 HOUR	68.5	86.0	66.1
10:00-11:00 HOUR	69.3	93.0	66.9
11:00-12:00 HOUR	69.7	92.7	66.3
12:00-13:00 HOUR	69.9	96.3	66.1
13:00-14:00 HOUR	68.4	85.7	62.6
14:00-15:00 HOUR	68.3	85.0	66.5
15:00-16:00 HOUR	68.1	83.6	66.7
16:00-17:00 HOUR	68.1	85.2	65.1
17:00-18:00 HOUR	54.1	68.7	51.3
18:00-19:00 HOUR	51.0	66.2	47.4
19:00-20:00 HOUR	52.9	78.7	46.9
20:00-21:00 HOUR	51.3	72.1	46.4
21:00-22:00 HOUR	56.9	70.3	51.8
22:00-23:00 HOUR	52.4	73.3	48.9
23:00-00:00 HOUR	56.5	68.8	54.2
00:00-01:00 HOUR	50.6	65.7	48.3
01:00-02:00 HOUR	54.9	68.6	48.6
02:00-03:00 HOUR	68.3	79.0	64.2
03:00-04:00 HOUR	67.5	81.2	65.0
04:00-05:00 HOUR	68.1	83.9	66.0
05:00-06:00 HOUR	68.1	84.9	63.8
06:00-07:00 HOUR	67.4	84.9	63.7
$L_{Aeq\ 24\ hours}$	66.5		
L_{Adn}	72.2		

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.

United Analyst and Engineering Consultant Co., Ltd.
3 Soi Udomsuk 41, Sukhumvit Road, Bangchak, Phrakhanong, Bangkok 10260
Tel.0 2763 2828 Fax 0 2763 2800 www.uaeconsultant.com E-mail: uae@uaeconsultant.com

TIME*	RESULT dB(A)		
	บริเวณหน้าสำนักงานโรงแต่งแร่ทับกวาง		
	DECEMBER 15-16, 2023 T23AZ305-0002		
	$L_{Aeq\ 1\ hour}$	$L_{Amax\ 1\ hour}$	$L_{A90\ 1\ hour}$
07:00-08:00 HOUR	68.8	81.4	66.4
08:00-09:00 HOUR	68.9	82.9	65.0
09:00-10:00 HOUR	68.6	81.2	65.8
10:00-11:00 HOUR	69.4	86.2	66.3
11:00-12:00 HOUR	68.8	84.4	66.2
12:00-13:00 HOUR	67.9	81.1	65.3
13:00-14:00 HOUR	66.7	81.8	61.7
14:00-15:00 HOUR	68.4	84.2	66.5
15:00-16:00 HOUR	67.9	80.6	66.5
16:00-17:00 HOUR	67.5	72.7	65.2
17:00-18:00 HOUR	53.4	75.1	47.0
18:00-19:00 HOUR	51.6	68.9	48.5
19:00-20:00 HOUR	45.3	59.7	37.4
20:00-21:00 HOUR	52.2	73.2	36.8
21:00-22:00 HOUR	46.7	69.8	37.3
22:00-23:00 HOUR	48.6	69.2	42.5
23:00-00:00 HOUR	43.3	58.0	38.5
00:00-01:00 HOUR	40.3	51.7	37.9
01:00-02:00 HOUR	50.3	67.0	39.2
02:00-03:00 HOUR	67.0	75.0	47.7
03:00-04:00 HOUR	67.5	83.8	64.8
04:00-05:00 HOUR	65.5	74.2	63.4
05:00-06:00 HOUR	67.8	83.7	64.5
06:00-07:00 HOUR	69.0	83.2	67.1
$L_{Aeq\ 24\ hours}$	66.1		
L_{Adn}	71.7		

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.

United Analyst and Engineering Consultant Co., Ltd.
3 Soi Udomsuk 41, Sukhumvit Road, Bangchak, Phrakhanong, Bangkok 10260
Tel.0 2763 2828 Fax 0 2763 2800 www.uaeconsultant.com E-mail: uae@uaeconsultant.com

TIME*	RESULT dB(A)		
	บริเวณหน้าสำนักงานโรงแต่งแร่ทับกวาง		
	DECEMBER 16-17, 2023 T23AZ305-0003		
	$L_{Aeq\ 1\ hour}$	$L_{Amax\ 1\ hour}$	$L_{A90\ 1\ hour}$
07:00-08:00 HOUR	68.5	78.9	67.1
08:00-09:00 HOUR	68.6	83.5	66.8
09:00-10:00 HOUR	68.4	84.1	66.8
10:00-11:00 HOUR	68.5	81.7	67.0
11:00-12:00 HOUR	67.8	87.6	65.2
12:00-13:00 HOUR	68.4	79.1	66.2
13:00-14:00 HOUR	68.5	82.1	66.7
14:00-15:00 HOUR	68.8	82.5	67.6
15:00-16:00 HOUR	68.3	76.6	66.7
16:00-17:00 HOUR	67.3	75.3	62.9
17:00-18:00 HOUR	56.6	70.1	50.2
18:00-19:00 HOUR	51.5	71.1	47.5
19:00-20:00 HOUR	47.3	65.5	41.0
20:00-21:00 HOUR	43.2	63.8	38.0
21:00-22:00 HOUR	47.5	62.1	40.2
22:00-23:00 HOUR	48.1	66.5	43.3
23:00-00:00 HOUR	49.2	65.3	40.9
00:00-01:00 HOUR	44.4	58.9	40.5
01:00-02:00 HOUR	49.0	65.0	43.6
02:00-03:00 HOUR	66.4	85.6	56.5
03:00-04:00 HOUR	68.4	78.3	66.6
04:00-05:00 HOUR	66.6	78.0	63.6
05:00-06:00 HOUR	69.7	85.8	67.6
06:00-07:00 HOUR	69.0	84.3	67.2
$L_{Aeq\ 24\ hours}$	66.3		
L_{Adn}	72.2		

[redacted]

DECEMBER 27, 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.

- End of Analysis Report -

United Analyst and Engineering Consultant Co., Ltd.
3 Soi Udomsuk 41, Sukhumvit Road, Bangchak, Phrakhanong, Bangkok 10260
Tel.0 2763 2828 Fax 0 2763 2800 www.uaeconsultant.com E-mail: uae@uaeconsultant.com

ANALYSIS REPORT

CUSTOMER NAME : CHEMEMAN PUBLIC COMPANY LIMITED
ADDRESS : 195/11-12 LAKE RAJADA OFFICE COMPLEX 2 TENTH-ELEVENTH FLOOR RATCHADAPHISEK ROAD KHLONG TOEI KHLONG TOEI BANGKOK 10110
CONTACT INFORMATION [redacted]
MEASURING SOURCE : สถานีวิจัยทับกวาง มหาวิทยาลัยเกษตรศาสตร์
MEASURING TYPE : AMBIENT (NOISE)
MEASURING DATE : DECEMBER 14-17, 2023
MEASURING TIME : *
MEASURING METHOD : INTEGRATED SOUND LEVEL METER
MEASURED BY [redacted]

RECEIVED DATE : DECEMBER 14-17, 2023
ANALYTICAL DATE : DECEMBER 14-17, 2023
REPORT NO. : 2023-U111734
WORK NO. : 2023-000549
ANALYSIS NO. : T23AZ305-0004 - T23AZ305-0006

TIME*	RESULT dB(A) สถานีวิจัยทับกวาง มหาวิทยาลัยเกษตรศาสตร์ DECEMBER 14-15, 2023 T23AZ305-0004		
	$L_{Aeq\ 1\ hour}$	$L_{Amax\ 1\ hour}$	$L_{A90\ 1\ hour}$
07:00-08:00 HOUR	54.1	79.3	50.0
08:00-09:00 HOUR	51.1	68.3	50.1
09:00-10:00 HOUR	51.4	73.4	50.1
10:00-11:00 HOUR	50.5	69.2	49.6
11:00-12:00 HOUR	51.1	65.9	49.9
12:00-13:00 HOUR	50.8	70.8	49.7
13:00-14:00 HOUR	52.2	65.4	51.0
14:00-15:00 HOUR	50.6	66.7	49.8
15:00-16:00 HOUR	50.3	59.9	50.0
16:00-17:00 HOUR	51.9	58.6	50.7
17:00-18:00 HOUR	53.1	75.6	50.7
18:00-19:00 HOUR	51.2	55.1	50.6
19:00-20:00 HOUR	51.0	65.6	49.8
20:00-21:00 HOUR	52.5	56.2	51.6
21:00-22:00 HOUR	51.8	60.4	50.8
22:00-23:00 HOUR	51.0	54.9	50.5
23:00-00:00 HOUR	51.5	56.0	50.9
00:00-01:00 HOUR	52.1	62.0	51.3
01:00-02:00 HOUR	52.0	65.9	51.0
02:00-03:00 HOUR	51.8	73.3	50.5
03:00-04:00 HOUR	50.5	64.9	49.9
04:00-05:00 HOUR	56.6	79.6	49.9
05:00-06:00 HOUR	53.2	72.7	49.8
06:00-07:00 HOUR	51.8	80.5	49.3
$L_{Aeq\ 24\ hours}$	52.1		
L_{Adn}	59.0		

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.

United Analyst and Engineering Consultant Co., Ltd.
3 Soi Udomsuk 41, Sukhumvit Road, Bangchak, Phrakhanong, Bangkok 10260
Tel.0 2763 2828 Fax 0 2763 2800 www.uaeconsultant.com E-mail: uae@uaeconsultant.com

TIME*	RESULT dB(A)		
	สถานีวิจัยทับกวาง มหาวิทยาลัยเกษตรศาสตร์		
	DECEMBER 15-16, 2023		
	T23AZ305-0005		
	$L_{Aeq\ 1\ hour}$	$L_{Amax\ 1\ hour}$	$L_{A90\ 1\ hour}$
07:00-08:00 HOUR	49.6	62.6	49.0
08:00-09:00 HOUR	49.9	62.6	49.2
09:00-10:00 HOUR	49.6	62.1	49.0
10:00-11:00 HOUR	50.1	64.6	49.4
11:00-12:00 HOUR	50.7	63.6	49.7
12:00-13:00 HOUR	52.5	72.8	49.8
13:00-14:00 HOUR	52.6	72.3	51.3
14:00-15:00 HOUR	52.2	66.8	51.6
15:00-16:00 HOUR	51.6	68.7	51.0
16:00-17:00 HOUR	51.4	54.7	50.8
17:00-18:00 HOUR	51.6	55.9	51.1
18:00-19:00 HOUR	51.4	56.7	50.9
19:00-20:00 HOUR	51.3	66.4	50.4
20:00-21:00 HOUR	52.2	59.1	51.2
21:00-22:00 HOUR	52.9	58.6	51.8
22:00-23:00 HOUR	51.3	55.1	50.5
23:00-00:00 HOUR	52.6	58.4	51.9
00:00-01:00 HOUR	53.3	68.8	52.2
01:00-02:00 HOUR	53.1	72.8	51.4
02:00-03:00 HOUR	52.8	74.4	49.7
03:00-04:00 HOUR	49.1	61.6	48.3
04:00-05:00 HOUR	49.4	68.0	48.2
05:00-06:00 HOUR	49.6	66.7	48.5
06:00-07:00 HOUR	49.6	61.9	48.7
$L_{Aeq\ 24\ hours}$	51.5		
L_{Adn}	57.9		

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.

United Analyst and Engineering Consultant Co., Ltd.
3 Soi Udomsuk 41, Sukhumvit Road, Bangchak, Phrakhanong, Bangkok 10260
Tel. 0 2763 2828 Fax 0 2763 2800 www.uaeconsultant.com E-mail: uae@uaeconsultant.com

TIME*	RESULT dB(A)		
	สถานีวิจัยทับกวาง มหาวิทยาลัยเกษตรศาสตร์		
	DECEMBER 16-17, 2023 T23AZ305-0006		
	$L_{Aeq\ 1\ hour}$	$L_{Amax\ 1\ hour}$	$L_{A90\ 1\ hour}$
07:00-08:00 HOUR	49.1	72.0	48.2
08:00-09:00 HOUR	49.1	60.3	48.4
09:00-10:00 HOUR	51.0	66.8	49.8
10:00-11:00 HOUR	51.3	59.8	50.4
11:00-12:00 HOUR	54.1	75.7	50.6
12:00-13:00 HOUR	52.8	69.6	50.9
13:00-14:00 HOUR	54.0	68.2	53.1
14:00-15:00 HOUR	52.4	67.9	51.5
15:00-16:00 HOUR	52.0	59.5	51.4
16:00-17:00 HOUR	52.4	59.0	51.8
17:00-18:00 HOUR	52.7	59.8	52.1
18:00-19:00 HOUR	51.2	59.5	50.5
19:00-20:00 HOUR	50.8	55.9	50.3
20:00-21:00 HOUR	50.9	55.5	50.4
21:00-22:00 HOUR	50.7	55.1	50.0
22:00-23:00 HOUR	50.8	56.5	50.1
23:00-00:00 HOUR	50.9	54.6	50.3
00:00-01:00 HOUR	51.9	64.8	51.1
01:00-02:00 HOUR	52.8	74.2	50.7
02:00-03:00 HOUR	50.5	68.0	49.6
03:00-04:00 HOUR	50.1	62.4	48.9
04:00-05:00 HOUR	50.0	76.9	48.7
05:00-06:00 HOUR	51.3	70.0	49.1
06:00-07:00 HOUR	52.1	68.7	49.0
$L_{Aeq\ 24\ hours}$	51.6		
L_{Adn}	57.8		

.....

DECEMBER 27, 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.

- End of Analysis Report -

United Analyst and Engineering Consultant Co., Ltd.
3 Soi Udomsuk 41, Sukhumvit Road, Bangchak, Phrakhanong, Bangkok 10260
Tel.0 2763 2828 Fax 0 2763 2800 www.uaeconsultant.com E-mail: uae@uaeconsultant.com

ANALYSIS REPORT

CUSTOMER NAME : CHEMEMAN PUBLIC COMPANY LIMITED
ADDRESS : 195/11-12 LAKE RAJADA OFFICE COMPLEX 2 TENTH-ELEVENTH FLOOR RATCHADAPHISEK ROAD KHLONG TOEI KHLONG TOEI BANGKOK 10110
CONTACT INFORMATION [redacted]
MEASURING SOURCE : ชุมชนบ้านถ้ำพัฒนา
MEASURING TYPE : AMBIENT (NOISE)
MEASURING DATE : DECEMBER 14-17, 2023
MEASURING TIME : *
MEASURING METHOD : INTEGRATED SOUND LEVEL METER
MEASURED BY [redacted]

RECEIVED DATE : DECEMBER 14-17, 2023
ANALYTICAL DATE : DECEMBER 14-17, 2023
REPORT NO. : 2023-U111735
WORK NO. : 2023-000549
ANALYSIS NO. : T23AZ305-0007 - T23AZ305-0009

TIME*	RESULT dB(A) ชุมชนบ้านถ้ำพัฒนา DECEMBER 14-15, 2023 T23AZ305-0007		
	$L_{Aeq\ 1\ hour}$	$L_{Amax\ 1\ hour}$	$L_{A90\ 1\ hour}$
07:00-08:00 HOUR	54.3	77.6	44.4
08:00-09:00 HOUR	55.6	76.7	45.9
09:00-10:00 HOUR	58.7	81.0	46.0
10:00-11:00 HOUR	53.7	72.3	45.9
11:00-12:00 HOUR	56.3	74.2	48.3
12:00-13:00 HOUR	55.7	78.2	46.7
13:00-14:00 HOUR	53.9	73.2	47.4
14:00-15:00 HOUR	55.2	75.4	47.8
15:00-16:00 HOUR	51.2	74.7	46.9
16:00-17:00 HOUR	50.8	72.0	46.5
17:00-18:00 HOUR	47.7	62.8	44.9
18:00-19:00 HOUR	49.2	75.9	42.1
19:00-20:00 HOUR	44.3	62.2	39.7
20:00-21:00 HOUR	50.8	74.0	39.5
21:00-22:00 HOUR	48.4	62.2	44.7
22:00-23:00 HOUR	46.3	61.8	42.9
23:00-00:00 HOUR	40.1	64.2	36.8
00:00-01:00 HOUR	37.7	60.7	34.9
01:00-02:00 HOUR	45.6	62.9	39.1
02:00-03:00 HOUR	51.1	79.8	43.5
03:00-04:00 HOUR	52.5	73.0	44.0
04:00-05:00 HOUR	58.2	79.9	46.8
05:00-06:00 HOUR	56.8	79.2	48.0
06:00-07:00 HOUR	56.4	84.3	46.3
$L_{Aeq\ 24\ hours}$	53.7		
L_{Adn}	59.9		

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.

United Analyst and Engineering Consultant Co., Ltd.
3 Soi Udomsuk 41, Sukhumvit Road, Bangchak, Phrakhanong, Bangkok 10260
Tel.0 2763 2828 Fax 0 2763 2800 www.uaeconsultant.com E-mail: uae@uaeconsultant.com

TIME*	RESULT dB(A)		
	ชุมชนบ้านถ้ำพัฒนา		
	DECEMBER 15-16, 2023 T23AZ305-0008		
	$L_{Aeq\ 1\ hour}$	$L_{Amax\ 1\ hour}$	$L_{A90\ 1\ hour}$
07:00-08:00 HOUR	57.5	80.0	48.0
08:00-09:00 HOUR	54.3	79.7	47.5
09:00-10:00 HOUR	55.2	75.8	48.2
10:00-11:00 HOUR	55.1	72.6	48.3
11:00-12:00 HOUR	55.2	78.1	50.4
12:00-13:00 HOUR	55.2	73.4	49.6
13:00-14:00 HOUR	59.5	88.0	50.4
14:00-15:00 HOUR	56.4	76.2	52.0
15:00-16:00 HOUR	54.2	78.5	49.7
16:00-17:00 HOUR	50.7	65.4	47.6
17:00-18:00 HOUR	49.3	68.9	46.0
18:00-19:00 HOUR	50.9	72.4	47.4
19:00-20:00 HOUR	42.8	63.4	40.3
20:00-21:00 HOUR	50.0	75.2	37.8
21:00-22:00 HOUR	50.7	74.1	39.9
22:00-23:00 HOUR	49.7	78.2	40.7
23:00-00:00 HOUR	38.7	55.2	35.2
00:00-01:00 HOUR	40.5	56.4	35.2
01:00-02:00 HOUR	46.0	63.0	39.5
02:00-03:00 HOUR	51.4	72.9	48.1
03:00-04:00 HOUR	55.3	78.9	47.8
04:00-05:00 HOUR	55.4	79.5	44.9
05:00-06:00 HOUR	56.1	76.4	47.0
06:00-07:00 HOUR	55.2	79.7	49.4
$L_{Aeq\ 24\ hours}$	54.0		
L_{Adn}	59.5		

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.

United Analyst and Engineering Consultant Co., Ltd.
3 Soi Udomsuk 41, Sukhumvit Road, Bangchak, Phrakhanong, Bangkok 10260
Tel.0 2763 2828 Fax 0 2763 2800 www.uaeconsultant.com E-mail: uae@uaeconsultant.com

TIME*	RESULT dB(A)		
	ชุมชนบ้านถ้ำพัฒนา		
	DECEMBER 16-17, 2023 T23AZ305-0009		
	$L_{Aeq\ 1\ hour}$	$L_{Amax\ 1\ hour}$	$L_{A90\ 1\ hour}$
07:00-08:00 HOUR	56.0	79.4	49.8
08:00-09:00 HOUR	55.6	76.4	49.5
09:00-10:00 HOUR	55.0	74.8	50.3
10:00-11:00 HOUR	54.6	77.6	47.9
11:00-12:00 HOUR	56.0	76.9	46.9
12:00-13:00 HOUR	55.3	76.8	45.7
13:00-14:00 HOUR	55.4	78.4	49.2
14:00-15:00 HOUR	57.3	77.9	52.6
15:00-16:00 HOUR	54.6	77.9	50.4
16:00-17:00 HOUR	52.8	77.4	49.2
17:00-18:00 HOUR	49.7	70.7	45.0
18:00-19:00 HOUR	51.9	76.4	45.3
19:00-20:00 HOUR	46.7	69.6	35.1
20:00-21:00 HOUR	47.2	72.4	33.8
21:00-22:00 HOUR	45.1	65.6	40.0
22:00-23:00 HOUR	44.5	64.6	39.0
23:00-00:00 HOUR	43.1	61.8	37.9
00:00-01:00 HOUR	47.1	62.6	40.2
01:00-02:00 HOUR	51.3	69.7	43.1
02:00-03:00 HOUR	52.3	72.0	46.7
03:00-04:00 HOUR	54.0	75.7	46.8
04:00-05:00 HOUR	54.3	75.3	47.6
05:00-06:00 HOUR	55.0	76.8	46.5
06:00-07:00 HOUR	55.4	76.0	45.6
$L_{Aeq\ 24\ hours}$	53.5		
L_{Adn}	59.1		

[redacted]

DECEMBER 27, 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.

- End of Analysis Report -

ภาคผนวก ค-3

ใบรายงานผลการตรวจวัดความสั่นสะเทือน

United Analyst and Engineering Consultant Co., Ltd.
3 Soi Udomsuk 41, Sukhumvit Road, Bangchak, Phrakhanong, Bangkok 10260
Tel.0 2763 2828 Fax 0 2763 2800 www.uaeconsultant.com E-mail: uae@uaeconsultant.com

ANALYSIS REPORT

CUSTOMER NAME : CHEMEMAN PUBLIC COMPANY LIMITED
ADDRESS : 195/11-12 LAKE RAJADA OFFICE COMPLEX 2 TENTH-ELEVENTH FLOOR RATCHADAPHISEK ROAD KHLONG TOEI KHLONG TOEI BANGKOK 10110
CONTACT INFORMATION : [redacted]
MEASURING PLACE : ขอบแปลงประทานบัตรด้านทิศใต้
MEASURING TYPE : AMBIENT (VIBRATION)
MEASURING DATE : OCTOBER 26-29, 2023
MEASURING TIME : *
MEASURING EQUIPMENT : VIBRATION METER [1/, 2/]
MEASURED BY : [redacted]

RECEIVED DATE : OCTOBER 26-29, 2023
ANALYTICAL DATE : OCTOBER 26-29, 2023
REPORT NO. : 2022-U094868
WORK NO. : 2023-000549
ANALYSIS NO. : T23AV573-0001-T23AV573-0003

TIME	RESULT								
	ขอบแปลงประทานบัตรด้านทิศใต้								
	TRANSVERSE						VERTICAL		
	X-AXIS			Y-AXIS			Z-AXIS		
	VELOCITY (mm/s)	FREQUENCY (Hz)	DISPLACEMENT (mm)	VELOCITY (mm/s)	FREQUENCY (Hz)	DISPLACEMENT (mm)	VELOCITY (mm/s)	FREQUENCY (Hz)	DISPLACEMENT (mm)
OCTOBER 26, 2023 T23AV573-0001	<0.200	NOT APPLICABLE[2/]	-	<0.200	NOT APPLICABLE[2/]	-	<0.200	NOT APPLICABLE[2/]	-
OCTOBER 27, 2023 T23AV573-0001- T23AV573-0002	<0.200	NOT APPLICABLE[2/]	-	<0.200	NOT APPLICABLE[2/]	-	<0.200	NOT APPLICABLE[2/]	-
OCTOBER 28, 2023 T23AV573-0002- T23AV573-0003	<0.200	NOT APPLICABLE[2/]	-	<0.200	NOT APPLICABLE[2/]	-	<0.200	NOT APPLICABLE[2/]	-
OCTOBER 29, 2023 T23AV573-0003	<0.200	NOT APPLICABLE[2/]	-	<0.200	NOT APPLICABLE[2/]	-	<0.200	NOT APPLICABLE[2/]	-

REMARK: * MEASURING FROM 07:00 HOUR ON OCTOBER 26, 2023 TO 07:00 HOUR ON OCTOBER 29, 2023
1/ TRIGGER SOURCE 0.200 mm/s
2/ NONEXISTENT ZC FREQUENCY

[redacted]

LABORATORY SUPERVISOR

NOVEMBER 7, 2023

- DO NOT COPY PARTIAL OF THIS ANALYSIS REPORT WITHOUT OFFICIAL APPROVAL.
- REPORTED ANALYSIS REFERS TO SUBMITTED SAMPLE ONLY.

United Analyst and Engineering Consultant Co., Ltd.
3 Soi Udomsuk 41, Sukhumvit Road, Bangchak, Phrakhanong, Bangkok 10260
Tel.0 2763 2828 Fax 0 2763 2800 www.uaeconsultant.com E-mail: uae@uaeconsultant.com

ANALYSIS REPORT

CUSTOMER NAME : CHEMEMAN PUBLIC COMPANY LIMITED
ADDRESS : 195/11-12 LAKE RAJADA OFFICE COMPLEX 2 TENTH-ELEVENTH FLOOR RATCHADAPHISEK ROAD KHLONG TOEI KHLONG TOEI BANGKOK 10110
CONTACT INFORMATION : [redacted]
MEASURING PLACE : สถานีวิจัยทับกวาง
MEASURING TYPE : AMBIENT (VIBRATION)
MEASURING DATE : OCTOBER 26-29, 2023
MEASURING TIME : *
MEASURING EQUIPMENT : VIBRATION METER [1/, 2/]
MEASURED BY : [redacted]

RECEIVED DATE : OCTOBER 26-29, 2023
ANALYTICAL DATE : OCTOBER 26-29, 2023
REPORT NO. : 2022-U094869
WORK NO. : 2023-000549
ANALYSIS NO. : T23AV573-0004-T23AV573-0006

TIME	RESULT								
	สถานีวิจัยทับกวาง								
	TRANSVERSE						VERTICAL		
	X-AXIS			Y-AXIS			Z-AXIS		
	VELOCITY (mm/s)	FREQUENCY (Hz)	DISPLACEMENT (mm)	VELOCITY (mm/s)	FREQUENCY (Hz)	DISPLACEMENT (mm)	VELOCITY (mm/s)	FREQUENCY (Hz)	DISPLACEMENT (mm)
OCTOBER 26, 2023 T23AV573-0004	<0.200	NOT APPLICABLE[2/]	-	<0.200	NOT APPLICABLE[2/]	-	<0.200	NOT APPLICABLE[2/]	-
OCTOBER 27, 2023 T23AV573-0004-T23AV573-0005	<0.200	NOT APPLICABLE[2/]	-	<0.200	NOT APPLICABLE[2/]	-	<0.200	NOT APPLICABLE[2/]	-
OCTOBER 28, 2023 T23AV573-0005-T23AV573-0006	<0.200	NOT APPLICABLE[2/]	-	<0.200	NOT APPLICABLE[2/]	-	<0.200	NOT APPLICABLE[2/]	-
OCTOBER 29, 2023 T23AV573-0006	<0.200	NOT APPLICABLE[2/]	-	<0.200	NOT APPLICABLE[2/]	-	<0.200	NOT APPLICABLE[2/]	-

REMARK: * MEASURING FROM 07:00 HOUR ON OCTOBER 26, 2023 TO 07:00 HOUR ON OCTOBER 29, 2023
1/ TRIGGER SOURCE 0.200 mm/s
2/ NONEXISTENT ZC FREQUENCY

[redacted]
LABORATORY SUPERVISOR
NOVEMBER 7, 2023

- DO NOT COPY PARTIAL OF THIS ANALYSIS REPORT WITHOUT OFFICIAL APPROVAL.
- REPORTED ANALYSIS REFERS TO SUBMITTED SAMPLE ONLY.

United Analyst and Engineering Consultant Co., Ltd.
3 Soi Udomsuk 41, Sukhumvit Road, Bangchak, Phrakhanong, Bangkok 10260
Tel.0 2763 2828 Fax 0 2763 2800 www.uaeconsultant.com E-mail: uae@uaeconsultant.com

ANALYSIS REPORT

CUSTOMER NAME : CHEMEMAN PUBLIC COMPANY LIMITED
ADDRESS : 195/11-12 LAKE RAJADA OFFICE COMPLEX 2 TENTH-ELEVENTH FLOOR RATCHADAPHISEK ROAD KHLONG TOEI KHLONG TOEI BANGKOK 10110
CONTACT INFORMATION : [redacted]
MEASURING PLACE : ชุมชนบ้านถ้ำพัฒนา
MEASURING TYPE : AMBIENT (VIBRATION)
MEASURING DATE : OCTOBER 26-29, 2023
MEASURING TIME : *
MEASURING EQUIPMENT : VIBRATION METER [1/, 2/]
MEASURED BY : [redacted]

RECEIVED DATE : OCTOBER 26-29, 2023
ANALYTICAL DATE : OCTOBER 26-29, 2023
REPORT NO. : 2022-U094870
WORK NO. : 2023-000549
ANALYSIS NO. : T23AV573-0007-T23AV573-0009

TIME	RESULT ชุมชนบ้านถ้ำพัฒนา								
	TRANSVERSE						VERTICAL		
	X-AXIS			Y-AXIS			Z-AXIS		
	VELOCITY (mm/s)	FREQUENCY (Hz)	DISPLACEMENT (mm)	VELOCITY (mm/s)	FREQUENCY (Hz)	DISPLACEMENT (mm)	VELOCITY (mm/s)	FREQUENCY (Hz)	DISPLACEMENT (mm)
OCTOBER 26, 2023 T23AV573-0007	<0.200	NOT APPLICABLE[2/]	-	<0.200	NOT APPLICABLE[2/]	-	<0.200	NOT APPLICABLE[2/]	-
OCTOBER 27, 2023 T23AV573-0007-T23AV573-0008	<0.200	NOT APPLICABLE[2/]	-	<0.200	NOT APPLICABLE[2/]	-	<0.200	NOT APPLICABLE[2/]	-
OCTOBER 28, 2023 T23AV573-0008-T23AV573-0009	<0.200	NOT APPLICABLE[2/]	-	<0.200	NOT APPLICABLE[2/]	-	<0.200	NOT APPLICABLE[2/]	-
OCTOBER 29, 2023 T23AV573-0009	<0.200	NOT APPLICABLE[2/]	-	<0.200	NOT APPLICABLE[2/]	-	<0.200	NOT APPLICABLE[2/]	-

REMARK: * MEASURING FROM 07:00 HOUR ON OCTOBER 26, 2023 TO 07:00 HOUR ON OCTOBER 29, 2023
1/ TRIGGER SOURCE 0.200 mm/s
2/ NONEXISTENT ZC FREQUENCY

[redacted]

LABORATORY SUPERVISOR

NOVEMBER 7, 2023

- DO NOT COPY PARTIAL OF THIS ANALYSIS REPORT WITHOUT OFFICIAL APPROVAL.
- REPORTED ANALYSIS REFERS TO SUBMITTED SAMPLE ONLY.

United Analyst and Engineering Consultant Co., Ltd.
3 Soi Udomsuk 41, Sukhumvit Road, Bangchak, Phrakhanong, Bangkok 10260
Tel.0 2763 2828 Fax 0 2763 2800 www.uaeconsultant.com E-mail: uae@uaeconsultant.com

ANALYSIS REPORT

CUSTOMER NAME : CHEMEMAN PUBLIC COMPANY LIMITED
ADDRESS : 195/11-12 LAKE RAJADA OFFICE COMPLEX 2 TENTH-ELEVENTH FLOOR RATCHADAPHISEK ROAD KHLONG TOEI KHLONG TOEI BANGKOK 10110
CONTACT INFORMATION : [redacted]
MEASURING PLACE : หน้าปากถ้ำค้างคาวทางทิศตะวันออก
MEASURING TYPE : AMBIENT (VIBRATION)
MEASURING DATE : OCTOBER 26-29, 2023
MEASURING TIME : *
MEASURING EQUIPMENT : VIBRATION METER 1/, 2/
MEASURED BY : [redacted]

RECEIVED DATE : OCTOBER 26-29, 2023
ANALYTICAL DATE : OCTOBER 26-29, 2023
REPORT NO. : 2022-U094871
WORK NO. : 2023-000549
ANALYSIS NO. : T23AV573-0010-T23AV573-0012

TIME	RESULT หน้าปากถ้ำค้างคาวทางทิศตะวันออก								
	TRANSVERSE						VERTICAL		
	X-AXIS			Y-AXIS			Z-AXIS		
	VELOCITY (mm/s)	FREQUENCY (Hz)	DISPLACEMENT (mm)	VELOCITY (mm/s)	FREQUENCY (Hz)	DISPLACEMENT (mm)	VELOCITY (mm/s)	FREQUENCY (Hz)	DISPLACEMENT (mm)
OCTOBER 26, 2023 T23AV573-0010	<0.200	NOT APPLICABLE 2/	-	<0.200	NOT APPLICABLE 2/	-	<0.200	NOT APPLICABLE 2/	-
OCTOBER 27, 2023 T23AV573-0010- T23AV573-0011	<0.200	NOT APPLICABLE 2/	-	<0.200	NOT APPLICABLE 2/	-	<0.200	NOT APPLICABLE 2/	-
OCTOBER 28, 2023 T23AV573-0011- T23AV573-0012	<0.200	NOT APPLICABLE 2/	-	<0.200	NOT APPLICABLE 2/	-	<0.200	NOT APPLICABLE 2/	-
OCTOBER 29, 2023 T23AV573-0012	<0.200	NOT APPLICABLE 2/	-	<0.200	NOT APPLICABLE 2/	-	<0.200	NOT APPLICABLE 2/	-

REMARK: * MEASURING FROM 07:00 HOUR ON OCTOBER 26, 2023 TO 07:00 HOUR ON OCTOBER 29, 2023
1/ TRIGGER SOURCE 0.200 mm/s
2/ NONEXISTENT ZC FREQUENCY

[redacted]

LABORATORY SUPERVISOR

NOVEMBER 7, 2023

- DO NOT COPY PARTIAL OF THIS ANALYSIS REPORT WITHOUT OFFICIAL APPROVAL.
- REPORTED ANALYSIS REFERS TO SUBMITTED SAMPLE ONLY.

ภาคผนวก ค-4

ใบรายงานผลการตรวจวัดความเร็วและทิศทางลม

United Analyst and Engineering Consultant Co., Ltd.
3 Soi Udomsuk 41, Sukhumvit Road, Bangchak, Phrakhanong, Bangkok 10260
Tel.0 2763 2828 Fax 0 2763 2800 www.uaeconsultant.com E-mail: uae@uaeconsultant.com

ANALYSIS REPORT

CUSTOMER NAME : CHEMEMAN PUBLIC COMPANY LIMITED
ADDRESS : 195/11-12 LAKE RAJADA OFFICE COMPLEX 2 TENTH-ELEVENTH FLOOR RATCHADAPHISEK ROAD KHLONG TOEI KHLONG TOEI BANGKOK 10110
CONTACT INFORMATION : [redacted]
MEASURING PLACE : บริเวณหน้าสำนักงานโรงแต่งแร่ทับกวาง
MEASURING TYPE : AMBIENT (AIR)
MEASURING DATE : DECEMBER 14-17, 2023
MEASURING TIME : *
MEASURING METHOD : WIND SPEED & WIND DIRECTION EQUIPMENT
MEASURED BY : [redacted]

RECEIVED DATE : DECEMBER 14-17, 2023
ANALYTICAL DATE : DECEMBER 14-17, 2023
REPORT NO. : 2023-U111732
WORK NO. : 2023-000549
ANALYSIS NO. : T23AZ304-0001 - T23AZ304-0003

TIME *	RESULT (m/s) บริเวณหน้าสำนักงานโรงแต่งแร่ทับกวาง					
	DECEMBER 14-15, 2023 T23AZ304-0001		DECEMBER 15-16, 2023 T23AZ304-0002		DECEMBER 16-17, 2023 T23AZ304-0003	
	WIND SPEED	WIND DIRECTION	WIND SPEED	WIND DIRECTION	WIND SPEED	WIND DIRECTION
07:00-08:00 HOUR	2.6	NE	1.5	E	1.4	ENE
08:00-09:00 HOUR	1.7	NE	1.3	E	1.2	ENE
09:00-10:00 HOUR	1.7	ENE	1.3	E	1.1	ENE
10:00-11:00 HOUR	1.7	ENE	0.8	E	1.7	NE
11:00-12:00 HOUR	2.0	ENE	1.3	E	2.4	ENE
12:00-13:00 HOUR	2.0	ENE	1.9	ENE	3.4	ENE
13:00-14:00 HOUR	2.4	NE	1.9	ENE	3.5	ENE
14:00-15:00 HOUR	3.0	NE	1.9	ENE	3.6	E
15:00-16:00 HOUR	3.3	NE	2.3	ENE	3.6	E
16:00-17:00 HOUR	3.5	NE	1.6	E	4.5	ESE
17:00-18:00 HOUR	2.4	ENE	1.4	ENE	3.9	ESE
18:00-19:00 HOUR	3.1	ENE	1.4	ENE	3.8	ESE
19:00-20:00 HOUR	3.0	ENE	1.9	NE	2.5	ESE
20:00-21:00 HOUR	1.7	ENE	1.6	NE	2.5	E
21:00-22:00 HOUR	1.9	ENE	1.8	NE	3.9	ESE
22:00-23:00 HOUR	1.9	ENE	2.4	NE	2.5	E
23:00-00:00 HOUR	1.8	ENE	2.3	NE	2.7	NE
00:00-01:00 HOUR	1.8	E	2.2	NNE	3.6	E
01:00-02:00 HOUR	1.6	E	2.1	NE	3.6	ENE
02:00-03:00 HOUR	1.3	ESE	1.6	NE	2.5	NNE
03:00-04:00 HOUR	2.2	E	2.3	ENE	2.3	NE
04:00-05:00 HOUR	1.7	ESE	2.3	NE	3.4	NE
05:00-06:00 HOUR	1.4	E	2.1	ENE	2.1	E
06:00-07:00 HOUR	1.7	E	1.5	ENE	3.2	E

[redacted]

DECEMBER 27, 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.

- End of Analysis Report -

ภาคผนวก ค-5

ใบรายงานผลการตรวจวัดน้ำผิวดิน

United Analyst and Engineering Consultant Co., Ltd.
3 Soi Udomsuk 41, Sukhumvit Road, Bangchak, Phrakhanong, Bangkok 10260
Tel.0 2763 2828 Fax 0 2763 2800 www.uaeconsultant.com E-mail: uae@uaeconsultant.com

NSC-TISI-TIS 17025
TESTING 0207

TESTING
No. 0063

ANALYSIS REPORT

CUSTOMER NAME : CHEMEMAN PUBLIC COMPANY LIMITED
ADDRESS : 71 MOO 10 TABKWANG KAENGKOI SARABURI 18260
CONTACT INFORMATION : [redacted]
SAMPLING SOURCE : ขุมเหมืองของโครงการ (เหมืองทับกวาง)
SAMPLE TYPE : SURFACE WATER
SAMPLING DATE : OCTOBER 31, 2023
SAMPLING TIME : 11:00 HOUR
SAMPLING METHOD : GRAB
SAMPLING BY : [redacted]
ANALYZED BY :

RECEIVED DATE : OCTOBER 31, 2023
ANALYTICAL DATE : OCTOBER 31 - NOVEMBER 10, 2023
REPORT NO. : 2023-U095811
WORK NO. : 2023-000549
ANALYSIS NO. : T23AV608-0001

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			SURFACE WATER T23AV608-0001	
pH [c]	-	ELECTROMETRIC METHOD (AT SITE) SM: PART 4500 -H^+ B AND 1060 B	8.3 (28°C)	-
TURBIDITY [c]	NTU	NEPHELOMETRIC METHOD (SM: PART 2130 B)	45	0.1
TOTAL SUSPENDED SOLIDS [a]	mg/L	TOTAL SUSPENDED SOLIDS DRIED AT 103-105 °C (SM: PART 2540 D)	18.5	5.0
TOTAL DISSOLVED SOLIDS [b]	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	271	25
SULPHATE [c]	mg/L SO_4^{2-}	TURBIDIMETRIC METHOD (SM: PART 4500-SO_4^{2-} E)	31.5	0.3
TOTAL HARDNESS [a]	mg/L as $CaCO_3$	EDTA TITRIMETRIC METHOD (SM: PART 2340 C)	194	4.0
METALS				
IRON [c]	mg/L Fe	IN-HOUSE METHOD: UAE.TP.SW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	0.470	0.005
SAMPLE CONDITION				
WATER'S COLOUR/TURBID			YELLOW/TURBID	
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, 23 rd EDITION, 2017.
SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23 rd EDITION, 2017.

[redacted]

NOVEMBER 13, 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.

- End of Analysis Report -

United Analyst and Engineering Consultant Co., Ltd.
3 Soi Udomsuk 41, Sukhumvit Road, Bangchak, Phrakhanong, Bangkok 10260
Tel.0 2763 2828 Fax 0 2763 2800 www.uaeconsultant.com E-mail: uae@uaeconsultant.com

NSC -TISI -TIS 17025
TESTING 0207

LABORATORY ACCREDITATION BLA-DSS
TESTING No. 0063

ANALYSIS REPORT

CUSTOMER NAME : CHEMEMAN PUBLIC COMPANY LIMITED
ADDRESS : 71 MOO 10 TABKWANG KAENGKOI SARABURI 18260
CONTACT INFORMATION : [redacted]
SAMPLING SOURCE : ห้วยใหญ่ หลังผ่านเข้าใกล้พื้นที่โครงการ (เหมืองทับกวาง)
SAMPLE TYPE : SURFACE WATER
SAMPLING DATE : OCTOBER 31, 2023
SAMPLING TIME : 10:30 HOUR
SAMPLING METHOD : GRAB
SAMPLING BY : [redacted]
ANALYZED BY : [redacted]

RECEIVED DATE : OCTOBER 31, 2023
ANALYTICAL DATE : OCTOBER 31 - NOVEMBER 10, 2023
REPORT NO. : 2023-U095812
WORK NO. : 2023-000549
ANALYSIS NO. : T23AV608-0002

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT SURFACE WATER T23AV608-0002	DETECTION LIMIT
pH [c]	-	ELECTROMETRIC METHOD (AT SITE) SM: PART 4500 -H^+ B AND 1060 B	8.0 (27°C)	-
TURBIDITY [c]	NTU	NEPHELOMETRIC METHOD (SM: PART 2130 B)	5.4	0.1
TOTAL SUSPENDED SOLIDS [c]	mg/L	TOTAL SUSPENDED SOLIDS DRIED AT 103-105 °C (SM: PART 2540 D)	ND	5.0
TOTAL DISSOLVED SOLIDS [b]	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	307	25
SULPHATE [c]	mg/L SO_4^{2-}	TURBIDIMETRIC METHOD (SM: PART 4500-SO_4^{2-} E)	50.3	0.3
TOTAL HARDNESS [a]	mg/L as $CaCO_3$	EDTA TITRIMETRIC METHOD (SM: PART 2340 C)	254	4.0
METALS				
IRON [c]	mg/L Fe	IN-HOUSE METHOD: UAE.TP.SW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	0.052	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

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

[redacted]

NOVEMBER 13, 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.

- End of Analysis Report -