

## ANALYSIS REPORT

<b>CUSTOMER NAME</b>	: CARLTON HOTEL BANGKOK SUKHUMVIT	<b>RECEIVED DATE</b>	: SEPTEMBER 30, 2022
<b>ADDRESS</b>	: 491 SUKUMVIT ROAD KHLONG TOEI NUEA WATTHANA BANGKOK 10110	<b>ANALYTICAL DATE</b>	: SEPTEMBER 30-OCTOBER 6, 2022
<b>CONTACT INFORMATION</b>	: TEL : 0 2090 7888 Ext.7804 e-mail : Piya.nalamphun@carltonhotel.co.th	<b>REPORT NO.</b>	: 2022-U080278
<b>SAMPLING SOURCE</b>	: WASTEWATER TREATMENT PLANT	<b>WORK NO.</b>	: 2022-000982
<b>SAMPLE TYPE</b>	: WASTEWATER	<b>ANALYSIS NO.</b>	: T22AT447-0001 - T22AT447-0002
<b>SAMPLING DATE</b>	: SEPTEMBER 30, 2022		
<b>SAMPLING TIME</b>	: 1/		
<b>SAMPLING METHOD</b>	: GRAB, GRAB AND STERILE TECHNIQUE		
<b>SAMPLING BY</b>	: MR WEERAYUT MOKKAEW		
<b>ANALYZED BY</b>	: MISS AMONRAT PUTTALEE		

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT		REGULATORY STANDARD	DETECTION LIMIT
			1 13:45 HOUR 1/ T22AT447-0001	2 13:40 HOUR 1/ T22AT447-0002		
pH <sup>a</sup>	-	ELECTROMETRIC METHOD AT SITE (SM:4500-H <sup>+</sup> B)	6.3 (31°C)	6.6 (35°C)	5-9	-
BIOCHEMICAL OXYGEN DEMAND <sup>c</sup>	mg/L	AZIDE MODIFICATION METHOD (SM: 4500-O C AND 5210 B)	372	324	≤ 20	2.0
SUSPENDED SOLIDS <sup>a</sup>	mg/L	SUSPENDED SOLIDS DRIED AT 103-105 °C (SM: 2540 D)	215	87.0	≤ 30	5.0
TOTAL DISSOLVED SOLIDS <sup>b</sup>	mg/L	IN-HOUSE METHOD: UAE.TP.WAO.007 (TOTAL DISSOLVED SOLIDS DRIED AT 103-105 °C); SM 2540 C	391	312	500*	25
SULPHIDE <sup>c</sup>	mg/L	IODOMETRIC METHOD (SM: 4500-S <sup>2-</sup> F)	4.4	< 0.50	≤ 1.0	0.50
TOTAL KJELDAHL NITROGEN <sup>b</sup>	mg/L	IN-HOUSE METHOD: UAE.TP.WAS.001 (KJELDAHL METHOD); SM: 4500-Norg C	47.3	14.3	≤ 35	1.5
FAT, OIL AND GREASE <sup>a</sup>	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: 5520 B)	22	ND	≤ 20	3



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT		REGULATORY STANDARD	DETECTION LIMIT
			1 13:45 HOUR 1/ T22AT447-0001	2 13:40 HOUR 1/ T22AT447-0002		
MICROBIOLOGY						
COLIFORM BACTERIA <sup>b</sup>	MPN/100 mL	MULTIPLE-TUBE FERMENTATION TECHNIQUE (SM: 9221 B)	>160,000	54,000	-	1.8
SAMPLE CONDITION						
WATER'S COLOUR/TURBID			YELLOW/TURBID	YELLOW/TURBID		
SEDIMENT			BROWN	BROWN		

<sup>a</sup> : ISO/IEC 17025 ACCREDITED BY THAI INDUSTRIAL STANDARDS INSTITUTE (TISI)

<sup>b</sup> : ISO/IEC 17025 ACCREDITED BY DEPARTMENT OF SCIENCE SERVICE (DSS)

<sup>c</sup> : 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<sup>rd</sup> EDITION, 2017.

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

RESULT 1 : น้่อปรับสภาพน้ำ

RESULT 2 : น้่อน้ำใส

REGULATORY STANDARD : RANGE OR MAXIMUM PERMITTED VALUE FOR BUILDING EFFLUENT STANDARDS CLASS A, NOTIFICATION OF THE MINISTRY OF RESOURCES AND ENVIRONMENT, PUBLISHED IN THE ROYAL GOVERNMENT GAZETTE, VOL 122, PART 125 D, DATED DECEMBER 29, 2005.

500\* : PERMITTED EXCESS VALUE TO TOTAL DISSOLVED SOLIDS OF ACTUAL TAP WATER USED  
(TOTAL DISSOLVED SOLIDS STANDARD VALUE OF TAP WATER QUALITY IS 1,000 mg/L).

ND : NON-DETECTABLE.

*Piyapat S.*

(MRS PIYAPAT SUTTAMANUTWONG)  
LABORATORY SUPERVISOR

OCTOBER 17, 2022

## ANALYSIS REPORT

<b>CUSTOMER NAME</b>	: CARLTON HOTEL BANGKOK SUKHUMVIT	<b>RECEIVED DATE</b>	: DECEMBER 28, 2022
<b>ADDRESS</b>	: 491 SUKHUMVIT ROAD KHLONG TOEI NUEA WATTHANA BANGKOK 10110	<b>ANALYTICAL DATE</b>	: DECEMBER 28, 2022 - JANUARY 6, 2023
<b>CONTACT INFORMATION</b>	: TEL : 0 2090 7888 Ext.7804 e-mail : Piya.nalamphun@carltonhotel.co.th	<b>REPORT NO.</b>	: 2023-U002731
<b>SAMPLING SOURCE</b>	: WASTEWATER TREATMENT PLANT	<b>WORK NO.</b>	: 2022-000982
<b>SAMPLE TYPE</b>	: WASTEWATER	<b>ANALYSIS NO.</b>	: T22AZ854-0001 - T22AZ854-0002
<b>SAMPLING DATE</b>	: DECEMBER 27, 2022		
<b>SAMPLING TIME</b>	: 1/		
<b>SAMPLING METHOD</b>	: GRAB, GRAB AND STERILE TECHNIQUE		
<b>SAMPLING BY</b>	: MR WEERAYUT MOKKAEW		
<b>ANALYZED BY</b>	: MISS AMONRAT PUTTALEE		

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT		REGULATORY STANDARD	DETECTION LIMIT
			1 13:05 HOUR 1/ T22AZ854-0001	2 13:00 HOUR 1/ T22AZ854-0002		
pH <sup>a</sup>	-	ELECTROMETRIC METHOD AT SITE (SM:4500-H <sup>+</sup> B)	6.9 (30°C)	7.3 (31°C)	5-9	-
BIOCHEMICAL OXYGEN DEMAND <sup>c</sup>	mg/L	AZIDE MODIFICATION METHOD (SM: 4500-O C AND 5210 B)	337	83.4	≤ 20	2.0
SUSPENDED SOLIDS <sup>a</sup>	mg/L	SUSPENDED SOLIDS DRIED AT 103-105 °C (SM: 2540 D)	107	110	≤ 30	5.0
TOTAL DISSOLVED SOLIDS <sup>b</sup>	mg/L	IN-HOUSE METHOD: UAE.TP.WAO.007 (TOTAL DISSOLVED SOLIDS DRIED AT 103-105 °C); SM 2540 C	566	446	500*	25
SULPHIDE <sup>b</sup>	mg/L	IODOMETRIC METHOD (SM: 4500-S <sup>2-</sup> F)	2.1	< 0.50	≤ 1.0	0.50
TOTAL KJELDAHL NITROGEN <sup>b</sup>	mg/L	IN-HOUSE METHOD: UAE.TP.WAS.001 (KJELDAHL METHOD); SM: 4500-Norg C	44.3	20.2	≤ 35	1.5
FAT, OIL AND GREASE <sup>a</sup>	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: 5520 B)	17	ND	≤ 20	3



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT		REGULATORY STANDARD	DETECTION LIMIT
			1 13:05 HOUR 1/ T22AZ854-0001	2 13:00 HOUR 1/ T22AZ854-0002		
MICROBIOLOGY						
COLIFORM BACTERIA <sup>b</sup>	MPN/100 mL	MULTIPLE-TUBE FERMENTATION TECHNIQUE (SM: 9221 B)	>160,000	13,000	-	1.8
SAMPLE CONDITION						
WATER'S COLOUR/TURBID			YELLOW/TURBID	YELLOW/TURBID		
SEDIMENT			BROWN	BROWN		

<sup>a</sup> : ISO/IEC 17025 ACCREDITED BY THAI INDUSTRIAL STANDARDS INSTITUTE (TISI)

<sup>b</sup> : ISO/IEC 17025 ACCREDITED BY DEPARTMENT OF SCIENCE SERVICE (DSS)

<sup>c</sup> : 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<sup>rd</sup> EDITION, 2017.

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

RESULT 1 : ม่อปฐิมสภาพน้ำ

RESULT 2 : ม่อน้ำใส

REGULATORY STANDARD : RANGE OR MAXIMUM PERMITTED VALUE FOR BUILDING EFFLUENT STANDARDS CLASS A, NOTIFICATION OF THE  
MINISTRY OF RESOURCES AND ENVIRONMENT, PUBLISHED IN THE ROYAL GOVERNMENT GAZETTE, VOL 122,  
PART 125 D, DATED DECEMBER 29, 2005.

500\* : PERMITTED EXCESS VALUE TO TOTAL DISSOLVED SOLIDS OF ACTUAL TAP WATER USED  
(TOTAL DISSOLVED SOLIDS STANDARD VALUE OF TAP WATER QUALITY IS 1,000 mg/L).

ND : NON-DETECTABLE.

*Piyapat S.*

(MRS PIYAPAT SUTTAMANUTWONG)  
LABORATORY SUPERVISOR

JANUARY 13, 2023

## ANALYSIS REPORT

**CUSTOMER NAME** : CARLTON HOTEL BANGKOK SUKHUMVIT  
**ADDRESS** : 491 SUKUMVIT ROAD KHLONG TOEI NUEA WATTHANA BANGKOK 10110  
**CONTACT INFORMATION** : TEL : 0 2090 7888 Ext.7804 e-mail : Sunisa.Anantachina@carltonhotel.co.th  
**SAMPLING SOURCE** : COOLING TOWER  
**SAMPLE TYPE** : COOLING WATER  
**SAMPLING DATE** : DECEMBER 27, 2022  
**SAMPLING TIME** : 12:45 HOUR  
**SAMPLING METHOD \*** : GRAB, GRAB AND STERILE TECHNIQUE  
**SAMPLING BY \*** : MR WEERAYUT MOKKAEW  
**ANALYZED BY** : MISS KAMICA CHOOSOMBAT

**RECEIVED DATE** : DECEMBER 28, 2022  
**ANALYTICAL DATE** : DECEMBER 28, 2022 - JANUARY 4, 2023  
**REPORT NO.** : 2023-U002732  
**WORK NO.** : 2022-000982  
**ANALYSIS NO.** : T22AZ854-0003

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	REGULATORY STANDARD	DETECTION LIMIT
			น้ำเข้ามาเติมในอ่าง รองรับ T22AZ854-0003		
pH *	-	ELECTROMETRIC METHOD AT SITE (SM:4500-H <sup>+</sup> B)	8.0 (27°C)	7.2-8.3	-
RESIDUAL CHLORINE *	mg/L Cl <sub>2</sub>	MODIFIED DPD COLOURIMETRIC METHOD (AT SITE)	ND	-	0.1
MICROBIOLOGY					
COLIFORM BACTERIA *	MPN/100 mL	MULTIPLE-TUBE FERMENTATION TECHNIQUE (SM: 9221 B)	18	-	1.8
<i>Legionella</i> spp. #	CFU/L	ISO 11731:2017-05 (E)	NOT DETECTED	NOT DETECTED	-
<b>SAMPLE CONDITION</b> WATER'S COLOUR/TURBID SEDIMENT			YELLOW/CLEAR BLACK		

# : ISO/IEC 17025 ACCREDITED BY DEPARTMENT OF MEDICAL SCIENCE (DMSC)  
\* : VERIFIED BY OWN LABORATORY QUALITY SYSTEM, BUT STILL NOT ACCREDITED

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

REGULATORY STANDARD : ANNOUNCEMENT OF THE DEPARTMENT OF HEALTH (THAILAND), PRACTICE FOR THE CONTROL OF LEGIONELLA BACTERIA IN COOLING TOWERS, JANUARY 2001.

ND : NON-DETECTABLE.

*Chaweevan B.*

(MISS CHAWEEWAN BOONLA)  
LABORATORY SUPERVISOR

JANUARY 13, 2023



## ANALYSIS REPORT

<b>CUSTOMER NAME</b>	: CARLTON HOTEL BANGKOK SUKHUMVIT	<b>RECEIVED DATE</b>	: DECEMBER 28, 2022
<b>ADDRESS</b>	: 491 SUKUMVIT ROAD KHLONG TOEI NUEA WATTHANA BANGKOK 10110	<b>ANALYTICAL DATE</b>	: DECEMBER 28, 2022 - JANUARY 4, 2023
<b>CONTACT INFORMATION</b>	: TEL : 0 2090 7888 Ext.7804 e-mail : Sunisa.Anantachina@carltonhotel.co.th	<b>REPORT NO.</b>	: 2023-U002734
<b>SAMPLING SOURCE</b>	: COOLING TOWER	<b>WORK NO.</b>	: 2022-000982
<b>SAMPLE TYPE</b>	: COOLING WATER	<b>ANALYSIS NO.</b>	: T22AZ854-0004
<b>SAMPLING DATE</b>	: DECEMBER 27, 2022		
<b>SAMPLING TIME</b>	: 12:40 HOUR		
<b>SAMPLING METHOD *</b>	: GRAB, GRAB AND STERILE TECHNIQUE		
<b>SAMPLING BY *</b>	: MR WEERAYUT MOKKAEW		
<b>ANALYZED BY</b>	: MISS KAMICA CHOOSOMBAT		

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	REGULATORY STANDARD	DETECTION LIMIT
			ท่อน้ำทิ้งจาก หอผึ่งเย็น T22AZ854-0004		
pH *	-	ELECTROMETRIC METHOD AT SITE (SM:4500-H <sup>+</sup> B)	9.1 (26°C)	7.2-8.3	-
RESIDUAL CHLORINE *	mg/L Cl <sub>2</sub>	MODIFIED DPD COLOURIMETRIC METHOD (AT SITE)	ND	-	0.1
MICROBIOLOGY					
COLIFORM BACTERIA *	MPN/100 mL	MULTIPLE-TUBE FERMENTATION TECHNIQUE (SM: 9221 B)	49	-	1.8
<i>Legionella</i> spp. #	CFU/L	ISO 11731:2017-05 (E)	NOT DETECTED	NOT DETECTED	-
<b>SAMPLE CONDITION</b> WATER'S COLOUR/TURBID SEDIMENT			YELLOW/CLEAR WHITE		

# : ISO/IEC 17025 ACCREDITED BY DEPARTMENT OF MEDICAL SCIENCE (DMSC)  
\* : VERIFIED BY OWN LABORATORY QUALITY SYSTEM, BUT STILL NOT ACCREDITED

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

REGULATORY STANDARD : ANNOUNCEMENT OF THE DEPARTMENT OF HEALTH (THAILAND), PRACTICE FOR THE CONTROL OF LEGIONELLA BACTERIA IN COOLING TOWERS, JANUARY 2001.

ND : NON-DETECTABLE.



(MISS CHAWEEVAN BOONLA)  
LABORATORY SUPERVISOR

JANUARY 13, 2023

