

ภาคผนวก ค-13

รายการผลการติดตามตรวจสอบ
การควบคุมเชื้อสปีชีส์โอเนลล่าในระบบฝังเย็น



Analysis / Test Report

Client : Chakri Naruebodindra Medical Institute, Faculty of Medicine Ramathibodi Hospital, Mahidol University
111 Moo 14, Bang Pla, Bang Phli, Samutprakarn Thailand 10540

P/O : สัญญาเลขที่C017/2566(CNMI)

Project Name : โรงพยาบาลรามารักษ์ตึกจักษุณดินทร์

Project Location :

Lot ID: 23143975

Date Received : Jan 08, 2024

Date Reported : Jan 22, 2024

Report Number : 2890491-1

Page 1 of 1

Sample Number	23143975-1
Sampled Date	Jan 08, 2024 9:45 AM
Sample Description	Consumption Water
Location	อาคารสาธารณสุขโรค - น้ำเข้า Cooling Tower
Date Analysis Commenced	Jan 09, 2024
Condition of Sample	Contained in three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Microbiological Testing							
<i>Legionella spp.</i>	CFU/L	-	-	Not Detected**	Not Detected	ISO 11731 (2017)	Bangkok
Standard Plate Count	CFU/100mL	-	-	3	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9215 D	Bangkok

Guideline : Notification of Department of Health about Legionella Control in Cooling Tower.

Note : ** Not Detected mean Bacteria not found in agar plate.

Sampling By : Thanwa Jariya

Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)

Approved by



Manager

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111 Moo 14, Bang Pla, Bang Phli, Samutprakarn Thailand 10540

P/O : สัญญาเลขที่C017/2566(CNMI)

Project Name : โรงพยาบาลรามธิบดีจักรีนฤเบดินทร์

Project Location :

Lot ID: 23143975

Date Received : Jan 08, 2024

Date Reported : Jan 22, 2024

Report Number : 2890492-1

Page 1 of 1

Sample Number	23143975-2
Sampled Date	Jan 08, 2024 10:15 AM
Sample Description	Consumption Water
Location	อาคารศูนย์การเรียนรู้ - น้ำเข้า Cooling Tower
Date Analysis Commenced	Jan 09, 2024
Condition of Sample	Contained in three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Microbiological Testing							
<i>Legionella spp.</i>	CFU/L	-	-	Not Detected**	Not Detected	ISO 11731 (2017)	Bangkok
Standard Plate Count	CFU/100mL	-	-	>200	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9215 D	Bangkok

Guideline : Notification of Department of Health about Legionella Control in Cooling Tower.

Note : ** Not Detected mean Bacteria not found in agar plate.

Sampling By : Thanwa Jariya

Remark :

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Project Name : โรงพยาบาลรามธิบดีจักรีนฤเบดินทร์

Project Location :

Lot ID: 23143975

Date Received : Jan 08, 2024

Date Reported : Jan 22, 2024

Report Number : 2890493-1

Page 1 of 1

Sample Number	23143975-3
Sampled Date	Jan 08, 2024 10:55 AM
Sample Description	Consumption Water
Location	อาคารพรีคลินิกฯ - น้ำเข้า Cooling Tower
Date Analysis Commenced	Jan 09, 2024
Condition of Sample	Contained in three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Microbiological Testing							
<i>Legionella spp.</i>	CFU/L	-	-	Not Detected**	Not Detected	ISO 11731 (2017)	Bangkok
Standard Plate Count	CFU/100mL	-	-	>200	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9215 D	Bangkok

Guideline : Notification of Department of Health about Legionella Control in Cooling Tower.

Note : ** Not Detected mean Bacteria not found in agar plate.

Sampling By : Thanwa Jariya

Remark :

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P/O : สัญญาเลขที่C017/2566(CNMI)

Project Name : โรงพยาบาลรามธิบดีจักรีนฤเบศร

Project Location :

Lot ID: 23143975

Date Received : Jan 08, 2024

Date Reported : Jan 25, 2024

Report Number : 2890494-1

Page 1 of 2

Sample Number	23143975-4
Sampled Date	Jan 08, 2024 9:50 AM
Sample Description	Consumption Water
Location	อาคารสาธารณสุขโรค - น้ำในหอ Cooling Tower ทิศตะวันออก
Date Analysis Commenced	Jan 09, 2024
Condition of Sample	Contained in six plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Metals Testing							
Iron	mg/L	0.003	0.005	0.02	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 3125 B, 3030 F	Bangkok
Microbiological Testing							
<i>Legionella spp.</i> *	CFU/L	-	-	Not Detected**	Not Detected	ISO 11731 (2017)	Bangkok
Standard Plate Count *	CFU/100mL	-	-	>200	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9215 D	Bangkok
Water Testing							
Ammonium *	mg/L	-	0.06	0.07	No Standard	Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-NH3 F	Bangkok
Chloride as Cl	mg/L	0.06	0.2	315	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4110 B	Bangkok
Conductivity at 25 degree C *	micromhos/cm	-	0.5	2155	No Standard	Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2510 B	Bangkok
Methyl Orange Alkalinity as CaCO3 *	mg/L	-	1	385	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2320 B	Bangkok
pH at 25 degree C		-	-	8.5	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Bangkok
Silica as SiO2 *	mg/L	0.02	0.05	89.0	No Standard	Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-SiO2 (D)	Bangkok

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P/O : สัญญาเลขที่C017/2566(CNMI)

Project Name : โรงพยาบาลรามธิบดีจักรีนฤเบศร

Project Location :

Lot ID: 23143975

Date Received : Jan 08, 2024

Date Reported : Jan 25, 2024

Report Number : 2890494-1

Page 2 of 2

Sample Number	23143975-4
Sampled Date	Jan 08, 2024 9:50 AM
Sample Description	Consumption Water
Location	อาคารสาธารณสุขโรค - น้ำในบ่อ Cooling Tower ทิศตะวันออก
Date Analysis Commenced	Jan 09, 2024
Condition of Sample	Contained in six plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
Sulfate	mg/L	0.15	0.5	283	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4110 B	Bangkok
Sulfide as H ₂ S *	mg/L	-	0.01	0.03	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-S ₂ (D)	Bangkok
Total Hardness as CaCO ₃	mg/L	-	1	499	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2340 C	Bangkok

Guideline : Notification of Department of Health about Legionella Control in Cooling Tower.

Note : ** Not Detected mean Bacteria not found in agar plate.

Sampling By : Thanwa Jariya

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Project Name : โรงพยาบาลรามธิบดีจักรีนฤเบศร

Project Location :

Lot ID: 23143975

Date Received : Jan 08, 2024

Date Reported : Jan 25, 2024

Report Number : 2890495-1

Page 1 of 2

Sample Number	23143975-5
Sampled Date	Jan 08, 2024 9:55 AM
Sample Description	Consumption Water
Location	อาคารสาธารณสุขโรค - น้ำในบ่อ Cooling Tower ทิศตะวันตก
Date Analysis Commenced	Jan 09, 2024
Condition of Sample	Contained in six plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Metals Testing							
Iron	mg/L	0.003	0.005	0.01	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 3125 B, 3030 F	Bangkok
Microbiological Testing							
<i>Legionella spp.</i> *	CFU/L	-	-	Not Detected**	Not Detected	ISO 11731 (2017)	Bangkok
Standard Plate Count *	CFU/100mL	-	-	>200	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9215 D	Bangkok
Water Testing							
Ammonium *	mg/L	-	0.06	0.13	No Standard	Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-NH3 F	Bangkok
Chloride as Cl	mg/L	0.06	0.2	309	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4110 B	Bangkok
Conductivity at 25 degree C *	micromhos/cm	-	0.5	2162	No Standard	Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2510 B	Bangkok
Methyl Orange Alkalinity as CaCO3 *	mg/L	-	1	405	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2320 B	Bangkok
pH at 25 degree C		-	-	8.7	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Bangkok
Silica as SiO2 *	mg/L	0.02	0.05	91.2	No Standard	Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-SiO2 (D)	Bangkok

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P/O : สัญญาเลขที่C017/2566(CNMI)

Project Name : โรงพยาบาลรามธิบดีจักรีนฤเบศร

Project Location :

Lot ID: 23143975

Date Received : Jan 08, 2024

Date Reported : Jan 25, 2024

Report Number : 2890495-1

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Sample Number 23143975-5
Sampled Date Jan 08, 2024 9:55 AM
Sample Description Consumption Water
Location อาคารสาธารณสุขโรค - น้ำในบ่อ Cooling Tower ทิศตะวันตก
Date Analysis Commenced Jan 09, 2024
Condition of Sample Contained in six plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
Sulfate	mg/L	0.15	0.5	281	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4110 B	Bangkok
Sulfide as H ₂ S *	mg/L	-	0.01	0.02	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-S ₂ (D)	Bangkok
Total Hardness as CaCO ₃	mg/L	-	1	497	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2340 C	Bangkok

Guideline : Notification of Department of Health about Legionella Control in Cooling Tower.

Note : ** Not Detected mean Bacteria not found in agar plate.

Sampling By : Thanwa Jariya

Remark :

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Project Location :

Lot ID: 23143975

Date Received : Jan 08, 2024

Date Reported : Jan 25, 2024

Report Number : 2890496-1

Page 1 of 2

Sample Number	23143975-6
Sampled Date	Jan 08, 2024 10:20 AM
Sample Description	Consumption Water
Location	อาคารศูนย์การเรียนรู้ - น้ำในบ่อ Cooling Tower ทิศตะวันออก
Date Analysis Commenced	Jan 09, 2024
Condition of Sample	Contained in six plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Metals Testing							
Iron	mg/L	0.003	0.005	0.11	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 3125 B, 3030 F	Bangkok
Microbiological Testing							
<i>Legionella spp.</i> *	CFU/L	-	-	Not Detected**	Not Detected	ISO 11731 (2017)	Bangkok
Standard Plate Count *	CFU/100mL	-	-	>200	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9215 D	Bangkok
Water Testing							
Ammonium *	mg/L	-	0.06	<0.06	No Standard	Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-NH3 F	Bangkok
Chloride as Cl	mg/L	0.06	0.2	498	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4110 B	Bangkok
Conductivity at 25 degree C *	micromhos/cm	-	0.5	3270	No Standard	Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2510 B	Bangkok
Methyl Orange Alkalinity as CaCO3 *	mg/L	-	1	622	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2320 B	Bangkok
pH at 25 degree C		-	-	9.1	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Bangkok
Silica as SiO2 *	mg/L	0.02	0.05	88.3	No Standard	Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-SiO2 (D)	Bangkok

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Project Location :

Lot ID: 23143975

Date Received : Jan 08, 2024

Date Reported : Jan 25, 2024

Report Number : 2890496-1

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Sample Number 23143975-6
Sampled Date Jan 08, 2024 10:20 AM
Sample Description Consumption Water
Location อาคารศูนย์การเรียนรู้ - น้ำในบ่อ Cooling Tower ที่สระวันออก
Date Analysis Commenced Jan 09, 2024
Condition of Sample Contained in six plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
Sulfate	mg/L	0.15	0.5	312	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4110 B	Bangkok
Sulfide as H ₂ S *	mg/L	-	0.01	0.02	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-S ₂ (D)	Bangkok
Total Hardness as CaCO ₃	mg/L	-	1	228	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2340 C	Bangkok

Guideline : Notification of Department of Health about Legionella Control in Cooling Tower.

Note : ** Not Detected mean Bacteria not found in agar plate.

Sampling By : Thanwa Jariya

Remark :

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Project Name : โรงพยาบาลรามธิบดีจักรีนฤเบศร

Project Location :

Lot ID: 23143975

Date Received : Jan 08, 2024

Date Reported : Jan 25, 2024

Report Number : 2890497-1

Page 1 of 2

Sample Number	23143975-7
Sampled Date	Jan 08, 2024 10:30 AM
Sample Description	Consumption Water
Location	อาคารศูนย์การเรียนรู้ - น้ำในบ่อ Cooling Tower ทิศตะวันตก
Date Analysis Commenced	Jan 09, 2024
Condition of Sample	Contained in six plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Metals Testing							
Iron	mg/L	0.003	0.005	0.04	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 3125 B, 3030 F	Bangkok
Microbiological Testing							
<i>Legionella spp.</i> *	CFU/L	-	-	Not Detected**	Not Detected	ISO 11731 (2017)	Bangkok
Standard Plate Count *	CFU/100mL	-	-	>200	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9215 D	Bangkok
Water Testing							
Ammonium *	mg/L	-	0.06	<0.06	No Standard	Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-NH3 F	Bangkok
Chloride as Cl	mg/L	0.06	0.2	25.5	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4110 B	Bangkok
Conductivity at 25 degree C *	micromhos/cm	-	0.5	1836	No Standard	Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2510 B	Bangkok
Methyl Orange Alkalinity as CaCO3 *	mg/L	-	1	344	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2320 B	Bangkok
pH at 25 degree C		-	-	9.0	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Bangkok
Silica as SiO2 *	mg/L	0.02	0.05	51.2	No Standard	Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-SiO2 (D)	Bangkok

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Accreditation No. 1031/47

Analysis / Test Report

Client : Chakri Naruebodindra Medical Institute, Faculty of Medicine Ramathibodi Hospital, Mahidol University
111 Moo 14, Bang Pla, Bang Phli, Samutprakarn Thailand 10540

P/O : สัญญาเลขที่ C017/2566(CNMI)

Project Name : โรงพยาบาลรามธิบดีจักรีนฤเบศร

Project Location :

Lot ID: 23143975

Date Received : Jan 08, 2024

Date Reported : Jan 25, 2024

Report Number : 2890497-1

Page 2 of 2

Sample Number	23143975-7
Sampled Date	Jan 08, 2024 10:30 AM
Sample Description	Consumption Water
Location	อาคารศูนย์การเรียนรู้ - น้ำในบ่อ Cooling Tower ทิศตะวันตก
Date Analysis Commenced	Jan 09, 2024
Condition of Sample	Contained in six plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
Sulfate	mg/L	0.15	0.5	163	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4110 B	Bangkok
Sulfide as H ₂ S *	mg/L	-	0.01	0.06	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-S ₂ (D)	Bangkok
Total Hardness as CaCO ₃	mg/L	-	1	109	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2340 C	Bangkok

Guideline : Notification of Department of Health about Legionella Control in Cooling Tower.

Note : ** Not Detected mean Bacteria not found in agar plate.

Sampling By : Thanwa Jariya

Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)
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Analysis / Test Report

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111 Moo 14, Bang Pla, Bang Phli, Samutprakarn Thailand 10540

P/O : สัญญาเลขที่C017/2566(CNMI)

Project Name : โรงพยาบาลรามธิบดีจักรีนฤเบศร

Project Location :

Lot ID: 23143975

Date Received : Jan 08, 2024

Date Reported : Jan 25, 2024

Report Number : 2890498-1

Page 1 of 2

Sample Number	23143975-8
Sampled Date	Jan 08, 2024 11:10 AM
Sample Description	Consumption Water
Location	อาคารพรีคลินิกฯ - น้ำในบ่อ Cooling Tower บ่อที่ 1
Date Analysis Commenced	Jan 09, 2024
Condition of Sample	Contained in six plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Metals Testing							
Iron	mg/L	0.003	0.005	0.04	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 3125 B, 3030 F	Bangkok
Microbiological Testing							
<i>Legionella spp.</i> *	CFU/L	-	-	Not Detected**	Not Detected	ISO 11731 (2017)	Bangkok
Standard Plate Count *	CFU/100mL	-	-	>200	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9215 D	Bangkok
Water Testing							
Ammonium *	mg/L	-	0.06	<0.06	No Standard	Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-NH3 F	Bangkok
Chloride as Cl	mg/L	0.06	0.2	132	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4110 B	Bangkok
Conductivity at 25 degree C *	micromhos/cm	-	0.5	767	No Standard	Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2510 B	Bangkok
Methyl Orange Alkalinity as CaCO3 *	mg/L	-	1	101	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2320 B	Bangkok
pH at 25 degree C		-	-	8.1	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Bangkok
Silica as SiO2 *	mg/L	0.02	0.05	16.6	No Standard	Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-SiO2 (D)	Bangkok

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Accreditation No. 1031/47

Analysis / Test Report

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111 Moo 14, Bang Pla, Bang Phli, Samutprakarn Thailand 10540

P/O : สัญญาเลขที่C017/2566(CNMI)

Project Name : โรงพยาบาลรามารักษ์ตึกจักษุณดินทร์

Project Location :

Lot ID: 23143975

Date Received : Jan 08, 2024

Date Reported : Jan 25, 2024

Report Number : 2890498-1

Page 2 of 2

Sample Number	23143975-8
Sampled Date	Jan 08, 2024 11:10 AM
Sample Description	Consumption Water
Location	อาคารพรีคลินิกฯ - น้ำในบ่อ Cooling Tower บ่อที่ 1
Date Analysis Commenced	Jan 09, 2024
Condition of Sample	Contained in six plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
Sulfate	mg/L	0.15	0.5	52.5	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4110 B	Bangkok
Sulfide as H ₂ S *	mg/L	-	0.01	0.08	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-S ₂ (D)	Bangkok
Total Hardness as CaCO ₃	mg/L	-	1	52	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2340 C	Bangkok

Guideline : Notification of Department of Health about Legionella Control in Cooling Tower.

Note : ** Not Detected mean Bacteria not found in agar plate.

Sampling By : Thanwa Jariya

Remark :

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111 Moo 14, Bang Pla, Bang Phli, Samutprakarn Thailand 10540

P/O : สัญญาเลขที่C017/2566(CNMI)

Project Name : โรงพยาบาลรามธิบดีจักรีนฤเบศร

Project Location :

Lot ID: 23143975

Date Received : Jan 08, 2024

Date Reported : Jan 25, 2024

Report Number : 2890499-1

Page 1 of 2

Sample Number	23143975-9
Sampled Date	Jan 08, 2024 11:15 AM
Sample Description	Consumption Water
Location	อาคารพรีคลินิกฯ - น้ำในบ่อ Cooling Tower บ่อที่ 2
Date Analysis Commenced	Jan 09, 2024
Condition of Sample	Contained in six plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Metals Testing							
Iron	mg/L	0.003	0.005	0.10	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 3125 B, 3030 F	Bangkok
Microbiological Testing							
<i>Legionella spp.</i> *	CFU/L	-	-	Not Detected**	Not Detected	ISO 11731 (2017)	Bangkok
Standard Plate Count *	CFU/100mL	-	-	>200	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9215 D	Bangkok
Water Testing							
Ammonium *	mg/L	-	0.06	<0.06	No Standard	Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-NH3 F	Bangkok
Chloride as Cl	mg/L	0.06	0.2	171	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4110 B	Bangkok
Conductivity at 25 degree C *	micromhos/cm	-	0.5	1330	No Standard	Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2510 B	Bangkok
Methyl Orange Alkalinity as CaCO3 *	mg/L	-	1	253	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2320 B	Bangkok
pH at 25 degree C		-	-	8.6	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Bangkok
Silica as SiO2 *	mg/L	0.02	0.05	41.0	No Standard	Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-SiO2 (D)	Bangkok

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Analysis / Test Report

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111 Moo 14, Bang Pla, Bang Phli, Samutprakarn Thailand 10540

P/O : สัญญาเลขที่C017/2566(CNMI)

Project Name : โรงพยาบาลรามธิบดีจักรีนฤเบศร

Project Location :

Lot ID: 23143975

Date Received : Jan 08, 2024

Date Reported : Jan 25, 2024

Report Number : 2890499-1

Page 2 of 2

Sample Number	23143975-9
Sampled Date	Jan 08, 2024 11:15 AM
Sample Description	Consumption Water
Location	อาคารพรีคลินิกฯ - น้ำในบ่อ Cooling Tower บ่อที่ 2
Date Analysis Commenced	Jan 09, 2024
Condition of Sample	Contained in six plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
Sulfate	mg/L	0.15	0.5	127	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4110 B	Bangkok
Sulfide as H ₂ S *	mg/L	-	0.01	0.03	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-S ₂ (D)	Bangkok
Total Hardness as CaCO ₃	mg/L	-	1	100	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2340 C	Bangkok

Guideline : Notification of Department of Health about Legionella Control in Cooling Tower.

Note : ** Not Detected mean Bacteria not found in agar plate.

Sampling By : Thanwa Jariya

Remark :

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- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)
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111 Moo 14, Bang Pla, Bang Phli, Samutprakarn Thailand 10540

P/O : สัญญาเลขที่C017/2566(CNMI)

Project Name : โรงพยาบาลรามธิบดีจักรีนฤเบศร

Project Location :

Lot ID: 23143975

Date Received : Jan 08, 2024

Date Reported : Jan 25, 2024

Report Number : 2890500-1

Page 1 of 2

Sample Number	23143975-10
Sampled Date	Jan 08, 2024 11:20 AM
Sample Description	Consumption Water
Location	อาคารพรีคลินิกฯ - น้ำในบ่อ Cooling Tower บ่อที่ 3
Date Analysis Commenced	Jan 09, 2024
Condition of Sample	Contained in six plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Metals Testing							
Iron	mg/L	0.003	0.005	0.05	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 3125 B, 3030 F	Bangkok
Microbiological Testing							
<i>Legionella spp.</i> *	CFU/L	-	-	Not Detected**	Not Detected	ISO 11731 (2017)	Bangkok
Standard Plate Count *	CFU/100mL	-	-	>200	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9215 D	Bangkok
Water Testing							
Ammonium *	mg/L	-	0.06	<0.06	No Standard	Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-NH3 F	Bangkok
Chloride as Cl	mg/L	0.06	0.2	137	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4110 B	Bangkok
Conductivity at 25 degree C *	micromhos/cm	-	0.5	880	No Standard	Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2510 B	Bangkok
Methyl Orange Alkalinity as CaCO3 *	mg/L	-	1	132	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2320 B	Bangkok
pH at 25 degree C		-	-	8.3	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Bangkok
Silica as SiO2 *	mg/L	0.02	0.05	22.2	No Standard	Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-SiO2 (D)	Bangkok

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P/O : สัญญาเลขที่C017/2566(CNMI)

Project Name : โรงพยาบาลรามธิบดีจักรีนฤเบศร

Project Location :

Lot ID: 23143975

Date Received : Jan 08, 2024

Date Reported : Jan 25, 2024

Report Number : 2890500-1

Page 2 of 2

Sample Number	23143975-10
Sampled Date	Jan 08, 2024 11:20 AM
Sample Description	Consumption Water
Location	อาคารพรีคลินิกฯ - น้ำในบ่อ Cooling Tower บ่อที่ 3
Date Analysis Commenced	Jan 09, 2024
Condition of Sample	Contained in six plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
Sulfate	mg/L	0.15	0.5	68.8	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4110 B	Bangkok
Sulfide as H ₂ S *	mg/L	-	0.01	0.07	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-S ₂ (D)	Bangkok
Total Hardness as CaCO ₃	mg/L	-	1	61	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2340 C	Bangkok

Guideline : Notification of Department of Health about Legionella Control in Cooling Tower.

Note : ** Not Detected mean Bacteria not found in agar plate.

Sampling By : Thanwa Jariya

Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)
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Signature: [Redacted]
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P/O : สัญญาเลขที่C017/2566(CNMI)

Project Name : โรงพยาบาลรามธิบดีจักรีนฤเบศร

Project Location :

Lot ID: 23143975

Date Received : Jan 08, 2024

Date Reported : Jan 25, 2024

Report Number : 2890501-1

Page 1 of 2

Sample Number	23143975-11
Sampled Date	Jan 08, 2024 10:00 AM
Sample Description	Consumption Water
Location	อาคารสาธารณสุขโรค - น้ำที่ระบายออกจาก Cooling Tower
Date Analysis Commenced	Jan 09, 2024
Condition of Sample	Contained in six plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Metals Testing							
Iron	mg/L	0.003	0.005	0.03	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 3125 B, 3030 F	Bangkok
Microbiological Testing							
<i>Legionella spp.</i> *	CFU/L	-	-	Not Detected**	Not Detected	ISO 11731 (2017)	Bangkok
Standard Plate Count *	CFU/100mL	-	-	>200	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9215 D	Bangkok
Water Testing							
Ammonium *	mg/L	-	0.06	<0.06	No Standard	Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-NH3 F	Bangkok
Chloride as Cl	mg/L	0.06	0.2	319	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4110 B	Bangkok
Conductivity at 25 degree C *	micromhos/cm	-	0.5	2184	No Standard	Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2510 B	Bangkok
Methyl Orange Alkalinity as CaCO3 *	mg/L	-	1	380	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2320 B	Bangkok
pH at 25 degree C		-	-	8.8	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Bangkok
Silica as SiO2 *	mg/L	0.02	0.05	91.5	No Standard	Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-SiO2 (D)	Bangkok

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Accreditation No. 1031/47

Analysis / Test Report

Client : Chakri Naruebodindra Medical Institute, Faculty of Medicine Ramathibodi Hospital, Mahidol University

111 Moo 14, Bang Pla, Bang Phli, Samutprakarn Thailand 10540

P/O : สัญญาเลขที่C017/2566(CNMI)

Project Name : โรงพยาบาลรามธิบดีจักรีนฤเบศร

Project Location :

Lot ID: 23143975

Date Received : Jan 08, 2024

Date Reported : Jan 25, 2024

Report Number : 2890501-1

Page 2 of 2

Sample Number	23143975-11
Sampled Date	Jan 08, 2024 10:00 AM
Sample Description	Consumption Water
Location	อาคารสาธารณสุขโรค - น้ำที่ระบายออกจาก Cooling Tower
Date Analysis Commenced	Jan 09, 2024
Condition of Sample	Contained in six plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
Sulfate	mg/L	0.15	0.5	288	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4110 B	Bangkok
Sulfide as H ₂ S *	mg/L	-	0.01	0.03	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-S ₂ (D)	Bangkok
Total Hardness as CaCO ₃	mg/L	-	1	502	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2340 C	Bangkok

Guideline : Notification of Department of Health about Legionella Control in Cooling Tower.

Note : ** Not Detected mean Bacteria not found in agar plate.

Sampling By : Thanwa Jariya

Remark :

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- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)
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Signature: [Redacted]
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Analysis / Test Report

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111 Moo 14, Bang Pla, Bang Phli, Samutprakarn Thailand 10540

P/O : สัญญาเลขที่C017/2566(CNMI)

Project Name : โรงพยาบาลรามธิบดีจักรีนฤเบศร

Project Location :

Lot ID: 23143975

Date Received : Jan 08, 2024

Date Reported : Jan 25, 2024

Report Number : 2890502-1

Page 1 of 2

Sample Number	23143975-12
Sampled Date	Jan 08, 2024 10:25 AM
Sample Description	Consumption Water
Location	อาคารศูนย์การเรียนรู้ - น้ำที่ระบายออกจาก Cooling Tower
Date Analysis Commenced	Jan 09, 2024
Condition of Sample	Contained in six plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Metals Testing							
Iron	mg/L	0.003	0.005	0.16	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 3125 B, 3030 F	Bangkok
Microbiological Testing							
<i>Legionella spp.</i> *	CFU/L	-	-	Not Detected**	Not Detected	ISO 11731 (2017)	Bangkok
Standard Plate Count *	CFU/100mL	-	-	>200	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9215 D	Bangkok
Water Testing							
Ammonium *	mg/L	-	0.06	<0.06	No Standard	Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-NH3 F	Bangkok
Chloride as Cl	mg/L	0.06	0.2	497	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4110 B	Bangkok
Conductivity at 25 degree C *	micromhos/cm	-	0.5	3222	No Standard	Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2510 B	Bangkok
Methyl Orange Alkalinity as CaCO3 *	mg/L	-	1	582	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2320 B	Bangkok
pH at 25 degree C		-	-	9.0	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Bangkok
Silica as SiO2 *	mg/L	0.02	0.05	87.1	No Standard	Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-SiO2 (D)	Bangkok

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Manager

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111 Moo 14, Bang Pla, Bang Phli, Samutprakarn Thailand 10540

P/O : สัญญาเลขที่C017/2566(CNMI)

Project Name : โรงพยาบาลรามธิบดีจักรีนฤเบศร

Project Location :

Lot ID: 23143975

Date Received : Jan 08, 2024

Date Reported : Jan 25, 2024

Report Number : 2890502-1

Page 2 of 2

Sample Number	23143975-12
Sampled Date	Jan 08, 2024 10:25 AM
Sample Description	Consumption Water
Location	อาคารศูนย์การเรียนรู้ - น้ำที่ระบายออกจาก Cooling Tower
Date Analysis Commenced	Jan 09, 2024
Condition of Sample	Contained in six plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
Sulfate	mg/L	0.15	0.5	311	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4110 B	Bangkok
Sulfide as H ₂ S *	mg/L	-	0.01	0.03	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-S ₂ (D)	Bangkok
Total Hardness as CaCO ₃	mg/L	-	1	214	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2340 C	Bangkok

Guideline : Notification of Department of Health about Legionella Control in Cooling Tower.

Note : ** Not Detected mean Bacteria not found in agar plate.

Sampling By : Thanwa Jariya

Remark :

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111 Moo 14, Bang Pla, Bang Phli, Samutprakarn Thailand 10540

P/O : สัญญาเลขที่C017/2566(CNMI)

Project Name : โรงพยาบาลรามธิบดีจักรีนฤเบศร

Project Location :

Lot ID: 23143975

Date Received : Jan 08, 2024

Date Reported : Jan 25, 2024

Report Number : 2890503-1

Page 1 of 2

Sample Number	23143975-13
Sampled Date	Jan 08, 2024 11:05 AM
Sample Description	Consumption Water
Location	อาคารพรีคลินิกฯ - น้ำที่ระบายออกจาก Cooling Tower
Date Analysis Commenced	Jan 09, 2024
Condition of Sample	Contained in six plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Metals Testing							
Iron	mg/L	0.003	0.005	0.10	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 3125 B, 3030 F	Bangkok
Microbiological Testing							
<i>Legionella spp.</i> *	CFU/L	-	-	Not Detected**	Not Detected	ISO 11731 (2017)	Bangkok
Standard Plate Count *	CFU/100mL	-	-	>200	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9215 D	Bangkok
Water Testing							
Ammonium *	mg/L	-	0.06	<0.06	No Standard	Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-NH3 F	Bangkok
Chloride as Cl	mg/L	0.06	0.2	176	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4110 B	Bangkok
Conductivity at 25 degree C *	micromhos/cm	-	0.5	1325	No Standard	Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2510 B	Bangkok
Methyl Orange Alkalinity as CaCO3 *	mg/L	-	1	258	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2320 B	Bangkok
pH at 25 degree C		-	-	8.8	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Bangkok
Silica as SiO2 *	mg/L	0.02	0.05	41.2	No Standard	Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-SiO2 (D)	Bangkok

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Manager

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111 Moo 14, Bang Pla, Bang Phli, Samutprakarn Thailand 10540

P/O : สัญญาเลขที่C017/2566(CNMI)

Project Name : โรงพยาบาลรามารักษ์ตึกจักษุณดินทร์

Project Location :

Lot ID: 23143975

Date Received : Jan 08, 2024

Date Reported : Jan 25, 2024

Report Number : 2890503-1

Page 2 of 2

Sample Number	23143975-13
Sampled Date	Jan 08, 2024 11:05 AM
Sample Description	Consumption Water
Location	อาคารพรีคลินิกฯ - น้ำที่ระบายออกจาก Cooling Tower
Date Analysis Commenced	Jan 09, 2024
Condition of Sample	Contained in six plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
Sulfate	mg/L	0.15	0.5	127	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4110 B	Bangkok
Sulfide as H ₂ S *	mg/L	-	0.01	0.07	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-S ₂ (D)	Bangkok
Total Hardness as CaCO ₃	mg/L	-	1	105	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2340 C	Bangkok

Guideline : Notification of Department of Health about Legionella Control in Cooling Tower.

Note : ** Not Detected mean Bacteria not found in agar plate.

Sampling By : Thanwa Jariya

Remark :

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- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)
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Samree Nongsriam
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P/O : สัญญาเลขที่C017/2566(CNMI)

Project Name : โรงพยาบาลรามารักษ์ตึกจักษุณดินทร์

Project Location :

Lot ID: 2433911

Date Received : Apr 04, 2024

Date Reported : Apr 22, 2024

Report Number : 2970102-1

Page 1 of 1

Sample Number	2433911-2
Sampled Date	Apr 04, 2024 10:12 AM
Sample Description	Consumption Water
Location	อาคารศูนย์การเรียนรู้ - น้ำเข้า Cooling Tower
Date Analysis Commenced	Apr 05, 2024
Condition of Sample	Contained in three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Microbiological Testing							
<i>Legionella spp.</i>	CFU/L	-	-	Not Detected**	Not Detected	ISO 11731 (2017)	Bangkok
Standard Plate Count	CFU/100mL	-	-	>200	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9215 D	Bangkok

Guideline : Notification of Department of Health about Legionella Control in Cooling Tower B.E. 2544

Note : ** Not Detected mean Bacteria not found in agar plate.

Sampling By : Chulladet Warin

Remark :

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P/O : สัญญาเลขที่C017/2566(CNMI)

Project Name : โรงพยาบาลรามารักษ์ตึกจักษุณดินทร์

Project Location :

Lot ID: 2433911

Date Received : Apr 04, 2024

Date Reported : Apr 22, 2024

Report Number : 2970103-1

Page 1 of 1

Sample Number	2433911-3
Sampled Date	Apr 04, 2024 10:43 AM
Sample Description	Consumption Water
Location	อาคารพรีคลินิกฯ - น้ำเข้า Cooling Tower
Date Analysis Commenced	Apr 05, 2024
Condition of Sample	Contained in three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Microbiological Testing							
<i>Legionella spp.</i>	CFU/L	-	-	Not Detected**	Not Detected	ISO 11731 (2017)	Bangkok
Standard Plate Count	CFU/100mL	-	-	70	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9215 D	Bangkok

Guideline : Notification of Department of Health about Legionella Control in Cooling Tower B.E. 2544

Note : ** Not Detected mean Bacteria not found in agar plate.

Sampling By : Chulladet Warin

Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)

Approved by

Suwannnee Chuankheaw
Section Head

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P/O : สัญญาเลขที่C017/2566(CNMI)

Project Name : โรงพยาบาลรามธิบดีจักรีนฤเบศร

Project Location :

Lot ID: 2433911

Date Received : Apr 04, 2024

Date Reported : Apr 22, 2024

Report Number : 2970106-1

Page 1 of 2

Sample Number	2433911-6
Sampled Date	Apr 04, 2024 10:10 AM
Sample Description	Consumption Water
Location	อาคารศูนย์การเรียนรู้ - น้ำในบ่อ Cooling Tower ทิศตะวันออก
Date Analysis Commenced	Apr 05, 2024
Condition of Sample	Contained in six plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Metals Testing							
Iron	mg/L	0.003	0.005	0.59	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 3125 B, 3030 F	Bangkok
Microbiological Testing							
<i>Legionella spp.</i> *	CFU/L	-	-	Not Detected**	Not Detected	ISO 11731 (2017)	Bangkok
Standard Plate Count *	CFU/100mL	-	-	>200	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9215 D	Bangkok
Water Testing							
Ammonium *	mg/L	-	0.06	<0.06	No Standard	Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-NH3 F	Bangkok
Chloride as Cl	mg/L	0.06	0.2	462	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4110 B	Bangkok
Conductivity at 25 degree C *	micromhos/cm	-	0.5	2731	No Standard	Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2510 B	Bangkok
Methyl Orange Alkalinity as CaCO3 *	mg/L	-	1	430	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2320 B	Bangkok
pH at 25 degree C		-	-	8.9	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Bangkok
Silica as SiO2 *	mg/L	0.02	0.05	44.0	No Standard	Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-SiO2 (D)	Bangkok

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111 Moo 14, Bang Pla, Bang Phli, Samutprakarn Thailand 10540

P/O : สัญญาเลขที่C017/2566(CNMI)

Project Name : โรงพยาบาลรามธิบดีจักรีนฤเบศร

Project Location :

Lot ID: 2433911

Date Received : Apr 04, 2024

Date Reported : Apr 22, 2024

Report Number : 2970106-1

Page 2 of 2

Sample Number	2433911-6
Sampled Date	Apr 04, 2024 10:10 AM
Sample Description	Consumption Water
Location	อาคารศูนย์การเรียนรู้ - น้ำในบ่อ Cooling Tower ทิศตะวันออก
Date Analysis Commenced	Apr 05, 2024
Condition of Sample	Contained in six plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
Sulfate	mg/L	0.15	0.5	265	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4110 B	Bangkok
Sulfide as H ₂ S *	mg/L	-	0.01	<0.01	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-S ₂ (D)	Bangkok
Total Hardness as CaCO ₃	mg/L	-	1	60	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2340 C	Bangkok

Guideline : Notification of Department of Health about Legionella Control in Cooling Tower B.E. 2544

Note : ** Not Detected mean Bacteria not found in agar plate.

Sampling By : Chulladet Warin

Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)
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Accreditation No. 1031/47

Analysis / Test Report

Client : Chakri Naruebodindra Medical Institute, Faculty of Medicine Ramathibodi Hospital, Mahidol University
111 Moo 14, Bang Pla, Bang Phli, Samutprakarn Thailand 10540

P/O : สัญญาเลขที่C017/2566(CNMI)

Project Name : โรงพยาบาลรามธิบดีจักรีนฤเบศร

Project Location :

Lot ID: 2433911

Date Received : Apr 04, 2024

Date Reported : Apr 22, 2024

Report Number : 2970107-1

Page 1 of 2

Sample Number	2433911-7
Sampled Date	Apr 04, 2024 10:15 AM
Sample Description	Consumption Water
Location	อาคารศูนย์การเรียนรู้ - น้ำในบ่อ Cooling Tower ทิศตะวันตก
Date Analysis Commenced	Apr 05, 2024
Condition of Sample	Contained in six plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Metals Testing							
Iron	mg/L	0.003	0.005	0.51	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 3125 B, 3030 F	Bangkok
Microbiological Testing							
<i>Legionella spp.</i> *	CFU/L	-	-	Not Detected**	Not Detected	ISO 11731 (2017)	Bangkok
Standard Plate Count *	CFU/100mL	-	-	>200	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9215 D	Bangkok
Water Testing							
Ammonium *	mg/L	-	0.06	<0.06	No Standard	Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-NH3 F	Bangkok
Chloride as Cl	mg/L	0.06	0.2	464	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4110 B	Bangkok
Conductivity at 25 degree C *	micromhos/cm	-	0.5	2716	No Standard	Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2510 B	Bangkok
Methyl Orange Alkalinity as CaCO3 *	mg/L	-	1	400	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2320 B	Bangkok
pH at 25 degree C		-	-	8.9	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Bangkok
Silica as SiO2 *	mg/L	0.02	0.05	43.5	No Standard	Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-SiO2 (D)	Bangkok

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111 Moo 14, Bang Pla, Bang Phli, Samutprakarn Thailand 10540

P/O : สัญญาเลขที่C017/2566(CNMI)

Project Name : โรงพยาบาลรามารักษ์ตึกจักษุโรคตื้น

Project Location :

Lot ID: 2433911

Date Received : Apr 04, 2024

Date Reported : Apr 22, 2024

Report Number : 2970107-1

Page 2 of 2

Sample Number	2433911-7
Sampled Date	Apr 04, 2024 10:15 AM
Sample Description	Consumption Water
Location	อาคารศูนย์การเรียนรู้ - น้ำในบ่อ Cooling Tower ทิศตะวันตก
Date Analysis Commenced	Apr 05, 2024
Condition of Sample	Contained in six plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
Sulfate	mg/L	0.15	0.5	266	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4110 B	Bangkok
Sulfide as H ₂ S *	mg/L	-	0.01	<0.01	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-S ₂ (D)	Bangkok
Total Hardness as CaCO ₃	mg/L	-	1	61	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2340 C	Bangkok

Guideline : Notification of Department of Health about Legionella Control in Cooling Tower B.E. 2544

Note : ** Not Detected mean Bacteria not found in agar plate.

Sampling By : Chulladet Warin

Remark :

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- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)
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Accreditation No. 1031/47

Analysis / Test Report

Client : Chakri Naruebodindra Medical Institute, Faculty of Medicine Ramathibodi Hospital, Mahidol University
111 Moo 14, Bang Pla, Bang Phli, Samutprakarn Thailand 10540

P/O : สัญญาเลขที่C017/2566(CNMI)

Project Name : โรงพยาบาลรามธิบดีจักรีนฤเบดินทร์

Project Location :

Lot ID: 2433911

Date Received : Apr 04, 2024

Date Reported : Apr 22, 2024

Report Number : 2970108-1

Page 1 of 2

Sample Number	2433911-8
Sampled Date	Apr 04, 2024 10:46 AM
Sample Description	Consumption Water
Location	อาคารพรีคลินิกฯ - น้ำในบ่อ Cooling Tower บ่อที่ 1
Date Analysis Commenced	Apr 05, 2024
Condition of Sample	Contained in six plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Metals Testing							
Iron	mg/L	0.003	0.005	0.03	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 3125 B, 3030 F	Bangkok
Microbiological Testing							
<i>Legionella spp.</i> *	CFU/L	-	-	Not Detected**	Not Detected	ISO 11731 (2017)	Bangkok
Standard Plate Count *	CFU/100mL	-	-	>200	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9215 D	Bangkok
Water Testing							
Ammonium *	mg/L	-	0.06	<0.06	No Standard	Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-NH3 F	Bangkok
Chloride as Cl	mg/L	0.06	0.2	82.6	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4110 B	Bangkok
Conductivity at 25 degree C *	micromhos/cm	-	0.5	527	No Standard	Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2510 B	Bangkok
Methyl Orange Alkalinity as CaCO3 *	mg/L	-	1	76	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2320 B	Bangkok
pH at 25 degree C		-	-	8.3	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Bangkok
Silica as SiO2 *	mg/L	0.02	0.05	9.24	No Standard	Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-SiO2 (D)	Bangkok

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111 Moo 14, Bang Pla, Bang Phli, Samutprakarn Thailand 10540

P/O : สัญญาเลขที่C017/2566(CNMI)

Project Name : โรงพยาบาลรามารักษ์ตึกจักษุณดินทร์

Project Location :

Lot ID: 2433911

Date Received : Apr 04, 2024

Date Reported : Apr 22, 2024

Report Number : 2970108-1

Page 2 of 2

Sample Number	2433911-8
Sampled Date	Apr 04, 2024 10:46 AM
Sample Description	Consumption Water
Location	อาคารพรีคลินิกฯ - น้ำในบ่อ Cooling Tower บ่อที่ 1
Date Analysis Commenced	Apr 05, 2024
Condition of Sample	Contained in six plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
Sulfate	mg/L	0.15	0.5	53.1	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4110 B	Bangkok
Sulfide as H ₂ S *	mg/L	-	0.01	<0.01	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-S ₂ (D)	Bangkok
Total Hardness as CaCO ₃	mg/L	-	1	24	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2340 C	Bangkok

Guideline : Notification of Department of Health about Legionella Control in Cooling Tower B.E. 2544

Note : ** Not Detected mean Bacteria not found in agar plate.

Sampling By : Chulladet Warin

Remark :

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- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)
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P/O : สัญญาเลขที่C017/2566(CNMI)

Project Name : โรงพยาบาลรามธิบดีจักรีนฤเบศร

Project Location :

Lot ID: 2433911

Date Received : Apr 04, 2024

Date Reported : Apr 22, 2024

Report Number : 2970109-1

Page 1 of 2

Sample Number	2433911-9
Sampled Date	Apr 04, 2024 10:49 AM
Sample Description	Consumption Water
Location	อาคารพรีคลินิกฯ - น้ำในบ่อ Cooling Tower บ่อที่ 2
Date Analysis Commenced	Apr 05, 2024
Condition of Sample	Contained in six plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Metals Testing							
Iron	mg/L	0.003	0.005	0.03	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 3125 B, 3030 F	Bangkok
Microbiological Testing							
<i>Legionella spp.</i> *	CFU/L	-	-	Not Detected**	Not Detected	ISO 11731 (2017)	Bangkok
Standard Plate Count *	CFU/100mL	-	-	>200	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9215 D	Bangkok
Water Testing							
Ammonium *	mg/L	-	0.06	<0.06	No Standard	Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-NH3 F	Bangkok
Chloride as Cl	mg/L	0.06	0.2	103	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4110 B	Bangkok
Conductivity at 25 degree C *	micromhos/cm	-	0.5	578	No Standard	Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2510 B	Bangkok
Methyl Orange Alkalinity as CaCO3 *	mg/L	-	1	81	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2320 B	Bangkok
pH at 25 degree C		-	-	8.3	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Bangkok
Silica as SiO2 *	mg/L	0.02	0.05	9.01	No Standard	Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-SiO2 (D)	Bangkok

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111 Moo 14, Bang Pla, Bang Phli, Samutprakarn Thailand 10540

P/O : สัญญาเลขที่C017/2566(CNMI)

Project Name : โรงพยาบาลรามารักษ์ตึกจักษุณดินทร์

Project Location :

Lot ID: 2433911

Date Received : Apr 04, 2024

Date Reported : Apr 22, 2024

Report Number : 2970109-1

Page 2 of 2

Sample Number	2433911-9
Sampled Date	Apr 04, 2024 10:49 AM
Sample Description	Consumption Water
Location	อาคารพรีคลินิกฯ - น้ำในบ่อ Cooling Tower บ่อที่ 2
Date Analysis Commenced	Apr 05, 2024
Condition of Sample	Contained in six plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
Sulfate	mg/L	0.15	0.5	50.4	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4110 B	Bangkok
Sulfide as H ₂ S *	mg/L	-	0.01	<0.01	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-S ₂ (D)	Bangkok
Total Hardness as CaCO ₃	mg/L	-	1	2	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2340 C	Bangkok

Guideline : Notification of Department of Health about Legionella Control in Cooling Tower B.E. 2544

Note : ** Not Detected mean Bacteria not found in agar plate.

Sampling By : Chulladet Warin

Remark :

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111 Moo 14, Bang Pla, Bang Phli, Samutprakarn Thailand 10540

P/O : สัญญาเลขที่C017/2566(CNMI)

Project Name : โรงพยาบาลรามารักษ์ตึกจักษุณดินทร์

Project Location :

Lot ID: 2433911

Date Received : Apr 04, 2024

Date Reported : Apr 22, 2024

Report Number : 2970110-1

Page 1 of 2

Sample Number	2433911-10
Sampled Date	Apr 04, 2024 10:40 AM
Sample Description	Consumption Water
Location	อาคารพรีคลินิกฯ - น้ำในบ่อ Cooling Tower บ่อที่ 3
Date Analysis Commenced	Apr 05, 2024
Condition of Sample	Contained in six plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Metals Testing							
Iron	mg/L	0.003	0.005	0.03	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 3125 B, 3030 F	Bangkok
Microbiological Testing							
<i>Legionella spp.</i> *	CFU/L	-	-	Not Detected**	Not Detected	ISO 11731 (2017)	Bangkok
Standard Plate Count *	CFU/100mL	-	-	>200	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9215 D	Bangkok
Water Testing							
Ammonium *	mg/L	-	0.06	<0.06	No Standard	Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-NH3 F	Bangkok
Chloride as Cl	mg/L	0.06	0.2	211	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4110 B	Bangkok
Conductivity at 25 degree C *	micromhos/cm	-	0.5	1387	No Standard	Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2510 B	Bangkok
Methyl Orange Alkalinity as CaCO3 *	mg/L	-	1	213	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2320 B	Bangkok
pH at 25 degree C		-	-	8.7	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Bangkok
Silica as SiO2 *	mg/L	0.02	0.05	30.6	No Standard	Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-SiO2 (D)	Bangkok

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111 Moo 14, Bang Pla, Bang Phli, Samutprakarn Thailand 10540

P/O : สัญญาเลขที่C017/2566(CNMI)

Project Name : โรงพยาบาลรามธิบดีจักรีนฤเบดินทร์

Project Location :

Lot ID: 2433911

Date Received : Apr 04, 2024

Date Reported : Apr 22, 2024

Report Number : 2970110-1

Page 2 of 2

Sample Number	2433911-10
Sampled Date	Apr 04, 2024 10:40 AM
Sample Description	Consumption Water
Location	อาคารพรีคลินิกฯ - น้ำในบ่อ Cooling Tower บ่อที่ 3
Date Analysis Commenced	Apr 05, 2024
Condition of Sample	Contained in six plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
Sulfate	mg/L	0.15	0.5	203	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4110 B	Bangkok
Sulfide as H ₂ S *	mg/L	-	0.01	<0.01	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-S ₂ (D)	Bangkok
Total Hardness as CaCO ₃	mg/L	-	1	301	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2340 C	Bangkok

Guideline : Notification of Department of Health about Legionella Control in Cooling Tower B.E. 2544

Note : ** Not Detected mean Bacteria not found in agar plate.

Sampling By : Chulladet Warin

Remark :

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ALS LABORATORY GROUP (THAILAND) CO., LTD. An ALS Limited Company

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Accreditation No. 1031/47

Analysis / Test Report

Client : Chakri Naruebodindra Medical Institute, Faculty of Medicine Ramathibodi Hospital, Mahidol University
111 Moo 14, Bang Pla, Bang Phli, Samutprakarn Thailand 10540

P/O : สัญญาเลขที่C017/2566(CNMI)

Project Name : โรงพยาบาลรามธิบดีจักรีนฤเบศร

Project Location :

Lot ID: 2433911

Date Received : Apr 04, 2024

Date Reported : Apr 22, 2024

Report Number : 2970112-1

Page 1 of 2

Sample Number	2433911-12
Sampled Date	Apr 04, 2024 10:19 AM
Sample Description	Consumption Water
Location	อาคารศูนย์การเรียนรู้ - น้ำที่ระบายออกจาก Cooling Tower
Date Analysis Commenced	Apr 05, 2024
Condition of Sample	Contained in six plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Metals Testing							
Iron	mg/L	0.003	0.005	0.97	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 3125 B, 3030 F	Bangkok
Microbiological Testing							
<i>Legionella spp.</i> *	CFU/L	-	-	Not Detected**	Not Detected	ISO 11731 (2017)	Bangkok
Standard Plate Count *	CFU/100mL	-	-	>200	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9215 D	Bangkok
Water Testing							
Ammonium *	mg/L	-	0.06	<0.06	No Standard	Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-NH3 F	Bangkok
Chloride as Cl	mg/L	0.06	0.2	471	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4110 B	Bangkok
Conductivity at 25 degree C *	micromhos/cm	-	0.5	2742	No Standard	Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2510 B	Bangkok
Methyl Orange Alkalinity as CaCO3 *	mg/L	-	1	410	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2320 B	Bangkok
pH at 25 degree C		-	-	9.0	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Bangkok
Silica as SiO2 *	mg/L	0.02	0.05	43.3	No Standard	Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-SiO2 (D)	Bangkok

Approved by

Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. No part of this report may be reproduced in any form without written consent from the laboratory. ALS Laboratory Group (Thailand) strongly recommends that this report is not reproduced except in full.

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111 Moo 14, Bang Pla, Bang Phli, Samutprakarn Thailand 10540

P/O : สัญญาเลขที่C017/2566(CNMI)

Project Name : โรงพยาบาลรามธิบดีจักรีนฤเบศร

Project Location :

Lot ID: 2433911

Date Received : Apr 04, 2024

Date Reported : Apr 22, 2024

Report Number : 2970112-1

Page 2 of 2

Sample Number	2433911-12
Sampled Date	Apr 04, 2024 10:19 AM
Sample Description	Consumption Water
Location	อาคารศูนย์การเรียนรู้ - น้ำที่ระบายออกจาก Cooling Tower
Date Analysis Commenced	Apr 05, 2024
Condition of Sample	Contained in six plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
Sulfate	mg/L	0.15	0.5	288	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4110 B	Bangkok
Sulfide as H ₂ S *	mg/L	-	0.01	<0.01	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-S ₂ (D)	Bangkok
Total Hardness as CaCO ₃	mg/L	-	1	63	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2340 C	Bangkok

Guideline : Notification of Department of Health about Legionella Control in Cooling Tower B.E. 2544

Note : ** Not Detected mean Bacteria not found in agar plate.

Sampling By : Chulladet Warin

Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)
- Analyte(s) marked * is/are not included in scope of Accreditation ISO/IEC 17025.
- The laboratory has been accepted as an accredited laboratory complying with the ISO/IEC 17025.

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P/O : สัญญาเลขที่C017/2566(CNMI)

Project Name : โรงพยาบาลรามธิบดีจักรีนฤเบศร

Project Location :

Lot ID: 2433911

Date Received : Apr 04, 2024

Date Reported : Apr 22, 2024

Report Number : 2970113-1

Page 1 of 2

Sample Number	2433911-13
Sampled Date	Apr 04, 2024 10:37 AM
Sample Description	Consumption Water
Location	อาคารพรีคลินิกฯ - น้ำที่ระบายออกจาก Cooling Tower
Date Analysis Commenced	Apr 05, 2024
Condition of Sample	Contained in six plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Metals Testing							
Iron	mg/L	0.003	0.005	0.05	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 3125 B, 3030 F	Bangkok
Microbiological Testing							
<i>Legionella spp.</i> *	CFU/L	-	-	Not Detected**	Not Detected	ISO 11731 (2017)	Bangkok
Standard Plate Count *	CFU/100mL	-	-	>200	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9215 D	Bangkok
Water Testing							
Ammonium *	mg/L	-	0.06	<0.06	No Standard	Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-NH3 F	Bangkok
Chloride as Cl	mg/L	0.06	0.2	205	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4110 B	Bangkok
Conductivity at 25 degree C *	micromhos/cm	-	0.5	1372	No Standard	Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2510 B	Bangkok
Methyl Orange Alkalinity as CaCO3 *	mg/L	-	1	207	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2320 B	Bangkok
pH at 25 degree C		-	-	8.7	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Bangkok
Silica as SiO2 *	mg/L	0.02	0.05	30.4	No Standard	Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-SiO2 (D)	Bangkok

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Accreditation No. 1031/47

Analysis / Test Report

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111 Moo 14, Bang Pla, Bang Phli, Samutprakarn Thailand 10540

P/O : สัญญาเลขที่C017/2566(CNMI)

Project Name : โรงพยาบาลรามารักษ์ตึกจักษุณดินทร์

Project Location :

Lot ID: 2433911

Date Received : Apr 04, 2024

Date Reported : Apr 22, 2024

Report Number : 2970113-1

Page 2 of 2

Sample Number	2433911-13
Sampled Date	Apr 04, 2024 10:37 AM
Sample Description	Consumption Water
Location	อาคารพรีคลินิกฯ - น้ำที่ระบายออกจาก Cooling Tower
Date Analysis Commenced	Apr 05, 2024
Condition of Sample	Contained in six plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
Sulfate	mg/L	0.15	0.5	201	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4110 B	Bangkok
Sulfide as H ₂ S *	mg/L	-	0.01	<0.01	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-S ₂ (D)	Bangkok
Total Hardness as CaCO ₃	mg/L	-	1	317	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2340 C	Bangkok

Guideline : Notification of Department of Health about Legionella Control in Cooling Tower B.E. 2544

Note : ** Not Detected mean Bacteria not found in agar plate.

Sampling By : Chulladet Warin

Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)
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