



ภาคผนวก ง
ใบรายงานผลการติดตามตรวจสอบผลกระทบสิ่งแวดล้อม
ระยะเจาะหลุมผลิต





ภาคผนวก ง-1
ใบรายงานผลการวิเคราะห์คุณภาพน้ำผิวดิน
ในระยะเจาะหลุมผลิต



ANALYSIS REPORT

PROJECT NAME : EIA COMPLIANCE AUDIT AND MONITORING OF SPH DEVELOPMENT DRILLING CAMPAIGN 2023 (WELLPAD C)
CUSTOMER NAME : PTTEP SP LIMITED
ADDRESS : 323 MOO 1 KUT NAM SAI NAM PHONG KHON KAEN 40310
CONTACT INFORMATION : TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com
SAMPLING SOURCE : -
SAMPLE TYPE : SURFACE WATER
SAMPLING DATE : JULY 4, 2023
SAMPLING TIME : 12:00 HOUR
SAMPLING METHOD : GRAB
SAMPLING BY : MR ACHITA SAENGJAN
ANALYZED BY : MISS NAPAPORN KHUNNOKKHUM

RECEIVED DATE : JULY 5, 2023
ANALYTICAL DATE : JULY 5-20, 2023
REPORT NO. : 2023-U062284
WORK NO. : 2023-002592
ANALYSIS NO. : T23AM739-0001

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			สารารใกล้กับพื้นที่ฐาน ผลิตซี (SW1) T23AM739-0001	
pH ^c	-	ELECTROMETRIC METHOD AT SITE (SM: PART 4500-H ⁺ B)	5.1 (24°C)	-
SALINITY ^c	ppt	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2520 B)	ND	0.1
TEMPERATURE ^c	°C	THERMOMETER AT SITE (SM: PART 2550 B)	24	-
ELECTRICAL CONDUCTIVITY ^c	µmhos/cm	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2510 B)	78.7 (24°C)	0.1
DEPTH ^c	m	DEPTH GAUGE	0.1	-
DISSOLVED OXYGEN ^c	mg/L	AZIDE MODIFICATION METHOD AT SITE (SM: PART 4500-O C)	4.2	0.5
FLOW RATE ^c	m³/s	CURRENT METER AND CALCULATION	0	-
BIOCHEMICAL OXYGEN DEMAND ^c	mg/L	AZIDE MODIFICATION METHOD (SM: PART 5210 B AND PART 4500-O C)	ND	1.0
TOTAL SUSPENDED SOLIDS ^a	mg/L	TOTAL SUSPENDED SOLIDS DRIED AT 103-105 °C (SM: PART 2540 D)	22.2	5.0
TOTAL DISSOLVED SOLIDS ^b	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	64	25
TOTAL PETROLEUM HYDROCARBONS ^c	mg/L	SOXHLET EXTRACTION METHOD (SM: PART 5520 D AND PART 5520 F)	ND	3
METALS				
ARSENIC ^c	mg/L As	HYDRIDE GENERATION AAS METHOD (SM: PART 3114 C)	0.0006	0.0003
BARIUM ^c	mg/L Ba	NITRIC ACID-HYDROCHLORIC ACID DIGESTION AND INDUCTIVELY COUPLED PLASMA (ICP) METHOD (SM: PART 3030 F AND PART 3120 B)	0.234	0.003
CADMIUM ^c	mg/L Cd	IN-HOUSE METHOD: UAE.TP.SW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.002
COPPER ^c	mg/L Cu	IN-HOUSE METHOD: UAE.TP.SW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.002
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	2.40	0.005



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			ค่าสารใกล้เคียงกับพื้นที่ฐาน ผลิต (SW1) T23AM739-0001	
LEAD ^c	mg/L Pb	IN-HOUSE METHOD: UAE.TP.SW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.003
MANGANESE ^c	mg/L Mn	IN-HOUSE METHOD: UAE.TP.SW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	0.035	0.002
NICKEL ^c	mg/L Ni	IN-HOUSE METHOD: UAE.TP.SW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005
SELENIUM ^c	mg/L Se	HYDRIDE GENERATION AAS METHOD (SM: PART 3114 C)	ND	0.0005
TOTAL CHROMIUM ^c	mg/L Cr	IN-HOUSE METHOD: UAE.TP.SW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005
TOTAL MERCURY ^c	mg/L Hg	IN-HOUSE METHOD: UAE.TP.HEM.002 (COLD VAPOUR ATOMIC ABSORPTION SPECTROMETRIC METHOD); SM: PART 3112 B	ND	0.0001
ZINC ^c	mg/L Zn	IN-HOUSE METHOD: UAE.TP.SW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	< LOQ	0.003
RADIOACTIVE (SC)				
GROSS ALPHA ^c	Bq/L	METHOD/REFERENCE	0.189±0.026	0.018
GROSS BETA ^c	Bq/L	METHOD/REFERENCE	0.318±0.027	0.012
SAMPLE CONDITION				
WATER'S COLOUR/TURBID SEDIMENT			YELLOW/CLEAR BROWN	

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

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

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

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

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

METHOD/REFERENCE : IN HOUSE METHOD BASED ON EPA METHOD 900.0, SECTION 1 GROSS ALPHA AND GROSS BETA RADIOACTIVITY IN DRINKING WATER METHOD 900.0. IN "PRESCRIBED PROCEDURES FOR MEASUREMENT OF RADIOACTIVITY IN DRINKING WATER" EPA-600/4/80-032 (1980).

ND : NON-DETECTABLE.

< LOQ : < LIMIT OF QUANTITATION (ZINC ≥ 0.003 AND < 0.025 mg/L).

SC : THE TEST WAS SUBCONTRACTED TO THE ANOTHER LABORATORY.

(MRS PIYAPAT SUTTAMANUTWONG)
LABORATORY SUPERVISOR

AUGUST 8, 2023



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			ห้วยกองสี ใกล้เคียงอ่างเก็บน้ำ คำลั่นคววม (SW4) T23AM739-0002	
LEAD ^c	mg/L Pb	IN-HOUSE METHOD: UAE.TP.SW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.003
MANGANESE ^c	mg/L Mn	IN-HOUSE METHOD: UAE.TP.SW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	0.580	0.002
NICKEL ^c	mg/L Ni	IN-HOUSE METHOD: UAE.TP.SW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005
SELENIUM ^c	mg/L Se	HYDRIDE GENERATION AAS METHOD (SM: PART 3114 C)	ND	0.0005
TOTAL CHROMIUM ^c	mg/L Cr	IN-HOUSE METHOD: UAE.TP.SW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005
TOTAL MERCURY ^c	mg/L Hg	IN-HOUSE METHOD: UAE.TP.HEM.002 (COLD VAPOUR ATOMIC ABSORPTION SPECTROMETRIC METHOD); SM: PART 3112 B	ND	0.0001
ZINC ^c	mg/L Zn	IN-HOUSE METHOD: UAE.TP.SW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.003
RADIOACTIVE (SC)				
GROSS ALPHA ^c	Bq/L	METHOD/REFERENCE	NONE	0.018
GROSS BETA ^c	Bq/L	METHOD/REFERENCE	0.209±0.024	0.012
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, 23rd EDITION, 2017.

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

METHOD/REFERENCE : IN HOUSE METHOD BASED ON EPA METHOD 900.0, SECTION 1 GROSS ALPHA AND GROSS BETA RADIOACTIVITY IN DRINKING WATER METHOD 900.0. IN "PRESCRIBED PROCEDURES FOR MEASUREMENT OF RADIOACTIVITY IN DRINKING WATER" EPA-600/4/80-032 (1980).

ND : NON-DETECTABLE

SC : THE TEST WAS SUBCONTRACTED TO THE ANOTHER LABORATORY.

(MRS PIPAT SUTTHAMONGKOLWONG)
LABORATORY SUPERVISOR

AUGUST 8, 2023

ANALYSIS REPORT

PROJECT NAME : EIA COMPLIANCE AUDIT AND MONITORING OF SPH DEVELOPMENT DRILLING CAMPAIGN 2023 (WELLPAD C)
CUSTOMER NAME : PTTEP SP LIMITED
ADDRESS : 323 MOO 1 KUT NAM SAI NAM PHONG KHON KAEN 40310
CONTACT INFORMATION : TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com
SAMPLING SOURCE : -
SAMPLE TYPE : SURFACE WATER
SAMPLING DATE : JULY 4, 2023
SAMPLING TIME : 10:50 HOUR
SAMPLING METHOD ° : GRAB
SAMPLING BY ° : MR ACHITA SAENGJAN
ANALYZED BY : MISS NAPAPORN KHUNNOKKHUM

RECEIVED DATE : JULY 5, 2023
ANALYTICAL DATE : JULY 5-20, 2023
REPORT NO. : 2023-U062288
WORK NO. : 2023-002592
ANALYSIS NO. : T23AM739-0003

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			หน่วยนำส่ง T23AM739-0003	
pH °	-	ELECTROMETRIC METHOD AT SITE (SM: PART 4500-H ⁺ B)	6.8 (27°C)	-
SALINITY °	ppt	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2520 B)	ND	0.1
TEMPERATURE °	°C	THERMOMETER AT SITE (SM: PART 2550 B)	27	-
ELECTRICAL CONDUCTIVITY °	µmhos/cm	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2510 B)	76.0 (27°C)	0.1
DEPTH °	m	DEPTH GAUGE	1.8	-
DISSOLVED OXYGEN °	mg/L	AZIDE MODIFICATION METHOD AT SITE (SM: PART 4500-O C)	4.8	0.5
FLOW RATE °	m³/s	CURRENT METER AND CALCULATION	0.2489	-
BIOCHEMICAL OXYGEN DEMAND °	mg/L	AZIDE MODIFICATION METHOD (SM: PART 5210 B AND PART 4500-O C)	2.6	1.0
TOTAL SUSPENDED SOLIDS °	mg/L	TOTAL SUSPENDED SOLIDS DRIED AT 103-105 °C (SM: PART 2540 D)	56.4	5.0
TOTAL DISSOLVED SOLIDS °	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	171	25
TOTAL PETROLEUM HYDROCARBONS °	mg/L	SOXHLET EXTRACTION METHOD (SM: PART 5520 D AND PART 5520 F)	ND	3
METALS				
ARSENIC °	mg/L As	HYDRIDE GENERATION AAS METHOD (SM: PART 3114 C)	0.0009	0.0003
BARIUM °	mg/L Ba	NITRIC ACID-HYDROCHLORIC ACID DIGESTION AND INDUCTIVELY COUPLED PLASMA (ICP) METHOD (SM: PART 3030 F AND PART 3120 B)	0.101	0.003
CADMIUM °	mg/L Cd	IN-HOUSE METHOD: UAE.TP.SW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.002
COPPER °	mg/L Cu	IN-HOUSE METHOD: UAE.TP.SW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	< LOQ	0.002
IRON °	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	6.49	0.005
LEAD °	mg/L Pb	IN-HOUSE METHOD: UAE.TP.SW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.003



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			หน่วยน้ำหนัก T23AM739-0003	
MANGANESE ^c	mg/L Mn	IN-HOUSE METHOD: UAE.TP.SW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	0.871	0.002
NICKEL ^c	mg/L Ni	IN-HOUSE METHOD: UAE.TP.SW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005
SELENIUM ^c	mg/L Se	HYDRIDE GENERATION AAS METHOD (SM: PART 3114 C)	ND	0.0005
TOTAL CHROMIUM ^c	mg/L Cr	IN-HOUSE METHOD: UAE.TP.SW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005
TOTAL MERCURY ^c	mg/L Hg	IN-HOUSE METHOD: UAE.TP.HEM.002 (COLD VAPOUR ATOMIC ABSORPTION SPECTROMETRIC METHOD); SM: PART 3112 B	ND	0.0001
ZINC ^c	mg/L Zn	IN-HOUSE METHOD: UAE.TP.SW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	< LOQ	0.003
RADIOACTIVE (SC)				
GROSS ALPHA ^c	Bq/L	METHOD/REFERENCE	NONE	0.018
GROSS BETA ^c	Bq/L	METHOD/REFERENCE	0.220±0.024	0.012
SAMPLE CONDITION				
WATER'S COLOUR/TURBID SEDIMENT			YELLOW/TURBID BROWN	

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

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

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

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

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

METHOD/REFERENCE : IN HOUSE METHOD BASED ON EPA METHOD 900.0, SECTION 1 GROSS ALPHA AND GROSS BETA RADIOACTIVITY IN DRINKING WATER METHOD 900.0. IN "PRESCRIBED PROCEDURES FOR MEASUREMENT OF RADIOACTIVITY IN DRINKING WATER" EPA-600/4/80-032 (1980).

ND : NON-DETECTABLE.

< LOQ : < LIMIT OF QUANTITATION (COPPER ≥ 0.002 AND < 0.025 mg/L, ZINC ≥ 0.003 AND < 0.025 mg/L).

SC : THE TEST WAS SUBCONTRACTED TO THE ANOTHER LABORATORY.

(MRS PIYAPAT SUTTAMANUTWONG)
LABORATORY SUPERVISOR

AUGUST 8, 2023

ANALYSIS REPORT

PROJECT NAME : EIA COMPLIANCE AUDIT AND MONITORING OF SPH DEVELOPMENT DRILLING CAMPAIGN 2023 (WELLPAD C)
CUSTOMER NAME : PTTEP SP LIMITED
ADDRESS : 323 MOO 1 KUT NAM SAI NAM PHONG KHON KAEN 40310
CONTACT INFORMATION : TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com
SAMPLING SOURCE : -
SAMPLE TYPE : BLANK (SURFACE WATER)
SAMPLING DATE : -
SAMPLING TIME : -
SAMPLING METHOD : -
SAMPLING BY : -
ANALYZED BY : MISS NAPAPORN KHUNNOKKHUM

RECEIVED DATE : JULY 5, 2023
ANALYTICAL DATE : JULY 5-20, 2023
REPORT NO. : 2023-U062283
WORK NO. : 2023-002592
ANALYSIS NO. : 2023-FB0644, 2023-TB0623

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT		DETECTION LIMIT
			1 2023-FB0644	2 2023-TB0623	
BIOCHEMICAL OXYGEN DEMAND	mg/L	AZIDE MODIFICATION METHOD (SM: PART 5210 B AND PART 4500-O C)	ND	ND	1.0
TOTAL SUSPENDED SOLIDS	mg/L	TOTAL SUSPENDED SOLIDS DRIED AT 103-105 °C (SM: PART 2540 D)	ND	ND	5.0
TOTAL DISSOLVED SOLIDS	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	ND	ND	25
TOTAL PETROLEUM HYDROCARBONS	mg/L	SOXHLET EXTRACTION METHOD (SM: PART 5520 D AND PART 5520 F)	ND	ND	3
METALS					
ARSENIC	mg/L As	HYDRIDE GENERATION AAS METHOD (SM: PART 3114 C)	ND	ND	0.0003
BARIUM	mg/L Ba	NITRIC ACID-HYDROCHLORIC ACID DIGESTION AND INDUCTIVELY COUPLED PLASMA (ICP) METHOD (SM: PART 3030 F AND PART 3120 B)	ND	ND	0.003
CADMIUM	mg/L Cd	IN-HOUSE METHOD: UAE.TP.SW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	ND	0.002
COPPER	mg/L Cu	IN-HOUSE METHOD: UAE.TP.SW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	ND	0.002
IRON	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	ND	ND	0.005
LEAD	mg/L Pb	IN-HOUSE METHOD: UAE.TP.SW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	ND	0.003
MANGANESE	mg/L Mn	IN-HOUSE METHOD: UAE.TP.SW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	ND	0.002
NICKEL	mg/L Ni	IN-HOUSE METHOD: UAE.TP.SW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	ND	0.005
SELENIUM	mg/L Se	HYDRIDE GENERATION AAS METHOD (SM: PART 3114 C)	ND	ND	0.0005
TOTAL CHROMIUM	mg/L Cr	IN-HOUSE METHOD: UAE.TP.SW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	ND	0.005



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT		DETECTION LIMIT
			1 2023-FB0644	2 2023-TB0623	
TOTAL MERCURY	mg/L Hg	IN-HOUSE METHOD: UAE.TP.HEM.002 (COLD VAPOUR ATOMIC ABSORPTION SPECTROMETRIC METHOD); SM: PART 3112 B	ND	ND	0.0001
ZINC	mg/L Zn	IN-HOUSE METHOD: UAE.TP.SW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	ND	0.003
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			COLOURLESS/CLEAR	COLOURLESS/CLEAR	

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

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

RESULT 1 : FIELD BLANK

RESULT 2 : TRIP BLANK

ND : NON-DETECTABLE.

LABORATORY SUPERVISOR

AUGUST 8, 2023



ภาคผนวก ง-2
ใบรายงานผลการวิเคราะห์คุณภาพน้ำใต้ดิน
ในระยะเจาะหลุมผลิต



ANALYSIS REPORT

PROJECT NAME	: EIA COMPLIANCE AUDIT AND MONITORING OF SPH DEVELOPMENT DRILLING CAMPAIGN 2023 (WELLPAD C)
CUSTOMER NAME	: PTTEP SP LIMITED
ADDRESS	: 323 MOO 1 KUT NAM SAI NAM PHONG KHON KAEN 40310
CONTACT INFORMATION	: TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com
SAMPLING SOURCE	: พื้นที่ปล่อยสารรั่วซึมจากหลุมเจาะที่ดัดแปลงใช้สำหรับปฏิบัติงาน
SAMPLE TYPE	: GROUNDWATER
SAMPLING DATE	: JULY 4, 2023
SAMPLING TIME	: 11:20 HOUR
SAMPLING METHOD °	: BAILER
SAMPLING BY °	: MR ACHITA SAENGJAN
ANALYZED BY	: MISS NAPAPORN KHUNNOKKHUM
RECEIVED DATE	: JULY 5, 2023
ANALYTICAL DATE	: JULY 5-13, 2023
REPORT NO.	: 2023-U060580
WORK NO.	: 2023-002592
ANALYSIS NO.	: T23AM740-0001

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			GW1 T23AM740-0001	
pH °	-	ELECTROMETRIC METHOD AT SITE (SM: PART 4500-H ⁺ B)	6.6 (27°C)	-
ELECTRICAL CONDUCTIVITY °	µmhos/cm	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2510 B)	283 (27°C)	0.1
TEMPERATURE °	°C	THERMOMETER AT SITE (SM: PART 2550 B)	27	-
COLOUR °	Pt-Co	VISUAL COMPARISON METHOD (SM: PART 2120 B)	ND	5
SALINITY °	ppt	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2520 B)	0.1	0.1
TOTAL DISSOLVED SOLIDS °	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	178	25
TOTAL HARDNESS °	mg/L as CaCO ₃	EDTA TITRIMETRIC METHOD (SM: PART 2340 C)	147	4.0
CHLORIDE °	mg/L Cl ⁻	ARGENTOMETRIC METHOD (SM: PART 4500-Cl ⁻ B)	ND	2.0
TOTAL PETROLEUM HYDROCARBONS °	mg/L	SOXHLET EXTRACTION METHOD (SM: PART 5520 D AND PART 5520 F)	ND	3
NON-CARBONATE HARDNESS °	mg/L as CaCO ₃	TITRATION, EDTA TITRIMETRIC (SM: PART 2320 B AND PART 2340 C) AND CALCULATION METHOD	0	0
METALS				
ARSENIC °	mg/L As	HYDRIDE GENERATION AAS METHOD (SM: PART 3114 C)	0.0042	0.0003
BARIUM °	mg/L Ba	NITRIC ACID-HYDROCHLORIC ACID DIGESTION AND INDUCTIVELY COUPLED PLASMA (ICP) METHOD (SM: PART 3030 F AND PART 3120 B)	0.667	0.003
CADMIUM °	mg/L Cd	IN-HOUSE METHOD: UAE.TP.GW.01(NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.002
COPPER °	mg/L Cu	IN-HOUSE METHOD: UAE.TP.GW.01(NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.002
LEAD °	mg/L Pb	IN-HOUSE METHOD: UAE.TP.GW.01(NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	< LOQ	0.003
MANGANESE °	mg/L Mn	IN-HOUSE METHOD: UAE.TP.GW.01(NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	0.876	0.002
NICKEL °	mg/L Ni	IN-HOUSE METHOD: UAE.TP.GW.01(NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			GW1 T23AM740-0001	
SELENIUM ^c	mg/L Se	HYDRIDE GENERATION AAS METHOD (SM: PART 3114 C)	ND	0.0005
TOTAL CHROMIUM ^c	mg/L Cr	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005
TOTAL MERCURY ^c	mg/L Hg	IN-HOUSE METHOD: UAE.TP.HEM.002 (COLD VAPOUR ATOMIC ABSORPTION SPECTROMETRIC METHOD); SM: PART 3112 B	ND	0.0001
ZINC ^c	mg/L Zn	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.003
VOLATILE ORGANIC COMPOUNDS				
BENZENE ^c	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	0.0002
ETHYLBENZENE ^c	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	0.0002
TOLUENE ^c	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	0.0002
TOTAL XYLENES ^c	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0006	0.0006
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			YELLOW/TURBID BROWN	

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

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

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

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

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

ND : NON-DETECTABLE.

< LOQ : < LIMIT OF QUANTITATION (LEAD ≥ 0.003 AND < 0.100 mg/L).

LABORATORY SUPERVISOR

JULY 24, 2023

ANALYSIS REPORT

PROJECT NAME : EIA COMPLIANCE AUDIT AND MONITORING OF SPH DEVELOPMENT DRILLING CAMPAIGN 2023 (WELLPAD C)
CUSTOMER NAME : PTTEP SP LIMITED
ADDRESS : 323 MOO 1 KUT NAM SAI NAM PHONG KHON KAEN 40310
CONTACT INFORMATION : TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com
SAMPLING SOURCE : บ่อน้ำบาดาล
SAMPLE TYPE : GROUNDWATER
SAMPLING DATE : JULY 4, 2023
SAMPLING TIME : 10:05 HOUR
SAMPLING METHOD : BAILER
SAMPLING BY : MR ACHITA SAENGJAN
ANALYZED BY : MISS NAPAPORN KHUNNOKKHUM

RECEIVED DATE : JULY 5, 2023
ANALYTICAL DATE : JULY 5-13, 2023
REPORT NO. : 2023-U060608
WORK NO. : 2023-002592
ANALYSIS NO. : T23AM740-0002

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			GW2 T23AM740-0002	
pH ^c	-	ELECTROMETRIC METHOD AT SITE (SM: PART 4500-H ⁺ B)	5.8 (27°C)	-
ELECTRICAL CONDUCTIVITY ^c	µmhos/cm	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2510 B)	78.0 (27°C)	0.1
TEMPERATURE ^c	°C	THERMOMETER AT SITE (SM: PART 2550 B)	27	-
COLOUR ^c	Pt-Co	VISUAL COMPARISON METHOD (SM: PART 2120 B)	ND	5
SALINITY ^c	ppt	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2520 B)	< 0.1	0.1
TOTAL DISSOLVED SOLIDS ^b	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	47	25
TOTAL HARDNESS ^a	mg/L as CaCO ₃	EDTA TITRIMETRIC METHOD (SM: PART 2340 C)	29.5	4.0
CHLORIDE ^c	mg/L Cl ⁻	ARGENTOMETRIC METHOD (SM: PART 4500-Cl ⁻ B)	ND	2.0
TOTAL PETROLEUM HYDROCARBONS ^c	mg/L	SOXHLET EXTRACTION METHOD (SM: PART 5520 D AND PART 5520 F)	ND	3
NON-CARBONATE HARDNESS ^c	mg/L as CaCO ₃	TITRATION, EDTA TITRIMETRIC (SM: PART 2320 B AND PART 2340 C) AND CALCULATION METHOD	3.88	0
METALS				
ARSENIC ^c	mg/L As	HYDRIDE GENERATION AAS METHOD (SM: PART 3114 C)	0.0008	0.0003
BARIUM ^c	mg/L Ba	NITRIC ACID-HYDROCHLORIC ACID DIGESTION AND INDUCTIVELY COUPLED PLASMA (ICP) METHOD (SM: PART 3030 F AND PART 3120 B)	0.046	0.003
CADMIUM ^c	mg/L Cd	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.002
COPPER ^c	mg/L Cu	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.002
LEAD ^c	mg/L Pb	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.003
MANGANESE ^c	mg/L Mn	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	0.236	0.002
NICKEL ^c	mg/L Ni	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			GW2 T23AM740-0002	
SELENIUM ^c	mg/L Se	HYDRIDE GENERATION AAS METHOD (SM: PART 3114 C)	ND	0.0005
TOTAL CHROMIUM ^c	mg/L Cr	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005
TOTAL MERCURY ^c	mg/L Hg	IN-HOUSE METHOD: UAE.TP.HEM.002 (COLD VAPOUR ATOMIC ABSORPTION SPECTROMETRIC METHOD); SM: PART 3112 B	ND	0.0001
ZINC ^c	mg/L Zn	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	0.026	0.003
VOLATILE ORGANIC COMPOUNDS				
BENZENE ^c	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	0.0002
ETHYLBENZENE ^c	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	0.0002
TOLUENE ^c	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	0.0002
TOTAL XYLENES ^c	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0006	0.0006
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			BROWN/TURBID BROWN	

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

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

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

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

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

ND : NON-DETECTABLE.

[REDACTED]

LABORATORY SUPERVISOR

JULY 24, 2023

ANALYSIS REPORT

PROJECT NAME : EIA COMPLIANCE AUDIT AND MONITORING OF SPH DEVELOPMENT DRILLING CAMPAIGN 2023 (WELLPAD C)
CUSTOMER NAME : PTTEP SP LIMITED
ADDRESS : 323 MOO 1 KUT NAM SAI NAM PHONG KHON KAEN 40310
CONTACT INFORMATION : TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com
SAMPLING SOURCE : -
SAMPLE TYPE : BLANK (GROUNDWATER) **RECEIVED DATE** : JULY 5, 2023
SAMPLING DATE : - **ANALYTICAL DATE** : JULY 5-13, 2023
SAMPLING TIME : - **REPORT NO.** : 2023-U060572
SAMPLING METHOD : - **WORK NO.** : 2023-002592
SAMPLING BY : - **ANALYSIS NO.** : 2023-EB0127
ANALYZED BY : MISS NAPAPORN KHUNNOKKHUM

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			EQUIPMENT BLANK 2023-EB0127	
TOTAL DISSOLVED SOLIDS	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	ND	25
TOTAL HARDNESS	mg/L as CaCO ₃	EDTA TITRIMETRIC METHOD (SM: PART 2340 C)	ND	4.0
CHLORIDE	mg/L Cl ⁻	ARGENTOMETRIC METHOD (SM: PART 4500-Cl ⁻ B)	ND	2.0
TOTAL PETROLEUM HYDROCARBONS	mg/L	SOXHLET EXTRACTION METHOD (SM: PART 5520 D AND PART 5520 F)	ND	3
METALS				
ARSENIC	mg/L As	HYDRIDE GENERATION AAS METHOD (SM: PART 3114 C)	ND	0.0003
BARIUM	mg/L Ba	NITRIC ACID-HYDROCHLORIC ACID DIGESTION AND INDUCTIVELY COUPLED PLASMA (ICP) METHOD (SM: PART 3030 F AND PART 3120 B)	ND	0.003
CADMIUM	mg/L Cd	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.002
COPPER	mg/L Cu	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.002
LEAD	mg/L Pb	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.003
MANGANESE	mg/L Mn	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.002
NICKEL	mg/L Ni	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005
SELENIUM	mg/L Se	HYDRIDE GENERATION AAS METHOD (SM: PART 3114 C)	ND	0.0005
TOTAL CHROMIUM	mg/L Cr	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005
TOTAL MERCURY	mg/L Hg	IN-HOUSE METHOD: UAE.TP.HEM.002 (COLD VAPOUR ATOMIC ABSORPTION SPECTROMETRIC METHOD); SM: PART 3112 B	ND	0.0001
ZINC	mg/L Zn	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.003

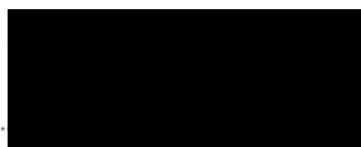


PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			EQUIPMENT BLANK 2023-EB0127	
VOLATILE ORGANIC COMPOUNDS				
BENZENE	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	0.0002
ETHYLBENZENE	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	0.0002
TOLUENE	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	0.0002
TOTAL XYLENES	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0006	0.0006
SAMPLE CONDITION				
WATER'S COLOUR/TURBID			COLOURLESS/CLEAR	
SEDIMENT			-	

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

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

ND : NON-DETECTABLE.



LABORATORY SUPERVISOR

JULY 24, 2023

ANALYSIS REPORT

PROJECT NAME : EIA COMPLIANCE AUDIT AND MONITORING OF SPH DEVELOPMENT DRILLING CAMPAIGN 2023 (WELLPAD C)
CUSTOMER NAME : PTTEP SP LIMITED
ADDRESS : 323 MOO 1 KUT NAM SAI NAM PHONG KHON KAEN 40310
CONTACT INFORMATION : TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com
SAMPLING SOURCE : -
SAMPLE TYPE : BLANK (GROUNDWATER)
SAMPLING DATE : -
SAMPLING TIME : -
SAMPLING METHOD : -
SAMPLING BY : -
ANALYZED BY : MISS NAPAPORN KHUNNOKKHUM

RECEIVED DATE : JULY 5, 2023
ANALYTICAL DATE : JULY 5-13, 2023
REPORT NO. : 2023-U060577
WORK NO. : 2023-002592
ANALYSIS NO. : 2023-FB0645, 2023-TB0624

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT		DETECTION LIMIT
			1 2023-FB0645	2 2023-TB0624	
TOTAL DISSOLVED SOLIDS	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	ND	ND	25
TOTAL HARDNESS	mg/L as CaCO ₃	EDTA TITRIMETRIC METHOD (SM: PART 2340 C)	ND	ND	4.0
CHLORIDE	mg/L Cl ⁻	ARGENTOMETRIC METHOD (SM: PART 4500-Cl ⁻ B)	ND	ND	2.0
TOTAL PETROLEUM HYDROCARBONS	mg/L	SOXHLET EXTRACTION METHOD (SM: PART 5520 D AND PART 5520 F)	ND	ND	3
METALS					
ARSENIC	mg/L As	HYDRIDE GENERATION AAS METHOD (SM: PART 3114 C)	ND	ND	0.0003
BARIUM	mg/L Ba	NITRIC ACID-HYDROCHLORIC ACID DIGESTION AND INDUCTIVELY COUPLED PLASMA (ICP) METHOD (SM: PART 3030 F AND PART 3120 B)	ND	ND	0.003
CADMIUM	mg/L Cd	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	ND	0.002
COPPER	mg/L Cu	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	ND	0.002
LEAD	mg/L Pb	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	ND	0.003
MANGANESE	mg/L Mn	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	ND	0.002
NICKEL	mg/L Ni	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	ND	0.005
SELENIUM	mg/L Se	HYDRIDE GENERATION AAS METHOD (SM: PART 3114 C)	ND	ND	0.0005
TOTAL CHROMIUM	mg/L Cr	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	ND	0.005
TOTAL MERCURY	mg/L Hg	IN-HOUSE METHOD: UAE.TP.HEM.002 (COLD VAPOUR ATOMIC ABSORPTION SPECTROMETRIC METHOD); SM: PART 3112 B	ND	ND	0.0001
ZINC	mg/L Zn	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	ND	0.003



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT		DETECTION LIMIT
			1 2023-FB0645	2 2023-TB0624	
VOLATILE ORGANIC COMPOUNDS					
BENZENE	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	< 0.0002	0.0002
ETHYLBENZENE	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	< 0.0002	0.0002
TOLUENE	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	< 0.0002	0.0002
TOTAL XYLENES	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0006	< 0.0006	0.0006
SAMPLE CONDITION					
WATER'S COLOUR/TURBID SEDIMENT			COLOURLESS/CLEAR	COLOURLESS/CLEAR	

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

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

RESULT 1 : FIELD BLANK

RESULT 2 : TRIP BLANK

ND : NON-DETECTABLE.

LABORATORY SUPERVISOR

JULY 24, 2023



ภาคผนวก จ

ใบรายงานผลการติดตามตรวจสอบผลกระทบสิ่งแวดล้อม

ระยะดำเนินการ





ภาคผนวก จ-1
ใบรายงานผลการวิเคราะห์คุณภาพอากาศในบรรยากาศโดยทั่วไป
ในระยะดำเนินการ



ANALYSIS REPORT

PROJECT NAME : EIA COMPLIANCE AUDIT AND MONITORING OF SPH DEVELOPMENT DRILLING CAMPAIGN 2023
(WELLPAD C)

CUSTOMER NAME : PTTEP SP LIMITED

ADDRESS : 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD
CHATUCHAK CHATUCHAK BANGKOK 10900

CONTACT INFORMATION : TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com

MEASURING PLACE : BAN KUT NAM SAI (A11)

MEASURING TYPE : AMBIENT (AIR)

MEASURING DATE : OCTOBER 25-30, 2023

MEASURING TIME : *

MEASURING METHOD : NON-DISPERSIVE INFRARED DETECTION

MEASURED BY : MR SURIYAN NITHICHERDCHOOWONG

RECEIVED DATE : OCTOBER 25-30, 2023

ANALYTICAL DATE : OCTOBER 25-30, 2023

REPORT NO. : 2023-U095338

WORK NO. : 2023-002592

ANALYSIS NO. : T23AV635-0006 - T23AV635-0010

TIME*	RESULT									
	CARBON MONOXIDE									
	BAN KUT NAM SAI (A11)									
	OCTOBER 25-26, 2023		OCTOBER 26-27, 2023		OCTOBER 27-28, 2023		OCTOBER 28-29, 2023		OCTOBER 29-30, 2023	
	T23AV635-0006		T23AV635-0007		T23AV635-0008		T23AV635-0009		T23AV635-0010	
	CO 1 hour	CO 8 hours	CO 1 hour	CO 8 hours	CO 1 hour	CO 8 hours	CO 1 hour	CO 8 hours	CO 1 hour	CO 8 hours
08:00-09:00 HOUR	0.93	-	0.70	-	0.76	-	0.81	-	0.89	-
09:00-10:00 HOUR	0.80	-	0.56	-	0.63	-	0.74	-	0.74	-
10:00-11:00 HOUR	0.69	-	0.47	-	0.55	-	0.68	-	0.62	-
11:00-12:00 HOUR	0.69	-	0.46	-	0.55	-	0.66	-	0.54	-
12:00-13:00 HOUR	0.75	-	0.48	-	0.59	-	0.67	-	0.54	-
13:00-14:00 HOUR	0.84	-	0.53	-	0.67	-	0.73	-	0.60	-
14:00-15:00 HOUR	0.93	-	0.62	-	0.75	-	0.81	-	0.68	-
15:00-16:00 HOUR	0.97	0.82	0.70	0.56	0.82	0.66	0.88	0.75	0.78	0.68
16:00-17:00 HOUR	0.96	-	0.79	-	0.87	-	0.93	-	0.90	-
17:00-18:00 HOUR	0.97	-	0.87	-	0.90	-	0.96	-	1.00	-
18:00-19:00 HOUR	0.97	-	0.88	-	0.93	-	0.96	-	1.05	-
19:00-20:00 HOUR	0.94	-	0.87	-	0.92	-	0.90	-	1.03	-
20:00-21:00 HOUR	0.87	-	0.81	-	0.90	-	0.86	-	0.98	-
21:00-22:00 HOUR	0.77	-	0.77	-	0.86	-	0.80	-	0.91	-
22:00-23:00 HOUR	0.69	-	0.71	-	0.82	-	0.77	-	0.85	-
23:00-00:00 HOUR	0.63	0.85	0.67	0.80	0.76	0.87	0.75	0.87	0.80	0.94
00:00-01:00 HOUR	0.62	-	0.66	-	0.73	-	0.77	-	0.77	-
01:00-02:00 HOUR	0.61	-	0.66	-	0.71	-	0.83	-	0.77	-
02:00-03:00 HOUR	0.64	-	0.69	-	0.74	-	0.89	-	0.79	-
03:00-04:00 HOUR	0.70	-	0.79	-	0.82	-	0.99	-	0.86	-
04:00-05:00 HOUR	0.83	-	0.90	-	0.90	-	1.07	-	0.93	-
05:00-06:00 HOUR	0.92	-	0.98	-	0.97	-	1.12	-	0.99	-
06:00-07:00 HOUR	0.95	-	0.97	-	0.96	-	1.11	-	0.97	-
07:00-08:00 HOUR	0.86	0.77	0.89	0.82	0.92	0.84	1.02	0.97	0.93	0.88
UNIT	ppm									

(MR. [REDACTED] JK)

LABORATORY SUPERVISOR

NOVEMBER 7, 2023



ANALYSIS REPORT

PROJECT NAME : EIA COMPLIANCE AUDIT AND MONITORING OF SPH DEVELOPMENT DRILLING CAMPAIGN 2023
(WELLPAD C)

CUSTOMER NAME : PTTEP SP LIMITED

ADDRESS : 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD
CHATUCHAK CHATUCHAK BANGKOK 10900

CONTACT INFORMATION : TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com

MEASURING PLACE : BAN KHAM YAI SCHOOL (A12)

MEASURING TYPE : AMBIENT (AIR)

MEASURING DATE : OCTOBER 25-30, 2023

MEASURING TIME : *

MEASURING METHOD : NON-DISPERSIVE INFRARED DETECTION

MEASURED BY : MR SURIYAN NITHICHERDCHOOWONG

RECEIVED DATE : OCTOBER 25-30, 2023

ANALYTICAL DATE : OCTOBER 25-30, 2023

REPORT NO. : 2023-U095339

WORK NO. : 2023-002592

ANALYSIS NO. : T23AV635-0011 - T23AV635-0015

TIME*	RESULT									
	CARBON MONOXIDE									
	BAN KHAM YAI SCHOOL (A12)									
	OCTOBER 25-26, 2023		OCTOBER 26-27, 2023		OCTOBER 27-28, 2023		OCTOBER 28-29, 2023		OCTOBER 29-30, 2023	
	T23AV635-0011		T23AV635-0012		T23AV635-0013		T23AV635-0014		T23AV635-0015	
	CO 1 hour	CO 8 hours	CO 1 hour	CO 8 hours	CO 1 hour	CO 8 hours	CO 1 hour	CO 8 hours	CO 1 hour	CO 8 hours
08:00-09:00 HOUR	0.94	-	0.91	-	0.73	-	0.93	-	0.76	-
09:00-10:00 HOUR	0.83	-	0.77	-	0.68	-	0.81	-	0.66	-
10:00-11:00 HOUR	0.75	-	0.69	-	0.63	-	0.73	-	0.62	-
11:00-12:00 HOUR	0.75	-	0.67	-	0.65	-	0.71	-	0.61	-
12:00-13:00 HOUR	0.75	-	0.69	-	0.67	-	0.69	-	0.66	-
13:00-14:00 HOUR	0.83	-	0.77	-	0.72	-	0.70	-	0.73	-
14:00-15:00 HOUR	0.89	-	0.86	-	0.77	-	0.71	-	0.81	-
15:00-16:00 HOUR	0.96	0.84	0.94	0.79	0.86	0.71	0.75	0.75	0.84	0.71
16:00-17:00 HOUR	1.01	-	1.02	-	0.94	-	0.82	-	0.88	-
17:00-18:00 HOUR	1.03	-	1.06	-	1.00	-	0.87	-	0.87	-
18:00-19:00 HOUR	1.05	-	1.07	-	1.01	-	0.91	-	0.87	-
19:00-20:00 HOUR	1.08	-	1.06	-	1.02	-	0.92	-	0.83	-
20:00-21:00 HOUR	1.12	-	0.99	-	1.00	-	0.97	-	0.79	-
21:00-22:00 HOUR	1.17	-	0.93	-	0.94	-	1.00	-	0.73	-
22:00-23:00 HOUR	1.19	-	0.81	-	0.87	-	1.03	-	0.66	-
23:00-00:00 HOUR	1.20	1.11	0.74	0.96	0.84	0.95	1.01	0.94	0.62	0.78
00:00-01:00 HOUR	1.16	-	0.68	-	0.83	-	0.96	-	0.60	-
01:00-02:00 HOUR	1.15	-	0.65	-	0.83	-	0.90	-	0.58	-
02:00-03:00 HOUR	1.10	-	0.66	-	0.84	-	0.84	-	0.62	-
03:00-04:00 HOUR	1.10	-	0.70	-	0.93	-	0.88	-	0.70	-
04:00-05:00 HOUR	1.10	-	0.79	-	1.00	-	0.94	-	0.81	-
05:00-06:00 HOUR	1.10	-	0.87	-	1.05	-	0.98	-	0.89	-
06:00-07:00 HOUR	1.11	-	0.88	-	1.08	-	0.95	-	0.88	-
07:00-08:00 HOUR	1.02	1.10	0.84	0.76	1.03	0.95	0.86	0.91	0.80	0.74
UNIT	ppm									

(MR. [REDACTED])
LABORATORY SUPERVISOR
NOVEMBER 7, 2023



ANALYSIS REPORT

PROJECT NAME : EIA COMPLIANCE AUDIT AND MONITORING OF SPH DEVELOPMENT DRILLING CAMPAIGN 2023
(WELLPAD C)

CUSTOMER NAME : PTTEP SP LIMITED

ADDRESS : 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD
CHATUCHAK CHATUCHAK BANGKOK 10900

CONTACT INFORMATION : TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com

MEASURING PLACE : PARKING LOT AT SOUTH WEST OF GPP NEAR PTT REGIONAL 4 (A15)

MEASURING TYPE : AMBIENT (AIR) **RECEIVED DATE** : OCTOBER 25-30, 2023

MEASURING DATE : OCTOBER 25-30, 2023 **ANALYTICAL DATE** : OCTOBER 25-30, 2023

MEASURING TIME : * **REPORT NO.** : 2023-U095337

MEASURING METHOD : NON-DISPERSIVE INFRARED DETECTION **WORK NO.** : 2023-002592

MEASURED BY : MR SURIYAN NITHICHERDCHOOWONG **ANALYSIS NO.** : T23AV635-0001 - T23AV635-0005

TIME*	RESULT									
	CARBON MONOXIDE									
	PARKING LOT AT SOUTH WEST OF GPP NEAR PTT REGIONAL 4 (A15)									
	OCTOBER 25-26, 2023		OCTOBER 26-27, 2023		OCTOBER 27-28, 2023		OCTOBER 28-29, 2023		OCTOBER 29-30, 2023	
	T23AV635-0001		T23AV635-0002		T23AV635-0003		T23AV635-0004		T23AV635-0005	
	CO 1 hour	CO 8 hours	CO 1 hour	CO 8 hours	CO 1 hour	CO 8 hours	CO 1 hour	CO 8 hours	CO 1 hour	CO 8 hours
08:00-09:00 HOUR	1.00	-	0.91	-	0.93	-	0.96	-	1.03	-
09:00-10:00 HOUR	0.87	-	0.84	-	0.76	-	0.79	-	0.84	-
10:00-11:00 HOUR	0.81	-	0.85	-	0.66	-	0.70	-	0.72	-
11:00-12:00 HOUR	0.81	-	0.89	-	0.64	-	0.67	-	0.65	-
12:00-13:00 HOUR	0.81	-	0.99	-	0.67	-	0.70	-	0.63	-
13:00-14:00 HOUR	0.86	-	1.15	-	0.77	-	0.84	-	0.67	-
14:00-15:00 HOUR	0.92	-	1.32	-	0.89	-	1.02	-	0.79	-
15:00-16:00 HOUR	1.00	0.86	1.43	1.05	1.03	0.79	1.22	0.86	0.94	0.78
16:00-17:00 HOUR	1.07	-	1.53	-	1.18	-	1.34	-	1.09	-
17:00-18:00 HOUR	1.07	-	1.59	-	1.26	-	1.41	-	1.19	-
18:00-19:00 HOUR	1.06	-	1.63	-	1.31	-	1.47	-	1.25	-
19:00-20:00 HOUR	1.02	-	1.62	-	1.34	-	1.48	-	1.23	-
20:00-21:00 HOUR	1.00	-	1.54	-	1.32	-	1.46	-	1.18	-
21:00-22:00 HOUR	0.94	-	1.49	-	1.33	-	1.36	-	1.09	-
22:00-23:00 HOUR	0.87	-	1.41	-	1.26	-	1.24	-	0.99	-
23:00-00:00 HOUR	0.82	0.98	1.38	1.52	1.24	1.28	1.13	1.36	0.93	1.12
00:00-01:00 HOUR	0.80	-	1.30	-	1.19	-	1.05	-	0.86	-
01:00-02:00 HOUR	0.78	-	1.24	-	1.18	-	1.02	-	0.90	-
02:00-03:00 HOUR	0.83	-	1.17	-	1.18	-	1.05	-	0.99	-
03:00-04:00 HOUR	0.92	-	1.17	-	1.22	-	1.11	-	1.16	-
04:00-05:00 HOUR	1.09	-	1.18	-	1.25	-	1.19	-	1.35	-
05:00-06:00 HOUR	1.18	-	1.22	-	1.31	-	1.26	-	1.45	-
06:00-07:00 HOUR	1.17	-	1.19	-	1.29	-	1.29	-	1.46	-
07:00-08:00 HOUR	1.04	0.98	1.08	1.19	1.16	1.22	1.20	1.15	1.32	1.19
UNIT	ppm									

(MR SILA BANJONGJAIKUK)
LABORATORY SUPERVISOR
NOVEMBER 7, 2023



ANALYSIS REPORT

PROJECT NAME : EIA COMPLIANCE AUDIT AND MONITORING OF SPH DEVELOPMENT DRILLING CAMPAIGN 2023 (WELLPAD C)
CUSTOMER NAME : PTTEP SP LIMITED
ADDRESS : 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD
CHATUCHAK CHATUCHAK BANGKOK 10900
CONTACT INFORMATION : TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com
MEASURING PLACE : BAN KUT NAM SAI (A11)
MEASURING TYPE : AMBIENT (AIR) **RECEIVED DATE** : OCTOBER 25-30, 2023
MEASURING DATE : OCTOBER 25-30, 2023 **ANALYTICAL DATE** : OCTOBER 25-30, 2023
MEASURING TIME : * **REPORT NO.** : 2023-U095335
MEASURING METHOD : CHEMILUMINESCENCE **WORK NO.** : 2019-001655
MEASURED BY : MR SURIYAN NITHICHERDCHOOWONG **ANALYSIS NO.** : T23AV635-0006 - T23AV635-0010

TIME *	RESULT (ppm)				
	NITROGEN DIOXIDE				
	BAN KUT NAM SAI (A11)				
	OCTOBER 25 - 26, 2023 T23AV635-0006	OCTOBER 26 - 27, 2023 T23AV635-0007	OCTOBER 27 - 28, 2023 T23AV635-0008	OCTOBER 28 - 29, 2023 T23AV635-0009	OCTOBER 29 - 30, 2023 T23AV635-0010
08:00-09:00 HOUR	0.0069	0.0071	0.0074	0.0069	0.0070
09:00-10:00 HOUR	0.0060	0.0063	0.0062	0.0059	0.0065
10:00-11:00 HOUR	0.0055	0.0057	0.0055	0.0053	0.0062
11:00-12:00 HOUR	0.0053	0.0057	0.0055	0.0053	0.0063
12:00-13:00 HOUR	0.0057	0.0060	0.0059	0.0058	0.0066
13:00-14:00 HOUR	0.0060	0.0064	0.0062	0.0065	0.0068
14:00-15:00 HOUR	0.0067	0.0071	0.0066	0.0073	0.0072
15:00-16:00 HOUR	0.0072	0.0077	0.0070	0.0080	0.0074
16:00-17:00 HOUR	0.0078	0.0082	0.0076	0.0087	0.0077
17:00-18:00 HOUR	0.0082	0.0084	0.0080	0.0090	0.0078
18:00-19:00 HOUR	0.0087	0.0083	0.0082	0.0090	0.0079
19:00-20:00 HOUR	0.0091	0.0079	0.0085	0.0087	0.0077
20:00-21:00 HOUR	0.0095	0.0073	0.0087	0.0086	0.0074
21:00-22:00 HOUR	0.0096	0.0070	0.0087	0.0085	0.0071
22:00-23:00 HOUR	0.0096	0.0068	0.0082	0.0087	0.0067
23:00-00:00 HOUR	0.0094	0.0069	0.0076	0.0087	0.0064
00:00-01:00 HOUR	0.0091	0.0068	0.0072	0.0087	0.0061
01:00-02:00 HOUR	0.0086	0.0069	0.0071	0.0084	0.0061
02:00-03:00 HOUR	0.0082	0.0069	0.0071	0.0079	0.0064
03:00-04:00 HOUR	0.0081	0.0073	0.0073	0.0077	0.0069
04:00-05:00 HOUR	0.0082	0.0078	0.0075	0.0077	0.0075
05:00-06:00 HOUR	0.0084	0.0085	0.0079	0.0081	0.0080
06:00-07:00 HOUR	0.0084	0.0088	0.0080	0.0081	0.0082
07:00-08:00 HOUR	0.0080	0.0085	0.0078	0.0078	0.0079

(MR SILA BANJONGJAIKUK)
LABORATORY SUPERVISOR

NOVEMBER 8, 2023



ANALYSIS REPORT

PROJECT NAME : EIA COMPLIANCE AUDIT AND MONITORING OF SPH DEVELOPMENT DRILLING CAMPAIGN 2023 (WELLPAD C)
CUSTOMER NAME : PTTEP SP LIMITED
ADDRESS : 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD
CHATUCHAK CHATUCHAK BANGKOK 10900
CONTACT INFORMATION : TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com
MEASURING PLACE : BAN KHAM YAI SCHOOL (A12)
MEASURING TYPE : AMBIENT (AIR) **RECEIVED DATE** : OCTOBER 25-30, 2023
MEASURING DATE : OCTOBER 25-30, 2023 **ANALYTICAL DATE** : OCTOBER 25-30, 2023
MEASURING TIME : * **REPORT NO.** : 2023-U095336
MEASURING METHOD : CHEMILUMINESCENCE **WORK NO.** : 2019-001655
MEASURED BY : MR. SURIYAN NITHICHERDCHOOWONG **ANALYSIS NO.** : T23AV635-0011 - T23AV635-0015

TIME *	RESULT (ppm)				
	NITROGEN DIOXIDE				
	BAN KHAM YAI SCHOOL (A12)				
	OCTOBER 25 - 26, 2023 T23AV635-0011	OCTOBER 26 - 27, 2023 T23AV635-0012	OCTOBER 27 - 28, 2023 T23AV635-0013	OCTOBER 28 - 29, 2023 T23AV635-0014	OCTOBER 29 - 30, 2023 T23AV635-0015
08:00-09:00 HOUR	0.0079	0.0083	0.0076	0.0081	0.0070
09:00-10:00 HOUR	0.0073	0.0077	0.0073	0.0073	0.0060
10:00-11:00 HOUR	0.0069	0.0073	0.0070	0.0067	0.0052
11:00-12:00 HOUR	0.0068	0.0069	0.0068	0.0066	0.0050
12:00-13:00 HOUR	0.0067	0.0067	0.0071	0.0070	0.0054
13:00-14:00 HOUR	0.0067	0.0066	0.0076	0.0077	0.0057
14:00-15:00 HOUR	0.0069	0.0068	0.0085	0.0084	0.0061
15:00-16:00 HOUR	0.0072	0.0069	0.0093	0.0088	0.0063
16:00-17:00 HOUR	0.0077	0.0072	0.0100	0.0090	0.0067
17:00-18:00 HOUR	0.0079	0.0075	0.0101	0.0091	0.0070
18:00-19:00 HOUR	0.0082	0.0079	0.0100	0.0092	0.0072
19:00-20:00 HOUR	0.0084	0.0083	0.0095	0.0094	0.0073
20:00-21:00 HOUR	0.0087	0.0087	0.0091	0.0095	0.0072
21:00-22:00 HOUR	0.0090	0.0088	0.0085	0.0093	0.0071
22:00-23:00 HOUR	0.0091	0.0087	0.0081	0.0091	0.0071
23:00-00:00 HOUR	0.0092	0.0084	0.0075	0.0085	0.0073
00:00-01:00 HOUR	0.0090	0.0080	0.0072	0.0081	0.0078
01:00-02:00 HOUR	0.0086	0.0077	0.0068	0.0075	0.0083
02:00-03:00 HOUR	0.0081	0.0076	0.0068	0.0071	0.0087
03:00-04:00 HOUR	0.0079	0.0078	0.0069	0.0070	0.0089
04:00-05:00 HOUR	0.0081	0.0081	0.0073	0.0072	0.0091
05:00-06:00 HOUR	0.0085	0.0084	0.0081	0.0077	0.0090
06:00-07:00 HOUR	0.0087	0.0083	0.0085	0.0081	0.0090
07:00-08:00 HOUR	0.0086	0.0081	0.0087	0.0079	0.0086

(MR. SILA BANJONGJAIKUK)
LABORATORY SUPERVISOR

NOVEMBER 8, 2023



ANALYSIS REPORT

PROJECT NAME : EIA COMPLIANCE AUDIT AND MONITORING OF SPH DEVELOPMENT DRILLING CAMPAIGN 2023 (WELLPAD C)
CUSTOMER NAME : PTTEP SP LIMITED
ADDRESS : 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD
CHATUCHAK CHATUCHAK BANGKOK 10900
CONTACT INFORMATION : TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com
MEASURING PLACE : PARKING LOT AT SOUTH WEST OF GPP NEAR PTT REGIONAL 4 (A15)
MEASURING TYPE : AMBIENT (AIR) **RECEIVED DATE** : OCTOBER 25-30, 2023
MEASURING DATE : OCTOBER 25-30, 2023 **ANALYTICAL DATE** : OCTOBER 25-30, 2023
MEASURING TIME : * **REPORT NO.** : 2023-U095334
MEASURING METHOD : CHEMILUMINESCENCE **WORK NO.** : 2019-001655
MEASURED BY : MR. SURTYAN NITHICHERDCHOOWONG **ANALYSIS NO.** : T23AV635-0001 - T23AV635-0005

TIME *	RESULT (ppm)				
	NITROGEN DIOXIDE				
	PARKING LOT AT SOUTH WEST OF GPP NEAR PTT REGIONAL 4 (A15)				
	OCTOBER 25 - 26, 2023 T23AV635-0001	OCTOBER 26 - 27, 2023 T23AV635-0002	OCTOBER 27 - 28, 2023 T23AV635-0003	OCTOBER 28 - 29, 2023 T23AV635-0004	OCTOBER 29 - 30, 2023 T23AV635-0005
08:00-09:00 HOUR	0.0071	0.0078	0.0079	0.0075	0.0073
09:00-10:00 HOUR	0.0062	0.0070	0.0072	0.0065	0.0066
10:00-11:00 HOUR	0.0059	0.0065	0.0067	0.0060	0.0064
11:00-12:00 HOUR	0.0060	0.0063	0.0065	0.0062	0.0065
12:00-13:00 HOUR	0.0065	0.0068	0.0068	0.0067	0.0068
13:00-14:00 HOUR	0.0069	0.0073	0.0073	0.0072	0.0068
14:00-15:00 HOUR	0.0074	0.0080	0.0078	0.0079	0.0072
15:00-16:00 HOUR	0.0080	0.0084	0.0081	0.0085	0.0076
16:00-17:00 HOUR	0.0086	0.0088	0.0082	0.0088	0.0081
17:00-18:00 HOUR	0.0089	0.0089	0.0083	0.0087	0.0084
18:00-19:00 HOUR	0.0089	0.0088	0.0084	0.0087	0.0084
19:00-20:00 HOUR	0.0089	0.0084	0.0086	0.0086	0.0083
20:00-21:00 HOUR	0.0089	0.0080	0.0089	0.0086	0.0081
21:00-22:00 HOUR	0.0088	0.0079	0.0090	0.0082	0.0079
22:00-23:00 HOUR	0.0088	0.0078	0.0088	0.0080	0.0077
23:00-00:00 HOUR	0.0087	0.0079	0.0086	0.0080	0.0078
00:00-01:00 HOUR	0.0086	0.0081	0.0084	0.0082	0.0081
01:00-02:00 HOUR	0.0084	0.0085	0.0085	0.0084	0.0085
02:00-03:00 HOUR	0.0081	0.0088	0.0086	0.0086	0.0089
03:00-04:00 HOUR	0.0081	0.0088	0.0086	0.0087	0.0091
04:00-05:00 HOUR	0.0081	0.0087	0.0085	0.0087	0.0090
05:00-06:00 HOUR	0.0085	0.0087	0.0086	0.0088	0.0090
06:00-07:00 HOUR	0.0086	0.0088	0.0087	0.0087	0.0090
07:00-08:00 HOUR	0.0085	0.0085	0.0084	0.0082	0.0089

(MR. SILA BANJONGJAIKUK)
LABORATORY SUPERVISOR

NOVEMBER 8, 2023



ANALYSIS REPORT

PROJECT NAME : EIA COMPLIANCE AUDIT AND MONITORING OF PART B: SPH = SINPHUHORM (1 FEB 2020 - 31 DEC 2023)
CUSTOMER NAME : PTTEP SP LIMITED
ADDRESS : 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD
CHATUCHAK CHATUCHAK BANGKOK 10900
CONTACT INFORMATION : TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com
SAMPLING SOURCE : PTTEP SP LIMITED 323 MOO 1, KUDNAMSAI, NAMPHONG, KHONKAEN 40310.
SAMPLE TYPE : AMBIENT
SAMPLING DATE : * , ** , *** , **** , *****
SAMPLING TIME : * , ** , *** , **** , *****
SAMPLING BY : MR SURIYAN NITHICHERDCHOOWONG
ANALYZED BY : MISS JETJARIN TUMSA-AT

RECEIVED DATE : OCTOBER 31, 2023
ANALYTICAL DATE : OCTOBER 31-NOVEMBER 7, 2023
REPORT NO. : 2023-U095805
WORK NO. : 2019-001655
ANALYSIS NO. : T23AV635-0006 - T23AV635-0010

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT				
			BAN KUT NAM SAI (A11)				
			*	**	***	****	*****
			T23AV635-0006	T23AV635-0007	T23AV635-0008	T23AV635-0009	T23AV635-0010
TOTAL SUSPENDED PARTICULATE	mg/m ³	GRAVIMETRIC (HIGH VOLUME METHOD)	0.057	0.033	0.037	0.046	0.042
PARTICULATE MATTER (≤ 10 µm)	mg/m ³	GRAVIMETRIC (HIGH VOLUME METHOD)	0.042	0.014	0.021	0.021	0.024
FINE PARTICULATE MATTER as PM2.5 (≤ 2.5 µm)	µg/m ³	US EPA, CODE OF FEDERAL REGULATION, 40 CFR CHAPTER I-PART 50, APPENDIX L, REFERENCE METHOD FOR THE DETERMINATION OF FINE PARTICULATE MATTER AS PM2.5 IN THE ATMOSPHERE, 2021	13.2	9.20	14.0	13.9	7.30
SAMPLE CONDITION			COMPLETE	COMPLETE	COMPLETE	COMPLETE	COMPLETE

REMARK

TSP, PM10 : REFERENCE CONDITION IS 25 DEGREE CELSIUS AT 1 ATMOSPHERE.
PM2.5 : REPORTED AS PER ACTUAL FIELD CONDITIONS DURING SAMPLING.
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 OCTOBER 25, 2023 TO 10:00 HOUR ON OCTOBER 26, 2023.
** : SAMPLING FROM 10:00 HOUR ON OCTOBER 26, 2023 TO 10:00 HOUR ON OCTOBER 27, 2023.
*** : SAMPLING FROM 10:00 HOUR ON OCTOBER 27, 2023 TO 10:00 HOUR ON OCTOBER 28, 2023.
**** : SAMPLING FROM 10:00 HOUR ON OCTOBER 28, 2023 TO 10:00 HOUR ON OCTOBER 29, 2023.
***** : SAMPLING FROM 10:00 HOUR ON OCTOBER 29, 2023 TO 10:00 HOUR ON OCTOBER 30, 2023.

(MISS BUDSAKORN LERDPANUMAS)
LABORATORY SUPERVISOR

NOVEMBER 9, 2023



ANALYSIS REPORT

PROJECT NAME : EIA COMPLIANCE AUDIT AND MONITORING OF PART B: SPH = SINPHUHORM (1 FEB 2020 - 31 DEC 2023)
CUSTOMER NAME : PTTEP SP LIMITED
ADDRESS : 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD
CHATUCHAK CHATUCHAK BANGKOK 10900
CONTACT INFORMATION : TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com
SAMPLING SOURCE : PTTEP SP LIMITED 323 MOO 1, KUDNAMSAI, NAMPHONG, KHONKAEN 40310.
SAMPLE TYPE : AMBIENT
SAMPLING DATE : * ** *** *****
SAMPLING TIME : * ** *** *****
SAMPLING BY : MR SURIYAN NITHICHERDCHOOWONG
ANALYZED BY : MISS JETJARAN TUMSA-AT
RECEIVED DATE : OCTOBER 31, 2023
ANALYTICAL DATE : OCTOBER 31-NOVEMBER 7, 2023
REPORT NO. : 2023-U095810
WORK NO. : 2019-001655
ANALYSIS NO. : T23AV635-0011 - T23AV635-0015

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT				
			BAN KHAM YAI SCHOOL				
			*	**	***	****	*****
			T23AV635-0011	T23AV635-0012	T23AV635-0013	T23AV635-0014	T23AV635-0015
TOTAL SUSPENDED PARTICULATE	mg/m ³	GRAVIMETRIC (HIGH VOLUME METHOD)	0.041	0.026	0.052	0.029	0.054
PARTICULATE MATTER (≤ 10 µm)	mg/m ³	GRAVIMETRIC (HIGH VOLUME METHOD)	0.023	0.014	0.018	0.019	0.033
FINE PARTICULATE MATTER as PM2.5 (≤ 2.5 µm)	µg/m ³	US EPA, CODE OF FEDERAL REGULATION, 40 CFR CHAPTER I-PART 50, APPENDIX L, REFERENCE METHOD FOR THE DETERMINATION OF FINE PARTICULATE MATTER AS PM2.5 IN THE ATMOSPHERE, 2021	15.3	8.20	10.6	10.2	14.0
SAMPLE CONDITION			COMPLETE	COMPLETE	COMPLETE	COMPLETE	COMPLETE

REMARK

TSP, PM10 : REFERENCE CONDITION IS 25 DEGREE CELSIUS AT 1 ATMOSPHERE.
PM2.5 : REPORTED AS PER ACTUAL FIELD CONDITIONS DURING SAMPLING.
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 OCTOBER 25, 2023 TO 09:30 HOUR ON OCTOBER 26, 2023.
** : SAMPLING FROM 09:30 HOUR ON OCTOBER 26, 2023 TO 09:30 HOUR ON OCTOBER 27, 2023.
*** : SAMPLING FROM 09:30 HOUR ON OCTOBER 27, 2023 TO 09:30 HOUR ON OCTOBER 28, 2023.
**** : SAMPLING FROM 09:30 HOUR ON OCTOBER 28, 2023 TO 09:30 HOUR ON OCTOBER 29, 2023.
***** : SAMPLING FROM 09:30 HOUR ON OCTOBER 29, 2023 TO 09:30 HOUR ON OCTOBER 30, 2023.

(MISS BUDSAKORN LERDPANUMAS)
LABORATORY SUPERVISOR

NOVEMBER 9, 2023



ANALYSIS REPORT

PROJECT NAME : EIA COMPLIANCE AUDIT AND MONITORING OF PART B: SPH = SINPHUHORM (1 FEB 2020 - 31 DEC 2023)
CUSTOMER NAME : PTTEP SP LIMITED
ADDRESS : 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD
CHATUCHAK CHATUCHAK BANGKOK 10900
CONTACT INFORMATION : TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com
SAMPLING SOURCE : PTTEP SP LIMITED 323 MOO 1, KUDNAMSAI, NAMPHONG, KHONKAEN 40310.
SAMPLE TYPE : AMBIENT
SAMPLING DATE : * ** *** *****
SAMPLING TIME : * ** *** *****
SAMPLING BY : MR SURIYAN NITHICHERDCHOOWONG
ANALYZED BY : MISS JETJARAN TUMSA-AT

RECEIVED DATE : OCTOBER 31, 2023
ANALYTICAL DATE : OCTOBER 31-NOVEMBER 7, 2023
REPORT NO. : 2023-U095804
WORK NO. : 2019-001655
ANALYSIS NO. : T23AV635-0001- T23AV635-0005

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT				
			PARKING LOT AT SOUTH WEST OF GPP NEAR PTT REGIONAL 4 (A15)				
			*	**	***	****	*****
			T23AV635-0001	T23AV635-0002	T23AV635-0003	T23AV635-0004	T23AV635-0005
TOTAL SUSPENDED PARTICULATE	mg/m ³	GRAVIMETRIC (HIGH VOLUME METHOD)	0.036	0.032	0.029	0.038	0.049
PARTICULATE MATTER (≤ 10 µm)	mg/m ³	GRAVIMETRIC (HIGH VOLUME METHOD)	0.023	0.022	0.019	0.028	0.039
FINE PARTICULATE MATTER as PM2.5 (≤ 2.5 µm)	µg/m ³	US EPA, CODE OF FEDERAL REGULATION, 40 CFR CHAPTER I-PART 50, APPENDIX L, REFERENCE METHOD FOR THE DETERMINATION OF FINE PARTICULATE MATTER AS PM2.5 IN THE ATMOSPHERE, 2021	17.4	8.40	10.5	11.1	18.2
SAMPLE CONDITION			COMPLETE	COMPLETE	COMPLETE	COMPLETE	COMPLETE

REMARK

TSP, PM10 : REFERENCE CONDITION IS 25 DEGREE CELSIUS AT 1 ATMOSPHERE.
PM2.5 : REPORTED AS PER ACTUAL FIELD CONDITIONS DURING SAMPLING.
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 OCTOBER 25, 2023 TO 09:00 HOUR ON OCTOBER 26, 2023.
** : SAMPLING FROM 09:00 HOUR ON OCTOBER 26, 2023 TO 09:00 HOUR ON OCTOBER 27, 2023.
*** : SAMPLING FROM 09:00 HOUR ON OCTOBER 27, 2023 TO 09:00 HOUR ON OCTOBER 28, 2023.
**** : SAMPLING FROM 09:00 HOUR ON OCTOBER 28, 2023 TO 09:00 HOUR ON OCTOBER 29, 2023.
***** : SAMPLING FROM 09:00 HOUR ON OCTOBER 29, 2023 TO 09:00 HOUR ON OCTOBER 30, 2023.

(MISS BUDSAKORN LERDPANUMAS)
LABORATORY SUPERVISOR

NOVEMBER 9, 2023



ANALYSIS REPORT

PROJECT NAME : EIA COMPLIANCE AUDIT AND MONITORING OF SPH DEVELOPMENT DRILLING CAMPAIGN 2023 (WELLPAD C)
CUSTOMER NAME : PTTEP SP LIMITED
ADDRESS : 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD CHATUCHAK CHATUCHAK BANGKOK 10900
CONTACT INFORMATION : TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com
MEASURING PLACE : BAN KUT NAM SAI (A11)
MEASURING TYPE : AMBIENT (AIR)
MEASURING DATE : OCTOBER 25-30, 2023
MEASURING TIME : *
MEASURING METHOD : WIND SPEED & WIND DIRECTION EQUIPMENT
MEASURED BY : MR SURIYAN NITHICHERDCHOOWONG

RECEIVED DATE : OCTOBER 25-30, 2023
ANALYTICAL DATE : OCTOBER 25-30, 2023
REPORT NO. : 2023-U095342
WORK NO. : 2019-001655
ANALYSIS NO. : T23AV635-0006 - T23AV635-0010

TIME *	RESULT (m/s)									
	BAN KUT NAM SAI (A11)									
	OCTOBER 25 - 26, 2023		OCTOBER 26 - 27, 2023		OCTOBER 27 - 28, 2023		OCTOBER 28 - 29, 2023		OCTOBER 29 - 30, 2023	
	T23AV635-0006		T23AV635-0007		T23AV635-0008		T23AV635-0009		T23AV635-0010	
	WIND SPEED	WIND DIRECTION	WIND SPEED	WIND DIRECTION	WIND SPEED	WIND DIRECTION	WIND SPEED	WIND DIRECTION	WIND SPEED	WIND DIRECTION
08:00-09:00 HOUR	1.5	N	1.8	E	1.5	NNE	1.6	NNE	1.9	ENE
09:00-10:00 HOUR	1.4	N	1.5	NE	2.3	NW	1.3	NE	2.0	ENE
10:00-11:00 HOUR	2.0	E	1.2	NNE	1.5	WNW	2.1	NNW	1.4	NNW
11:00-12:00 HOUR	1.9	ENE	0.9	N	1.8	NW	1.4	NE	1.3	NE
12:00-13:00 HOUR	1.7	ESE	1.1	ESE	1.9	N	1.4	NW	0.9	NNE
13:00-14:00 HOUR	1.4	E	0.8	E	1.8	NE	1.8	NNW	1.0	E
14:00-15:00 HOUR	1.8	NE	1.0	E	1.3	NNE	1.6	NW	0.8	ENE
15:00-16:00 HOUR	2.0	NE	0.9	NE	2.2	NW	1.2	WNW	0.9	NE
16:00-17:00 HOUR	2.2	E	1.1	ESE	2.1	NW	0.7	NNE	1.2	ENE
17:00-18:00 HOUR	1.5	ESE	0.8	NE	1.6	NNW	1.0	N	0.8	NNW
18:00-19:00 HOUR	2.2	ENE	1.2	NNW	2.3	NNE	1.5	NW	0.9	NNW
19:00-20:00 HOUR	1.5	SE	1.1	NNW	1.5	NNW	1.4	NNE	0.9	N
20:00-21:00 HOUR	1.5	N	1.0	NNW	1.5	NE	1.9	NNW	0.9	NNE
21:00-22:00 HOUR	1.6	NNE	1.3	NNW	2.0	NNW	2.2	N	1.3	NNW
22:00-23:00 HOUR	2.2	NNE	1.4	NW	2.0	WNW	1.7	E	1.7	NNW
23:00-00:00 HOUR	2.1	NE	1.4	NW	2.2	NW	1.4	NE	2.0	NNE
00:00-01:00 HOUR	1.8	ESE	1.2	N	2.2	N	1.9	NNE	2.3	ENE
01:00-02:00 HOUR	1.4	NNE	1.5	NE	2.1	NNW	1.5	N	1.8	NNE
02:00-03:00 HOUR	1.8	E	1.4	N	2.2	NNW	2.3	ESE	2.4	ENE
03:00-04:00 HOUR	2.1	NNE	1.7	N	1.6	NNE	1.6	SSE	1.6	NNE
04:00-05:00 HOUR	1.5	N	2.4	N	1.4	N	2.4	ESE	1.9	NNW
05:00-06:00 HOUR	2.1	NE	2.1	NNW	1.6	E	1.9	ESE	2.1	N
06:00-07:00 HOUR	1.6	E	1.7	NNE	1.7	ENE	2.0	NNE	1.3	NNE
07:00-08:00 HOUR	2.1	ESE	2.3	N	1.9	NNE	1.8	NE	1.4	NNW

(MR SILA BANJONGJAIKUK)
LABORATORY SUPERVISOR

NOVEMBER 8, 2023



ANALYSIS REPORT

PROJECT NAME : EIA COMPLIANCE AUDIT AND MONITORING OF SPH DEVELOPMENT DRILLING CAMPAIGN 2023 (WELLPAD C)
CUSTOMER NAME : PTTEP SP LIMITED
ADDRESS : 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD CHATUCHAK
CHATUCHAK BANGKOK 10900
CONTACT INFORMATION : TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com
MEASURING PLACE : BAN KHAM YAI SCHOOL (A12)
MEASURING TYPE : AMBIENT (AIR)
MEASURING DATE : OCTOBER 25-30, 2023
MEASURING TIME : *
MEASURING METHOD : WIND SPEED & WIND DIRECTION EQUIPMENT
MEASURED BY : MR SURIYAN NITHICHERDCHOOWONG

RECEIVED DATE : OCTOBER 25-30, 2023
ANALYTICAL DATE : OCTOBER 25-30, 2023
REPORT NO. : 2023-U095343
WORK NO. : 2019-001655
ANALYSIS NO. : T23AV635-0011 - T23AV635-0015

TIME *	RESULT (m/s)									
	BAN KHAM YAI SCHOOL (A12)									
	OCTOBER 25 - 26, 2023		OCTOBER 26 - 27, 2023		OCTOBER 27 - 28, 2023		OCTOBER 28 - 29, 2023		OCTOBER 29 - 30, 2023	
	T23AV635-0011		T23AV635-0012		T23AV635-0013		T23AV635-0014		T23AV635-0015	
	WIND SPEED	WIND DIRECTION	WIND SPEED	WIND DIRECTION	WIND SPEED	WIND DIRECTION	WIND SPEED	WIND DIRECTION	WIND SPEED	WIND DIRECTION
08:00-09:00 HOUR	1.2	NE	0.8	NNE	2.1	N	1.9	ENE	1.0	NE
09:00-10:00 HOUR	1.2	ENE	1.0	NNW	2.1	N	1.3	NE	0.9	NNE
10:00-11:00 HOUR	1.2	E	1.2	NNE	1.9	N	1.7	NNE	0.9	N
11:00-12:00 HOUR	1.5	NW	2.0	NE	1.5	NE	1.7	ESE	1.1	NNW
12:00-13:00 HOUR	1.5	NNW	1.7	N	1.2	E	1.6	SE	1.0	NE
13:00-14:00 HOUR	2.2	ENE	2.2	NE	1.2	NE	1.7	SSE	1.0	NNE
14:00-15:00 HOUR	1.8	NE	1.6	NW	1.1	NE	1.6	E	0.7	N
15:00-16:00 HOUR	1.7	NE	2.3	NNW	0.9	SSE	2.2	NE	0.8	ENE
16:00-17:00 HOUR	1.5	ESE	2.3	N	0.8	SSE	1.6	NE	1.1	NE
17:00-18:00 HOUR	1.3	ESE	2.1	NNE	1.1	ESE	1.5	N	0.8	NE
18:00-19:00 HOUR	1.0	NNE	1.7	E	0.8	ENE	1.9	NNE	1.3	ESE
19:00-20:00 HOUR	0.9	SE	2.1	NE	0.8	ESE	2.1	NNE	1.4	NNE
20:00-21:00 HOUR	1.0	NE	2.1	ESE	0.9	NE	2.1	WNW	1.7	NNE
21:00-22:00 HOUR	1.1	NE	1.6	ENE	0.7	NNE	1.3	W	2.0	E
22:00-23:00 HOUR	1.3	N	1.9	NE	0.9	E	1.6	NNW	1.8	N
23:00-00:00 HOUR	1.8	NE	2.0	NE	0.9	ENE	1.2	N	1.4	ENE
00:00-01:00 HOUR	2.0	NE	1.7	ENE	1.0	ENE	1.0	NNE	1.6	ENE
01:00-02:00 HOUR	1.9	E	1.7	N	1.0	ENE	1.1	NNE	1.4	NE
02:00-03:00 HOUR	1.5	NE	2.1	NNE	1.2	ENE	0.9	NW	1.4	ENE
03:00-04:00 HOUR	2.0	NE	2.1	N	1.4	NNE	0.8	NNW	1.1	N
04:00-05:00 HOUR	2.0	E	2.0	NE	1.3	NE	1.0	NNW	1.0	NNW
05:00-06:00 HOUR	1.2	ENE	2.1	NNW	1.6	NNW	1.2	NNW	1.0	NW
06:00-07:00 HOUR	1.1	NNE	1.6	NE	1.6	N	0.7	N	0.8	NNW
07:00-08:00 HOUR	0.9	NNW	1.9	NE	1.6	NE	0.8	NNW	0.7	NNE

(MR SILA BANJONGJAIKUK)
LABORATORY SUPERVISOR

NOVEMBER 8, 2023



ANALYSIS REPORT

PROJECT NAME : EIA COMPLIANCE AUDIT AND MONITORING OF SPH DEVELOPMENT DRILLING CAMPAIGN 2023 (WELLPAD C)
CUSTOMER NAME : PTTEP SP LIMITED
ADDRESS : 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD CHATUCHAK CHATUCHAK BANGKOK 10900
CONTACT INFORMATION : TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com
MEASURING PLACE : PARKING LOT AT SOUTH WEST OF GPP NEAR PTT REGIONAL 4 (A15)
MEASURING TYPE : AMBIENT (AIR) **RECEIVED DATE** : OCTOBER 25-30, 2023
MEASURING DATE : OCTOBER 25-30, 2023 **ANALYTICAL DATE** : OCTOBER 25-30, 2023
MEASURING TIME : * **REPORT NO.** : 2023-U095341
MEASURING METHOD : WIND SPEED & WIND DIRECTION EQUIPMENT **WORK NO.** : 2019-001655
MEASURED BY : MR SURIYAN NITHICHERDCHOOWONG **ANALYSIS NO.** : T23AV635-0001 - T23AV635-0005

TIME *	RESULT (m/s)									
	PARKING LOT AT SOUTH WEST OF GPP NEAR PTT REGIONAL 4 (A15)									
	OCTOBER 25 - 26, 2023		OCTOBER 26 - 27, 2023		OCTOBER 27 - 28, 2023		OCTOBER 28 - 29, 2023		OCTOBER 29 - 30, 2023	
	T23AV635-0001		T23AV635-0002		T23AV635-0003		T23AV635-0004		T23AV635-0005	
	WIND SPEED	WIND DIRECTION	WIND SPEED	WIND DIRECTION	WIND SPEED	WIND DIRECTION	WIND SPEED	WIND DIRECTION	WIND SPEED	WIND DIRECTION
08:00-09:00 HOUR	1.0	NE	1.4	N	2.2	NNW	0.9	ENE	1.6	E
09:00-10:00 HOUR	1.0	NE	1.1	NW	1.4	WNW	0.8	NE	1.8	NE
10:00-11:00 HOUR	0.8	NE	1.5	N	2.2	N	1.4	NNE	2.1	ENE
11:00-12:00 HOUR	1.0	NW	1.4	NNE	1.6	NW	1.1	NNW	2.1	NE
12:00-13:00 HOUR	0.8	NNW	1.3	ENE	1.3	NNW	2.1	NW	2.0	NNE
13:00-14:00 HOUR	0.7	N	1.1	NNW	1.4	N	1.5	NNW	2.2	WNW
14:00-15:00 HOUR	0.7	N	1.2	NNE	1.1	NE	1.3	NW	2.3	NW
15:00-16:00 HOUR	1.0	NNW	1.0	NE	1.3	NNW	1.4	NW	1.5	NW
16:00-17:00 HOUR	0.9	WNW	0.8	NE	1.5	NW	1.2	NNE	1.7	NNE
17:00-18:00 HOUR	0.8	WNW	0.8	N	1.2	NW	1.3	N	1.6	N
18:00-19:00 HOUR	1.2	NNE	1.2	ENE	1.6	NW	1.2	NNW	1.6	WNW
19:00-20:00 HOUR	1.1	NE	1.0	NNE	1.9	NW	1.8	ENE	1.4	NNE
20:00-21:00 HOUR	1.0	NNE	1.0	NE	1.2	NE	1.4	NNE	0.8	N
21:00-22:00 HOUR	0.7	NE	0.9	N	1.8	E	2.0	N	1.2	N
22:00-23:00 HOUR	1.1	NW	1.2	NE	2.1	ESE	1.8	N	1.8	N
23:00-00:00 HOUR	0.7	NNW	2.0	NE	2.0	E	2.0	N	2.1	NNE
00:00-01:00 HOUR	0.9	NNW	2.0	NNE	1.4	SE	2.3	NNE	2.1	ENE
01:00-02:00 HOUR	0.9	N	2.2	NW	1.2	ENE	2.2	NW	1.5	NNE
02:00-03:00 HOUR	0.7	NNE	1.6	NNE	1.4	ENE	1.9	NW	1.5	NNW
03:00-04:00 HOUR	0.6	N	2.2	WNW	1.1	ENE	2.0	N	1.5	NNE
04:00-05:00 HOUR	0.9	NE	2.1	NW	0.8	NE	1.6	NW	1.9	E
05:00-06:00 HOUR	1.1	N	2.1	NNW	1.0	NE	2.0	NNW	1.1	ESE
06:00-07:00 HOUR	1.0	N	1.3	N	0.7	N	2.0	N	1.2	ESE
07:00-08:00 HOUR	1.1	NW	2.2	NW	1.0	NNW	1.9	NNW	0.8	SE

(MR SILA BANJONGJAIKUK)
LABORATORY SUPERVISOR

NOVEMBER 8, 2023





ภาคผนวก จ-2
ใบรายงานผลการวิเคราะห์คุณภาพอากาศจากปล่อง
ในระยะดำเนินการ



ANALYSIS REPORT

CUSTOMER NAME : PTTEP SP LIMITED
ADDRESS : 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD
CHATUCHAK CHATUCHAK BANGKOK 10900
CONTACT INFORMATION : TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com
SAMPLING SOURCE : 323 MOO 1, KUDNAMSAI, NAMPHONG, KHONKAEN 40310
SAMPLE TYPE : STACK
SAMPLING DATE : OCTOBER 27, 2023
SAMPLING TIME : 10:00-11:00 HOUR
SAMPLING BY : MR SUKSUN PANSING ๓-145-๓-0001
ANALYZED BY : MISS SUWAN KONGTHONG ๓-145-๓-0025

RECEIVED DATE : OCTOBER 30, 2023
ANALYTICAL DATE : OCTOBER 30-NOVEMBER 10, 2023
REPORT NO. : 2023-U097603
WORK NO. : 2019-001655
ANALYSIS NO. : T23AV479-0001

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	
			THERMAL OXIDIZER STACK T23AV479-0001	
			ACTUAL OXYGEN	7% OXYGEN
TOTAL SUSPENDED PARTICULATE	mg/m ³	ISOKINETIC, GRAVIMETRIC METHOD (US EPA METHOD 5)	6.48	15.7
ARSENIC	mg/m ³	ISOKINETIC, DIGESTION, HYDRIDE GENERATION, ATOMIC ABSORPTION SPECTROMETRIC METHOD (US EPA METHOD 29)	0.014	0.034
COPPER	mg/m ³	ISOKINETIC, DIRECT AIR-ACETYLENE FLAME METHOD (US EPA METHOD 29)	0.063	0.153
LEAD	mg/m ³	ISOKINETIC, DIRECT AIR-ACETYLENE FLAME METHOD (US EPA METHOD 29)	0.010	0.024
MERCURY	mg/m ³	ISOKINETIC, DIGESTION, COLD-VAPOR ATOMIC ABSORPTION SPECTROMETRIC METHOD (US EPA METHOD 29)	< 0.001	< 0.001
SAMPLE CONDITION			COMPLETE	

REMARK

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

(MISS BUDSAKORN LERDPANUMAS)
LABORATORY SUPERVISOR
๓-145-๓-0011
NOVEMBER 15, 2023



ANALYSIS REPORT

CUSTOMER NAME : PTTEP SP LIMITED
ADDRESS : 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD
CHATUCHAK CHATUCHAK BANGKOK 10900
CONTACT INFORMATION : TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com
SAMPLING SOURCE : 323 MOO 1, KUDNAMSAI, NAMPHONG, KHONKAEN 40310
SAMPLE TYPE : STACK
SAMPLING DATE : OCTOBER 27, 2023
SAMPLING TIME : 11:10-11:20 HOUR
SAMPLING BY : MR SUKSUN PANSING ๖-145-๔-0001
ANALYZED BY : MISS SUWAN KONGTHONG ๖-145-๔-0025

RECEIVED DATE : OCTOBER 27, 2023
ANALYTICAL DATE : OCTOBER 27, 2023
REPORT NO. : 2023-U097604
WORK NO. : 2019-001655
ANALYSIS NO. : T23AV479-0001

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	
			THERMAL OXIDIZER STACK T23AV479-0001	
			ACTUAL OXYGEN	7% OXYGEN
HYDROGEN SULPHIDE	ppm	ABSORPTION, IODOMETRIC METHOD AT SITE (US EPA METHOD 11)	< 5.75	< 5.75
SAMPLE CONDITION			COMPLETE	

REMARK

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

(MISS BUDSAKORN LERDPANUMAS)
LABORATORY SUPERVISOR
๖-145-๔-0011
NOVEMBER 15, 2023



ANALYSIS REPORT

CUSTOMER NAME : PTTEP SP LIMITED
ADDRESS : 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD
 CHATUCHAK CHATUCHAK BANGKOK 10900
CONTACT INFORMATION : TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com
MEASURING SOURCE : 323 MOO 1, KUDNAMSAL, NAMPHONG, KHONKAEN 40310
MEASURING TYPE : STACK
MEASURING DATE : OCTOBER 27, 2023
MEASURING TIME : 10:10-10:20 HOUR
MEASURING METHOD : U.S. EPA METHOD 6C, 7E, 10
MEASURED BY : MR SUKSUN PANSING ๓-145-๓-0001

RECEIVED DATE : OCTOBER 27, 2023
ANALYTICAL DATE : OCTOBER 27, 2023
REPORT NO. : 2023-U097605
WORK NO. : 2019-001655
ANALYSIS NO. : T23AV479-0001

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	
			THERMAL OXIDIZER STACK T23AV479-0001	
			ACTUAL OXYGEN	7% OXYGEN
SULPHUR DIOXIDE	ppm	PORTABLE ANALYZER, ELECTROCHEMICAL METHOD AT SITE (US EPA METHOD 6C)	< 1	< 1
OXIDES OF NITROGEN AS NITROGEN DIOXIDE	ppm	PORTABLE ANALYZER, ELECTROCHEMICAL METHOD AT SITE (US EPA METHOD 7E)	15	36
CARBON MONOXIDE	ppm	PORTABLE ANALYZER, ELECTROCHEMICAL METHOD AT SITE (US EPA METHOD 10)	21	51
SAMPLE CONDITION			COMPLETE	

REMARK

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

(MR NATTAWAT DANGSAWAT)
 LABORATORY SUPERVISOR
 ๓-145-๓-0021
 NOVEMBER 15, 2023





ภาคผนวก จ-3
ใบรายงานผลการวิเคราะห์ระดับเสี่ยงโดยทั่วไป
และระดับเสี่ยงรบกวน ในระยะดำเนินการ



ANALYSIS REPORT

PROJECT NAME	: EIA COMPLIANCE AUDIT AND MONITORING OF SPH DEVELOPMENT DRILLING CAMPAIGN 2023 (WELLPAD C)	RECEIVED DATE	: OCTOBER 25-28, 2023
CUSTOMER NAME	: PTTEP SP LIMITED	ANALYTICAL DATE	: OCTOBER 25-28, 2023
ADDRESS	: 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD CHATUCHAK CHATUCHAK BANGKOK 10900	REPORT NO.	: 2023-U095725
CONTACT INFORMATION	: TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com	WORK NO.	: 2019-001655
MEASURING SOURCE	: BAN KHAM YAI SCHOOL (N12)	ANALYSIS NO.	: T23AV636-0001 - T23AV636-0003
MEASURING TYPE	: AMBIENT (NOISE)		
MEASURING DATE	: OCTOBER 25-28, 2023		
MEASURING TIME	: *		
MEASURING METHOD	: INTEGRATED SOUND LEVEL METER		
MEASURED BY	: MR SURİYAN NITHICHERDCHOOWONG		

TIME*	RESULT dB(A)		
	BAN KHAM YAI SCHOOL (N12)		
	OCTOBER 25 - 26, 2023		
	T23AV636-0001		
	L _{Aeq} 1 hour	L _{Amax} 1 hour	L _{A90} 1 hour
07:00-08:00 HOUR	44.3	61.1	40.0
08:00-09:00 HOUR	45.3	66.6	40.4
09:00-10:00 HOUR	46.4	69.8	41.0
10:00-11:00 HOUR	48.4	79.5	40.8
11:00-12:00 HOUR	54.1	77.8	42.0
12:00-13:00 HOUR	52.8	78.8	41.7
13:00-14:00 HOUR	53.1	76.1	43.8
14:00-15:00 HOUR	49.1	76.2	43.3
15:00-16:00 HOUR	46.7	72.3	44.3
16:00-17:00 HOUR	45.7	62.2	43.6
17:00-18:00 HOUR	44.7	59.1	43.1
18:00-19:00 HOUR	44.2	57.8	42.8
19:00-20:00 HOUR	44.5	61.4	42.8
20:00-21:00 HOUR	44.3	60.2	42.9
21:00-22:00 HOUR	43.6	53.4	42.5
22:00-23:00 HOUR	43.6	52.1	42.8
23:00-00:00 HOUR	42.5	53.8	41.8
00:00-01:00 HOUR	43.1	56.9	42.0
01:00-02:00 HOUR	43.0	62.3	41.2
02:00-03:00 HOUR	46.9	67.9	42.8
03:00-04:00 HOUR	49.0	71.0	44.2
04:00-05:00 HOUR	46.3	68.5	42.6
05:00-06:00 HOUR	47.8	69.1	42.1
06:00-07:00 HOUR	45.8	72.4	40.2
L _{Aeq} 24 hours		47.9	
L _{Adn}		52.8	



TIME*	RESULT dB(A)		
	BAN KHAM YAI SCHOOL (N12)		
	OCTOBER 26 - 27, 2023		
	T23AV636-0002		
	L _{Aeq} 1 hour	L _{Amax} 1 hour	L _{A90} 1 hour
07:00-08:00 HOUR	45.3	69.4	40.0
08:00-09:00 HOUR	42.6	59.0	39.6
09:00-10:00 HOUR	47.9	79.6	40.5
10:00-11:00 HOUR	43.4	68.6	38.5
11:00-12:00 HOUR	50.7	73.5	41.6
12:00-13:00 HOUR	52.7	78.1	41.4
13:00-14:00 HOUR	54.2	79.1	43.0
14:00-15:00 HOUR	52.7	84.3	41.9
15:00-16:00 HOUR	46.4	68.2	41.7
16:00-17:00 HOUR	46.5	63.6	41.8
17:00-18:00 HOUR	42.9	57.1	40.9
18:00-19:00 HOUR	43.7	59.8	41.5
19:00-20:00 HOUR	43.3	60.7	41.3
20:00-21:00 HOUR	43.3	60.7	41.0
21:00-22:00 HOUR	42.8	60.9	41.3
22:00-23:00 HOUR	47.0	61.6	41.5
23:00-00:00 HOUR	42.0	60.5	40.9
00:00-01:00 HOUR	42.1	50.8	40.8
01:00-02:00 HOUR	41.2	57.9	39.6
02:00-03:00 HOUR	47.6	69.4	41.6
03:00-04:00 HOUR	47.7	63.1	41.6
04:00-05:00 HOUR	47.8	65.8	42.2
05:00-06:00 HOUR	46.2	72.2	40.0
06:00-07:00 HOUR	44.0	67.8	40.1
L _{Aeq} 24 hours		47.7	
L _{Adn}		52.7	

TIME*	RESULT dB(A)		
	BAN KHAM YAI SCHOOL (N12)		
	OCTOBER 27 - 28, 2023		
	T23AV636-0003		
	L _{Aeq} 1 hour	L _{Amax} 1 hour	L _{A90} 1 hour
07:00-08:00 HOUR	44.4	73.3	40.3
08:00-09:00 HOUR	44.8	68.4	40.5
09:00-10:00 HOUR	45.3	71.9	41.1
10:00-11:00 HOUR	48.5	84.0	41.7
11:00-12:00 HOUR	48.1	80.4	42.6
12:00-13:00 HOUR	50.6	77.3	45.3
13:00-14:00 HOUR	50.8	81.9	45.6
14:00-15:00 HOUR	48.0	74.6	45.2
15:00-16:00 HOUR	47.1	64.9	45.5
16:00-17:00 HOUR	47.6	61.2	45.7
17:00-18:00 HOUR	47.2	60.6	45.1
18:00-19:00 HOUR	46.7	59.3	44.9
19:00-20:00 HOUR	45.8	58.4	44.1
20:00-21:00 HOUR	46.1	62.0	43.4
21:00-22:00 HOUR	44.9	49.6	43.0
22:00-23:00 HOUR	46.5	62.9	44.0
23:00-00:00 HOUR	45.9	61.5	43.8
00:00-01:00 HOUR	45.9	57.4	43.9
01:00-02:00 HOUR	45.6	55.4	43.4
02:00-03:00 HOUR	48.9	66.9	45.5
03:00-04:00 HOUR	49.3	66.5	45.4
04:00-05:00 HOUR	48.6	68.8	44.4
05:00-06:00 HOUR	47.1	70.1	42.5
06:00-07:00 HOUR	47.8	76.0	41.1
L _{Aeq} 24 hours		47.5	
L _{Adn}		53.9	

(MR SILA BANJONGJAIKUK)
LABORATORY SUPERVISOR

NOVEMBER 8, 2023

ANALYSIS REPORT

PROJECT NAME	: EIA COMPLIANCE AUDIT AND MONITORING OF SPH DEVELOPMENT DRILLING CAMPAIGN 2023 (WELLPAD C)	RECEIVED DATE	: OCTOBER 25-28, 2023
CUSTOMER NAME	: PTTEP SP LIMITED	ANALYTICAL DATE	: OCTOBER 25-28, 2023
ADDRESS	: 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD CHATUCHAK CHATUCHAK BANGKOK 10900	REPORT NO.	: 2023-U095723
CONTACT INFORMATION	: TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com	WORK NO.	: 2019-001655
MEASURING SOURCE	: BAN KHAM YAI SCHOOL (N12)	ANALYSIS NO.	: T23AV636-0001 - T23AV636-0003
MEASURING TYPE	: AMBIENT (NOISE)		
MEASURING DATE	: OCTOBER 25-28, 2023		
MEASURING TIME	: *		
MEASURING METHOD	: INTEGRATED SOUND LEVEL METER		
MEASURED BY	: MR SURIYAN NITHICHERDCHOOWONG		

TIME*	RESULT dB(A)	
	BAN KHAM YAI SCHOOL (N12)	
	OCTOBER 25 - 26, 2023	
	T23AV636-0001	
	L _{Aeq} 5 min	L _{A90} 5 min
07:00-07:05 HOUR	42.7	40.0
07:05-07:10 HOUR	45.7	40.0
07:10-07:15 HOUR	42.1	39.9
07:15-07:20 HOUR	44.5	39.9
07:20-07:25 HOUR	43.2	40.1
07:25-07:30 HOUR	43.1	40.0
07:30-07:35 HOUR	44.6	40.2
07:35-07:40 HOUR	45.5	40.1
07:40-07:45 HOUR	44.2	39.7
07:45-07:50 HOUR	45.1	40.0
07:50-07:55 HOUR	45.0	40.6
07:55-08:00 HOUR	44.2	39.5
08:00-08:05 HOUR	44.7	40.5
08:05-08:10 HOUR	47.6	41.3
08:10-08:15 HOUR	44.0	40.9
08:15-08:20 HOUR	42.7	39.7
08:20-08:25 HOUR	44.0	40.1
08:25-08:30 HOUR	47.3	40.2
08:30-08:35 HOUR	44.1	40.2
08:35-08:40 HOUR	44.5	40.3
08:40-08:45 HOUR	45.9	40.7
08:45-08:50 HOUR	45.6	41.0
08:50-08:55 HOUR	46.7	40.9
08:55-09:00 HOUR	42.4	39.8
09:00-09:05 HOUR	46.2	42.4
09:05-09:10 HOUR	44.4	42.1
09:10-09:15 HOUR	49.3	42.7
09:15-09:20 HOUR	43.8	41.0
09:20-09:25 HOUR	45.2	40.4
09:25-09:30 HOUR	45.4	40.9
09:30-09:35 HOUR	47.8	40.3
09:35-09:40 HOUR	50.0	41.7
09:40-09:45 HOUR	42.6	40.5
09:45-09:50 HOUR	45.2	40.2
09:50-09:55 HOUR	44.8	40.1
09:55-10:00 HOUR	46.1	41.7
10:00-10:05 HOUR	51.8	41.8
10:05-10:10 HOUR	47.8	43.7



TIME*	RESULT dB(A)	
	BAN KHAM YAI SCHOOL (N12)	
	OCTOBER 25 - 26, 2023	
	T23AV636-0001	
	L _{Aeq} 5 min	L _{A90} 5 min
10:10-10:15 HOUR	50.1	40.5
10:15-10:20 HOUR	44.3	39.6
10:20-10:25 HOUR	44.7	39.4
10:25-10:30 HOUR	41.5	39.1
10:30-10:35 HOUR	46.2	39.5
10:35-10:40 HOUR	44.0	39.4
10:40-10:45 HOUR	49.3	41.0
10:45-10:50 HOUR	49.2	44.3
10:50-10:55 HOUR	52.2	44.8
10:55-11:00 HOUR	46.8	44.0
11:00-11:05 HOUR	48.9	42.7
11:05-11:10 HOUR	47.2	39.8
11:10-11:15 HOUR	47.9	40.9
11:15-11:20 HOUR	54.4	39.9
11:20-11:25 HOUR	49.3	40.8
11:25-11:30 HOUR	54.7	41.9
11:30-11:35 HOUR	56.0	43.1
11:35-11:40 HOUR	56.7	42.7
11:40-11:45 HOUR	52.4	42.2
11:45-11:50 HOUR	55.7	40.9
11:50-11:55 HOUR	55.2	42.9
11:55-12:00 HOUR	56.8	42.1
12:00-12:05 HOUR	53.2	42.1
12:05-12:10 HOUR	55.0	41.7
12:10-12:15 HOUR	55.2	41.2
12:15-12:20 HOUR	50.4	41.5
12:20-12:25 HOUR	48.5	41.2
12:25-12:30 HOUR	52.9	40.6
12:30-12:35 HOUR	50.8	41.6
12:35-12:40 HOUR	53.2	42.4
12:40-12:45 HOUR	51.9	42.9
12:45-12:50 HOUR	54.7	42.4
12:50-12:55 HOUR	51.9	41.9
12:55-13:00 HOUR	51.6	41.6
13:00-13:05 HOUR	51.6	41.0
13:05-13:10 HOUR	52.9	41.4
13:10-13:15 HOUR	52.1	42.7
13:15-13:20 HOUR	54.2	41.4
13:20-13:25 HOUR	57.0	44.4
13:25-13:30 HOUR	52.3	44.1
13:30-13:35 HOUR	51.2	44.9
13:35-13:40 HOUR	53.4	44.9
13:40-13:45 HOUR	53.2	43.4
13:45-13:50 HOUR	52.5	44.3
13:50-13:55 HOUR	52.3	44.7
13:55-14:00 HOUR	49.1	43.3
14:00-14:05 HOUR	48.4	42.6
14:05-14:10 HOUR	53.3	42.8
14:10-14:15 HOUR	51.8	42.4
14:15-14:20 HOUR	52.2	42.2
14:20-14:25 HOUR	43.0	41.3

TIME*	RESULT dB(A)	
	BAN KHAM YAI SCHOOL (N12)	
	OCTOBER 25 - 26, 2023	
	T23AV636-0001	
	L _{Aeq} 5 min	L _{A90} 5 min
14:25-14:30 HOUR	45.0	41.4
14:30-14:35 HOUR	45.3	43.7
14:35-14:40 HOUR	48.9	46.6
14:40-14:45 HOUR	47.4	45.5
14:45-14:50 HOUR	46.8	45.3
14:50-14:55 HOUR	46.7	45.2
14:55-15:00 HOUR	47.4	46.3
15:00-15:05 HOUR	47.7	46.2
15:05-15:10 HOUR	46.9	45.9
15:10-15:15 HOUR	48.0	46.5
15:15-15:20 HOUR	47.1	46.1
15:20-15:25 HOUR	45.8	44.0
15:25-15:30 HOUR	45.3	44.0
15:30-15:35 HOUR	45.3	43.9
15:35-15:40 HOUR	46.6	44.0
15:40-15:45 HOUR	46.1	44.5
15:45-15:50 HOUR	47.4	44.7
15:50-15:55 HOUR	47.5	43.5
15:55-16:00 HOUR	45.6	43.8
16:00-16:05 HOUR	45.4	44.3
16:05-16:10 HOUR	46.9	44.6
16:10-16:15 HOUR	45.2	43.9
16:15-16:20 HOUR	45.3	44.0
16:20-16:25 HOUR	47.0	44.6
16:25-16:30 HOUR	45.8	43.0
16:30-16:35 HOUR	47.7	42.8
16:35-16:40 HOUR	44.4	43.2
16:40-16:45 HOUR	44.8	43.3
16:45-16:50 HOUR	44.9	43.7
16:50-16:55 HOUR	45.0	43.5
16:55-17:00 HOUR	44.5	43.2
17:00-17:05 HOUR	44.6	43.2
17:05-17:10 HOUR	44.7	43.4
17:10-17:15 HOUR	44.5	43.2
17:15-17:20 HOUR	44.9	43.1
17:20-17:25 HOUR	44.7	42.5
17:25-17:30 HOUR	45.5	42.4
17:30-17:35 HOUR	43.7	42.2
17:35-17:40 HOUR	44.4	42.6
17:40-17:45 HOUR	45.2	43.5
17:45-17:50 HOUR	45.4	43.6
17:50-17:55 HOUR	44.2	43.0
17:55-18:00 HOUR	44.1	42.9
18:00-18:05 HOUR	43.7	42.9
18:05-18:10 HOUR	43.2	42.2
18:10-18:15 HOUR	43.7	42.7
18:15-18:20 HOUR	44.7	42.8
18:20-18:25 HOUR	43.6	41.7
18:25-18:30 HOUR	44.8	43.0
18:30-18:35 HOUR	44.5	43.2
18:35-18:40 HOUR	44.2	42.8

TIME*	RESULT dB(A)	
	BAN KHAM YAI SCHOOL (N12)	
	OCTOBER 25 - 26, 2023	
	T23AV636-0001	
	L _{Aeq} 5 min	L _{A90} 5 min
18:40-18:45 HOUR	43.8	42.8
18:45-18:50 HOUR	44.2	42.9
18:50-18:55 HOUR	44.8	42.9
18:55-19:00 HOUR	44.4	42.8
19:00-19:05 HOUR	43.5	42.7
19:05-19:10 HOUR	44.4	42.9
19:10-19:15 HOUR	45.5	43.0
19:15-19:20 HOUR	43.9	42.5
19:20-19:25 HOUR	44.1	43.1
19:25-19:30 HOUR	47.3	43.3
19:30-19:35 HOUR	45.1	42.8
19:35-19:40 HOUR	43.7	42.8
19:40-19:45 HOUR	43.2	42.4
19:45-19:50 HOUR	43.6	42.1
19:50-19:55 HOUR	44.6	42.2
19:55-20:00 HOUR	43.2	42.6
20:00-20:05 HOUR	44.8	42.8
20:05-20:10 HOUR	43.8	42.9
20:10-20:15 HOUR	43.2	42.8
20:15-20:20 HOUR	43.3	42.8
20:20-20:25 HOUR	44.3	43.1
20:25-20:30 HOUR	45.9	43.0
20:30-20:35 HOUR	44.9	43.2
20:35-20:40 HOUR	44.9	43.0
20:40-20:45 HOUR	44.0	42.7
20:45-20:50 HOUR	43.6	42.7
20:50-20:55 HOUR	43.1	42.2
20:55-21:00 HOUR	44.4	43.1
21:00-21:05 HOUR	44.2	43.1
21:05-21:10 HOUR	43.6	43.0
21:10-21:15 HOUR	44.3	42.9
21:15-21:20 HOUR	44.0	42.9
21:20-21:25 HOUR	44.1	42.7
21:25-21:30 HOUR	43.5	42.7
21:30-21:35 HOUR	43.1	42.2
21:35-21:40 HOUR	42.9	42.2
21:40-21:45 HOUR	43.0	42.0
21:45-21:50 HOUR	43.4	42.2
21:50-21:55 HOUR	43.3	42.3
21:55-22:00 HOUR	43.1	42.3
22:00-22:05 HOUR	43.2	42.5
22:05-22:10 HOUR	44.0	42.7
22:10-22:15 HOUR	43.7	43.1
22:15-22:20 HOUR	44.3	43.5
22:20-22:25 HOUR	44.2	43.7
22:25-22:30 HOUR	43.9	43.3
22:30-22:35 HOUR	43.8	43.1
22:35-22:40 HOUR	43.4	42.8
22:40-22:45 HOUR	43.3	42.3
22:45-22:50 HOUR	43.6	42.4
22:50-22:55 HOUR	43.5	42.0

TIME*	RESULT dB(A)	
	BAN KHAM YAI SCHOOL (N12)	
	OCTOBER 25 - 26, 2023	
	T23AV636-0001	
	L _{Aeq} 5 min	L _{A90} 5 min
22:55-23:00 HOUR	42.6	42.1
23:00-23:05 HOUR	42.4	41.7
23:05-23:10 HOUR	42.4	41.7
23:10-23:15 HOUR	42.3	41.7
23:15-23:20 HOUR	42.2	41.6
23:20-23:25 HOUR	41.9	41.4
23:25-23:30 HOUR	42.7	42.0
23:30-23:35 HOUR	42.3	41.8
23:35-23:40 HOUR	42.4	41.9
23:40-23:45 HOUR	42.8	42.2
23:45-23:50 HOUR	42.7	42.1
23:50-23:55 HOUR	43.0	42.3
23:55-00:00 HOUR	42.9	41.5
00:00-00:05 HOUR	42.2	41.3
00:05-00:10 HOUR	43.2	42.0
00:10-00:15 HOUR	42.8	42.0
00:15-00:20 HOUR	42.8	41.9
00:20-00:25 HOUR	43.4	42.7
00:25-00:30 HOUR	43.2	42.3
00:30-00:35 HOUR	43.1	42.1
00:35-00:40 HOUR	44.1	42.4
00:40-00:45 HOUR	43.1	41.8
00:45-00:50 HOUR	44.3	41.8
00:50-00:55 HOUR	42.2	41.4
00:55-01:00 HOUR	42.8	41.8
01:00-01:05 HOUR	43.3	42.1
01:05-01:10 HOUR	43.6	42.2
01:10-01:15 HOUR	43.1	42.0
01:15-01:20 HOUR	42.3	41.4
01:20-01:25 HOUR	42.5	41.2
01:25-01:30 HOUR	42.2	41.2
01:30-01:35 HOUR	42.1	41.2
01:35-01:40 HOUR	42.6	40.8
01:40-01:45 HOUR	43.6	40.8
01:45-01:50 HOUR	42.5	40.4
01:50-01:55 HOUR	41.7	40.3
01:55-02:00 HOUR	45.3	42.1
02:00-02:05 HOUR	45.6	42.2
02:05-02:10 HOUR	44.7	41.8
02:10-02:15 HOUR	45.5	41.9
02:15-02:20 HOUR	43.8	42.5
02:20-02:25 HOUR	45.4	42.5
02:25-02:30 HOUR	45.5	42.2
02:30-02:35 HOUR	46.7	43.0
02:35-02:40 HOUR	46.1	43.0
02:40-02:45 HOUR	50.1	44.4
02:45-02:50 HOUR	48.1	43.5
02:50-02:55 HOUR	48.1	43.8
02:55-03:00 HOUR	48.5	44.3
03:00-03:05 HOUR	48.8	44.2
03:05-03:10 HOUR	49.8	44.4

TIME*	RESULT dB(A)	
	BAN KHAM YAI SCHOOL (N12)	
	OCTOBER 25 - 26, 2023	
	T23AV636-0001	
	L _{Aeq} 5 min	L _{A90} 5 min
03:10-03:15 HOUR	49.2	44.7
03:15-03:20 HOUR	51.2	45.3
03:20-03:25 HOUR	47.1	44.2
03:25-03:30 HOUR	49.9	43.5
03:30-03:35 HOUR	48.8	44.1
03:35-03:40 HOUR	46.3	43.6
03:40-03:45 HOUR	48.5	43.4
03:45-03:50 HOUR	49.0	43.6
03:50-03:55 HOUR	47.7	43.6
03:55-04:00 HOUR	49.0	44.2
04:00-04:05 HOUR	47.1	43.1
04:05-04:10 HOUR	46.7	43.4
04:10-04:15 HOUR	48.2	43.0
04:15-04:20 HOUR	47.0	43.0
04:20-04:25 HOUR	45.6	42.1
04:25-04:30 HOUR	46.9	42.6
04:30-04:35 HOUR	47.4	43.7
04:35-04:40 HOUR	45.4	42.4
04:40-04:45 HOUR	44.3	42.1
04:45-04:50 HOUR	44.8	42.5
04:50-04:55 HOUR	45.1	42.5
04:55-05:00 HOUR	44.7	42.3
05:00-05:05 HOUR	47.6	41.6
05:05-05:10 HOUR	48.9	42.2
05:10-05:15 HOUR	46.8	42.3
05:15-05:20 HOUR	47.2	42.0
05:20-05:25 HOUR	49.3	41.7
05:25-05:30 HOUR	48.2	41.7
05:30-05:35 HOUR	48.2	42.6
05:35-05:40 HOUR	48.8	42.2
05:40-05:45 HOUR	48.6	42.6
05:45-05:50 HOUR	45.5	42.1
05:50-05:55 HOUR	45.8	41.5
05:55-06:00 HOUR	46.8	40.7
06:00-06:05 HOUR	44.8	40.2
06:05-06:10 HOUR	45.5	40.2
06:10-06:15 HOUR	46.4	40.7
06:15-06:20 HOUR	47.6	40.7
06:20-06:25 HOUR	48.4	42.5
06:25-06:30 HOUR	48.1	43.3
06:30-06:35 HOUR	47.4	39.7
06:35-06:40 HOUR	42.1	40.0
06:40-06:45 HOUR	43.7	40.1
06:45-06:50 HOUR	43.3	40.0
06:50-06:55 HOUR	43.4	40.6
06:55-07:00 HOUR	43.1	39.4

TIME*	RESULT dB(A)	
	BAN KHAM YAI SCHOOL (N12)	
	OCTOBER 26 - 27, 2023	
	T23AV636-0002	
	L _{Aeq} 5 min	L _{A90} 5 min
07:00-07:05 HOUR	48.2	42.6
07:05-07:10 HOUR	44.9	41.1
07:10-07:15 HOUR	50.2	41.0
07:15-07:20 HOUR	42.6	40.0
07:20-07:25 HOUR	43.6	40.3
07:25-07:30 HOUR	45.0	39.7
07:30-07:35 HOUR	45.1	40.3
07:35-07:40 HOUR	42.4	39.9
07:40-07:45 HOUR	42.4	39.7
07:45-07:50 HOUR	42.2	39.6
07:50-07:55 HOUR	44.7	39.8
07:55-08:00 HOUR	42.5	39.7
08:00-08:05 HOUR	41.5	39.6
08:05-08:10 HOUR	42.9	40.8
08:10-08:15 HOUR	40.9	38.6
08:15-08:20 HOUR	44.1	40.3
08:20-08:25 HOUR	43.1	39.4
08:25-08:30 HOUR	42.5	39.7
08:30-08:35 HOUR	41.8	38.9
08:35-08:40 HOUR	42.0	39.5
08:40-08:45 HOUR	43.5	40.2
08:45-08:50 HOUR	41.2	38.9
08:50-08:55 HOUR	42.3	38.4
08:55-09:00 HOUR	43.9	40.3
09:00-09:05 HOUR	50.3	41.6
09:05-09:10 HOUR	51.5	42.2
09:10-09:15 HOUR	44.5	39.5
09:15-09:20 HOUR	49.9	39.7
09:20-09:25 HOUR	51.2	39.9
09:25-09:30 HOUR	48.3	40.3
09:30-09:35 HOUR	43.3	41.0
09:35-09:40 HOUR	43.7	39.5
09:40-09:45 HOUR	46.9	40.7
09:45-09:50 HOUR	45.0	40.9
09:50-09:55 HOUR	44.0	40.7
09:55-10:00 HOUR	43.4	40.1
10:00-10:05 HOUR	46.0	40.3
10:05-10:10 HOUR	42.2	38.0
10:10-10:15 HOUR	41.9	38.2
10:15-10:20 HOUR	42.9	38.6
10:20-10:25 HOUR	43.4	38.6
10:25-10:30 HOUR	43.5	39.2
10:30-10:35 HOUR	45.5	39.6
10:35-10:40 HOUR	44.4	37.8
10:40-10:45 HOUR	42.3	38.5
10:45-10:50 HOUR	43.6	37.5
10:50-10:55 HOUR	40.5	37.9
10:55-11:00 HOUR	41.2	38.5
11:00-11:05 HOUR	45.2	38.9
11:05-11:10 HOUR	45.5	38.9
11:10-11:15 HOUR	47.3	40.7

TIME*	RESULT dB(A)	
	BAN KHAM YAI SCHOOL (N12)	
	OCTOBER 26 - 27, 2023	
	T23AV636-0002	
	L _{Aeq} 5 min	L _{A90} 5 min
11:15-11:20 HOUR	50.0	40.9
11:20-11:25 HOUR	48.5	39.2
11:25-11:30 HOUR	49.9	41.4
11:30-11:35 HOUR	50.2	42.5
11:35-11:40 HOUR	52.9	42.4
11:40-11:45 HOUR	51.0	43.3
11:45-11:50 HOUR	53.3	43.0
11:50-11:55 HOUR	51.3	41.8
11:55-12:00 HOUR	53.7	42.9
12:00-12:05 HOUR	55.4	42.5
12:05-12:10 HOUR	51.9	41.1
12:10-12:15 HOUR	53.0	41.9
12:15-12:20 HOUR	52.2	36.8
12:20-12:25 HOUR	51.9	37.1
12:25-12:30 HOUR	52.7	37.7
12:30-12:35 HOUR	51.6	40.8
12:35-12:40 HOUR	50.2	42.1
12:40-12:45 HOUR	54.0	41.6
12:45-12:50 HOUR	53.6	42.4
12:50-12:55 HOUR	52.4	41.8
12:55-13:00 HOUR	51.2	41.0
13:00-13:05 HOUR	55.1	43.2
13:05-13:10 HOUR	55.2	44.4
13:10-13:15 HOUR	56.6	44.8
13:15-13:20 HOUR	53.6	43.0
13:20-13:25 HOUR	54.3	43.5
13:25-13:30 HOUR	52.3	42.9
13:30-13:35 HOUR	53.1	43.4
13:35-13:40 HOUR	52.0	41.7
13:40-13:45 HOUR	54.3	39.8
13:45-13:50 HOUR	56.0	41.6
13:50-13:55 HOUR	52.7	40.8
13:55-14:00 HOUR	52.1	40.0
14:00-14:05 HOUR	55.2	44.1
14:05-14:10 HOUR	57.3	43.6
14:10-14:15 HOUR	58.0	42.4
14:15-14:20 HOUR	50.4	41.0
14:20-14:25 HOUR	47.2	40.6
14:25-14:30 HOUR	45.2	41.0
14:30-14:35 HOUR	45.9	41.4
14:35-14:40 HOUR	52.3	42.1
14:40-14:45 HOUR	48.5	41.6
14:45-14:50 HOUR	50.6	48.0
14:50-14:55 HOUR	49.7	48.0
14:55-15:00 HOUR	48.8	41.5
15:00-15:05 HOUR	49.2	47.2
15:05-15:10 HOUR	49.6	47.9
15:10-15:15 HOUR	50.5	48.0
15:15-15:20 HOUR	45.7	41.5
15:20-15:25 HOUR	43.1	41.9
15:25-15:30 HOUR	44.4	41.9

TIME*	RESULT dB(A)	
	BAN KHAM YAI SCHOOL (N12)	
	OCTOBER 26 - 27, 2023	
	T23AV636-0002	
	L _{Aeq} 5 min	L _{A90} 5 min
15:30-15:35 HOUR	43.2	40.8
15:35-15:40 HOUR	43.2	41.1
15:40-15:45 HOUR	43.3	41.2
15:45-15:50 HOUR	43.2	41.7
15:50-15:55 HOUR	42.8	41.5
15:55-16:00 HOUR	47.0	41.7
16:00-16:05 HOUR	42.6	41.4
16:05-16:10 HOUR	43.4	41.5
16:10-16:15 HOUR	42.7	41.3
16:15-16:20 HOUR	43.2	41.3
16:20-16:25 HOUR	42.1	40.7
16:25-16:30 HOUR	46.1	41.0
16:30-16:35 HOUR	48.9	43.6
16:35-16:40 HOUR	50.1	48.3
16:40-16:45 HOUR	49.6	45.6
16:45-16:50 HOUR	48.4	42.7
16:50-16:55 HOUR	44.7	42.7
16:55-17:00 HOUR	44.8	42.1
17:00-17:05 HOUR	43.2	41.8
17:05-17:10 HOUR	44.4	41.6
17:10-17:15 HOUR	43.2	41.2
17:15-17:20 HOUR	41.5	40.7
17:20-17:25 HOUR	44.6	40.8
17:25-17:30 HOUR	41.9	40.9
17:30-17:35 HOUR	42.0	41.0
17:35-17:40 HOUR	41.6	40.7
17:40-17:45 HOUR	41.1	40.4
17:45-17:50 HOUR	41.7	40.3
17:50-17:55 HOUR	43.7	40.8
17:55-18:00 HOUR	43.8	41.1
18:00-18:05 HOUR	43.8	40.9
18:05-18:10 HOUR	44.9	41.3
18:10-18:15 HOUR	43.9	41.3
18:15-18:20 HOUR	44.0	41.4
18:20-18:25 HOUR	43.8	41.7
18:25-18:30 HOUR	45.1	41.8
18:30-18:35 HOUR	43.4	41.5
18:35-18:40 HOUR	42.7	41.9
18:40-18:45 HOUR	43.0	41.7
18:45-18:50 HOUR	43.8	41.8
18:50-18:55 HOUR	43.2	40.4
18:55-19:00 HOUR	41.6	40.4
19:00-19:05 HOUR	43.4	40.6
19:05-19:10 HOUR	42.3	41.3
19:10-19:15 HOUR	43.0	41.3
19:15-19:20 HOUR	42.7	41.2
19:20-19:25 HOUR	42.3	40.9
19:25-19:30 HOUR	42.3	41.2
19:30-19:35 HOUR	44.9	41.1
19:35-19:40 HOUR	42.8	41.4
19:40-19:45 HOUR	44.7	41.6

TIME*	RESULT dB(A)	
	BAN KHAM YAI SCHOOL (N12)	
	OCTOBER 26 - 27, 2023	
	T23AV636-0002	
	L _{Aeq} 5 min	L _{A90} 5 min
19:45-19:50 HOUR	43.6	42.0
19:50-19:55 HOUR	42.7	41.6
19:55-20:00 HOUR	43.3	41.6
20:00-20:05 HOUR	43.0	41.2
20:05-20:10 HOUR	43.1	41.2
20:10-20:15 HOUR	43.2	40.9
20:15-20:20 HOUR	44.5	40.8
20:20-20:25 HOUR	45.3	42.0
20:25-20:30 HOUR	44.1	41.7
20:30-20:35 HOUR	43.0	41.2
20:35-20:40 HOUR	42.5	40.9
20:40-20:45 HOUR	42.1	41.1
20:45-20:50 HOUR	41.5	40.7
20:50-20:55 HOUR	43.0	40.3
20:55-21:00 HOUR	42.4	40.5
21:00-21:05 HOUR	43.1	41.4
21:05-21:10 HOUR	42.4	41.0
21:10-21:15 HOUR	41.1	40.3
21:15-21:20 HOUR	41.8	40.7
21:20-21:25 HOUR	41.7	41.0
21:25-21:30 HOUR	45.6	41.8
21:30-21:35 HOUR	42.6	41.4
21:35-21:40 HOUR	42.3	41.4
21:40-21:45 HOUR	44.0	41.2
21:45-21:50 HOUR	42.6	41.5
21:50-21:55 HOUR	41.9	41.2
21:55-22:00 HOUR	42.1	41.3
22:00-22:05 HOUR	41.7	41.1
22:05-22:10 HOUR	41.7	40.8
22:10-22:15 HOUR	43.6	41.2
22:15-22:20 HOUR	42.9	40.9
22:20-22:25 HOUR	48.7	42.3
22:25-22:30 HOUR	49.2	45.4
22:30-22:35 HOUR	49.3	45.0
22:35-22:40 HOUR	49.7	45.7
22:40-22:45 HOUR	49.9	45.1
22:45-22:50 HOUR	44.5	41.1
22:50-22:55 HOUR	46.9	41.7
22:55-23:00 HOUR	42.0	40.4
23:00-23:05 HOUR	42.0	40.2
23:05-23:10 HOUR	42.4	40.3
23:10-23:15 HOUR	40.6	39.7
23:15-23:20 HOUR	39.9	39.3
23:20-23:25 HOUR	41.1	39.7
23:25-23:30 HOUR	42.2	40.6
23:30-23:35 HOUR	42.2	41.1
23:35-23:40 HOUR	43.0	41.3
23:40-23:45 HOUR	42.0	41.2
23:45-23:50 HOUR	42.7	41.9
23:50-23:55 HOUR	43.0	41.7
23:55-00:00 HOUR	41.7	41.1

TIME*	RESULT dB(A)	
	BAN KHAM YAI SCHOOL (N12)	
	OCTOBER 26 - 27, 2023	
	T23AV636-0002	
	L _{Aeq} 5 min	L _{A90} 5 min
00:00-00:05 HOUR	41.8	40.8
00:05-00:10 HOUR	41.4	40.8
00:10-00:15 HOUR	42.9	41.2
00:15-00:20 HOUR	41.4	40.8
00:20-00:25 HOUR	41.5	40.9
00:25-00:30 HOUR	41.9	40.5
00:30-00:35 HOUR	42.2	40.9
00:35-00:40 HOUR	43.7	41.7
00:40-00:45 HOUR	42.1	40.1
00:45-00:50 HOUR	41.0	39.3
00:50-00:55 HOUR	42.4	40.2
00:55-01:00 HOUR	41.8	40.6
01:00-01:05 HOUR	42.1	40.0
01:05-01:10 HOUR	40.7	39.4
01:10-01:15 HOUR	41.1	39.6
01:15-01:20 HOUR	42.6	40.0
01:20-01:25 HOUR	41.6	39.7
01:25-01:30 HOUR	40.8	39.2
01:30-01:35 HOUR	41.6	39.6
01:35-01:40 HOUR	40.5	39.0
01:40-01:45 HOUR	40.4	39.6
01:45-01:50 HOUR	40.8	39.6
01:50-01:55 HOUR	40.7	39.4
01:55-02:00 HOUR	41.3	39.1
02:00-02:05 HOUR	41.6	39.9
02:05-02:10 HOUR	43.5	39.8
02:10-02:15 HOUR	44.7	41.7
02:15-02:20 HOUR	46.0	41.0
02:20-02:25 HOUR	49.9	42.9
02:25-02:30 HOUR	48.0	43.7
02:30-02:35 HOUR	49.2	42.5
02:35-02:40 HOUR	49.6	42.7
02:40-02:45 HOUR	50.5	44.0
02:45-02:50 HOUR	45.5	41.5
02:50-02:55 HOUR	47.8	41.0
02:55-03:00 HOUR	45.7	41.5
03:00-03:05 HOUR	45.3	41.5
03:05-03:10 HOUR	45.0	40.8
03:10-03:15 HOUR	46.9	42.0
03:15-03:20 HOUR	44.1	41.5
03:20-03:25 HOUR	45.4	41.6
03:25-03:30 HOUR	43.2	40.8
03:30-03:35 HOUR	47.7	40.9
03:35-03:40 HOUR	46.3	41.3
03:40-03:45 HOUR	48.6	42.5
03:45-03:50 HOUR	52.5	44.2
03:50-03:55 HOUR	46.0	41.9
03:55-04:00 HOUR	50.8	41.6
04:00-04:05 HOUR	48.2	42.3
04:05-04:10 HOUR	47.8	42.0
04:10-04:15 HOUR	48.8	43.3

TIME*	RESULT dB(A)	
	BAN KHAM YAI SCHOOL (N12)	
	OCTOBER 26 - 27, 2023	
	T23AV636-0002	
	L _{Aeq} 5 min	L _{A90} 5 min
04:15-04:20 HOUR	45.9	41.4
04:20-04:25 HOUR	47.4	42.4
04:25-04:30 HOUR	45.3	40.6
04:30-04:35 HOUR	46.4	41.5
04:35-04:40 HOUR	47.3	40.8
04:40-04:45 HOUR	49.1	41.3
04:45-04:50 HOUR	48.4	44.4
04:50-04:55 HOUR	48.1	42.5
04:55-05:00 HOUR	49.2	42.5
05:00-05:05 HOUR	46.5	41.7
05:05-05:10 HOUR	47.9	40.6
05:10-05:15 HOUR	48.2	40.8
05:15-05:20 HOUR	48.1	40.7
05:20-05:25 HOUR	49.3	40.6
05:25-05:30 HOUR	48.0	40.9
05:30-05:35 HOUR	43.0	39.1
05:35-05:40 HOUR	43.8	38.7
05:40-05:45 HOUR	43.2	39.3
05:45-05:50 HOUR	42.8	38.9
05:50-05:55 HOUR	41.8	38.2
05:55-06:00 HOUR	41.5	38.4
06:00-06:05 HOUR	42.2	38.3
06:05-06:10 HOUR	43.7	37.9
06:10-06:15 HOUR	43.1	38.1
06:15-06:20 HOUR	45.7	40.6
06:20-06:25 HOUR	45.2	42.1
06:25-06:30 HOUR	43.8	41.4
06:30-06:35 HOUR	45.0	39.3
06:35-06:40 HOUR	42.0	39.5
06:40-06:45 HOUR	42.3	40.2
06:45-06:50 HOUR	42.8	40.2
06:50-06:55 HOUR	46.8	40.2
06:55-07:00 HOUR	42.6	40.0

TIME*	RESULT dB(A)	
	BAN KHAM YAI SCHOOL (N12)	
	OCTOBER 27 - 28, 2023	
	T23AV636-0003	
	L _{Aeq} 5 min	L _{A90} 5 min
07:00-07:05 HOUR	42.1	39.5
07:05-07:10 HOUR	46.3	39.5
07:10-07:15 HOUR	45.3	40.3
07:15-07:20 HOUR	45.5	40.3
07:20-07:25 HOUR	43.2	39.8
07:25-07:30 HOUR	41.4	39.5
07:30-07:35 HOUR	47.8	40.3
07:35-07:40 HOUR	43.0	40.7
07:40-07:45 HOUR	42.1	39.9
07:45-07:50 HOUR	42.5	40.2
07:50-07:55 HOUR	43.8	40.4
07:55-08:00 HOUR	44.7	41.4
08:00-08:05 HOUR	45.4	41.7
08:05-08:10 HOUR	42.8	40.3
08:10-08:15 HOUR	42.3	39.9
08:15-08:20 HOUR	42.7	40.6
08:20-08:25 HOUR	41.7	39.9
08:25-08:30 HOUR	43.5	39.8
08:30-08:35 HOUR	46.5	40.6
08:35-08:40 HOUR	46.1	41.6
08:40-08:45 HOUR	47.9	41.5
08:45-08:50 HOUR	46.4	40.6
08:50-08:55 HOUR	43.3	40.0
08:55-09:00 HOUR	43.7	40.3
09:00-09:05 HOUR	45.3	40.3
09:05-09:10 HOUR	44.7	40.2
09:10-09:15 HOUR	42.8	39.9
09:15-09:20 HOUR	42.2	39.9
09:20-09:25 HOUR	45.3	42.0
09:25-09:30 HOUR	48.9	43.1
09:30-09:35 HOUR	47.2	42.5
09:35-09:40 HOUR	42.4	40.3
09:40-09:45 HOUR	43.7	41.4
09:45-09:50 HOUR	47.7	41.8
09:50-09:55 HOUR	43.3	40.8
09:55-10:00 HOUR	43.8	41.7
10:00-10:05 HOUR	44.1	41.5
10:05-10:10 HOUR	44.5	41.1
10:10-10:15 HOUR	44.2	41.0
10:15-10:20 HOUR	43.9	41.7
10:20-10:25 HOUR	44.6	41.6
10:25-10:30 HOUR	49.8	44.2
10:30-10:35 HOUR	53.2	43.8
10:35-10:40 HOUR	44.5	41.7
10:40-10:45 HOUR	44.6	41.5
10:45-10:50 HOUR	54.4	41.8
10:50-10:55 HOUR	45.7	42.6
10:55-11:00 HOUR	46.2	43.0
11:00-11:05 HOUR	49.0	42.2
11:05-11:10 HOUR	46.8	42.4
11:10-11:15 HOUR	46.7	41.8

TIME*	RESULT dB(A)	
	BAN KHAM YAI SCHOOL (N12)	
	OCTOBER 27 - 28, 2023	
	T23AV636-0003	
	L _{Aeq} 5 min	L _{A90} 5 min
11:15-11:20 HOUR	49.8	44.0
11:20-11:25 HOUR	46.8	42.5
11:25-11:30 HOUR	46.9	42.4
11:30-11:35 HOUR	45.8	42.7
11:35-11:40 HOUR	48.6	42.6
11:40-11:45 HOUR	48.6	42.5
11:45-11:50 HOUR	44.9	42.9
11:50-11:55 HOUR	51.3	42.8
11:55-12:00 HOUR	47.8	42.9
12:00-12:05 HOUR	50.9	43.8
12:05-12:10 HOUR	51.6	46.5
12:10-12:15 HOUR	50.9	44.7
12:15-12:20 HOUR	52.1	48.4
12:20-12:25 HOUR	51.0	44.5
12:25-12:30 HOUR	50.7	44.8
12:30-12:35 HOUR	49.0	45.4
12:35-12:40 HOUR	50.0	45.6
12:40-12:45 HOUR	47.8	45.0
12:45-12:50 HOUR	48.3	45.4
12:50-12:55 HOUR	50.6	45.1
12:55-13:00 HOUR	51.6	47.3
13:00-13:05 HOUR	53.2	45.6
13:05-13:10 HOUR	49.0	45.6
13:10-13:15 HOUR	48.7	44.8
13:15-13:20 HOUR	49.4	45.0
13:20-13:25 HOUR	48.3	45.0
13:25-13:30 HOUR	49.0	45.6
13:30-13:35 HOUR	52.7	46.8
13:35-13:40 HOUR	49.4	46.6
13:40-13:45 HOUR	54.7	50.4
13:45-13:50 HOUR	52.3	49.4
13:50-13:55 HOUR	47.9	45.8
13:55-14:00 HOUR	45.9	43.6
14:00-14:05 HOUR	47.4	42.4
14:05-14:10 HOUR	45.7	42.9
14:10-14:15 HOUR	46.1	43.6
14:15-14:20 HOUR	45.2	43.0
14:20-14:25 HOUR	49.8	43.5
14:25-14:30 HOUR	45.8	44.4
14:30-14:35 HOUR	47.5	46.0
14:35-14:40 HOUR	49.9	46.2
14:40-14:45 HOUR	49.4	46.3
14:45-14:50 HOUR	48.3	47.0
14:50-14:55 HOUR	49.6	47.0
14:55-15:00 HOUR	48.1	46.6
15:00-15:05 HOUR	48.2	46.5
15:05-15:10 HOUR	46.7	45.6
15:10-15:15 HOUR	46.6	45.8
15:15-15:20 HOUR	46.5	45.4
15:20-15:25 HOUR	46.9	45.8
15:25-15:30 HOUR	47.8	45.1

TIME*	RESULT dB(A)	
	BAN KHAM YAI SCHOOL (N12)	
	OCTOBER 27 - 28, 2023	
	T23AV636-0003	
	L _{Aeq} 5 min	L _{A90} 5 min
15:30-15:35 HOUR	46.8	45.5
15:35-15:40 HOUR	47.7	45.5
15:40-15:45 HOUR	47.9	46.0
15:45-15:50 HOUR	46.8	45.4
15:50-15:55 HOUR	46.2	44.8
15:55-16:00 HOUR	46.2	44.5
16:00-16:05 HOUR	47.2	45.6
16:05-16:10 HOUR	47.3	46.0
16:10-16:15 HOUR	47.6	46.2
16:15-16:20 HOUR	48.3	47.0
16:20-16:25 HOUR	47.6	45.5
16:25-16:30 HOUR	47.5	45.3
16:30-16:35 HOUR	46.7	45.2
16:35-16:40 HOUR	46.6	45.3
16:40-16:45 HOUR	47.6	45.7
16:45-16:50 HOUR	47.8	45.3
16:50-16:55 HOUR	47.8	46.0
16:55-17:00 HOUR	48.7	45.8
17:00-17:05 HOUR	48.4	46.1
17:05-17:10 HOUR	48.3	45.2
17:10-17:15 HOUR	47.2	45.1
17:15-17:20 HOUR	46.4	44.6
17:20-17:25 HOUR	46.8	45.1
17:25-17:30 HOUR	46.6	44.6
17:30-17:35 HOUR	47.5	45.6
17:35-17:40 HOUR	48.1	46.1
17:40-17:45 HOUR	46.7	44.8
17:45-17:50 HOUR	47.1	45.1
17:50-17:55 HOUR	46.2	44.3
17:55-18:00 HOUR	46.6	44.6
18:00-18:05 HOUR	47.2	45.2
18:05-18:10 HOUR	46.3	44.7
18:10-18:15 HOUR	46.9	45.3
18:15-18:20 HOUR	46.1	44.6
18:20-18:25 HOUR	46.7	45.1
18:25-18:30 HOUR	47.5	44.9
18:30-18:35 HOUR	46.7	45.2
18:35-18:40 HOUR	46.9	45.2
18:40-18:45 HOUR	46.8	44.9
18:45-18:50 HOUR	46.6	44.6
18:50-18:55 HOUR	45.7	44.5
18:55-19:00 HOUR	46.8	44.9
19:00-19:05 HOUR	46.8	45.2
19:05-19:10 HOUR	46.3	44.8
19:10-19:15 HOUR	46.9	45.4
19:15-19:20 HOUR	45.6	44.1
19:20-19:25 HOUR	45.7	43.7
19:25-19:30 HOUR	44.8	43.6
19:30-19:35 HOUR	44.9	44.0
19:35-19:40 HOUR	45.3	44.3
19:40-19:45 HOUR	46.5	44.9

TIME*	RESULT dB(A)	
	BAN KHAM YAI SCHOOL (N12)	
	OCTOBER 27 - 28, 2023	
	T23AV636-0003	
	L _{Aeq} 5 min	L _{A90} 5 min
19:45-19:50 HOUR	45.6	43.8
19:50-19:55 HOUR	44.6	43.7
19:55-20:00 HOUR	45.7	44.1
20:00-20:05 HOUR	50.2	44.6
20:05-20:10 HOUR	48.6	44.2
20:10-20:15 HOUR	46.0	44.3
20:15-20:20 HOUR	45.7	44.2
20:20-20:25 HOUR	45.0	43.3
20:25-20:30 HOUR	45.5	43.1
20:30-20:35 HOUR	44.2	43.1
20:35-20:40 HOUR	44.8	43.5
20:40-20:45 HOUR	45.9	44.0
20:45-20:50 HOUR	44.2	43.1
20:50-20:55 HOUR	44.7	43.3
20:55-21:00 HOUR	43.2	42.2
21:00-21:05 HOUR	43.4	42.4
21:05-21:10 HOUR	45.7	43.6
21:10-21:15 HOUR	45.1	43.0
21:15-21:20 HOUR	45.4	43.4
21:20-21:25 HOUR	44.4	42.7
21:25-21:30 HOUR	43.2	42.1
21:30-21:35 HOUR	45.3	43.4
21:35-21:40 HOUR	45.3	43.1
21:40-21:45 HOUR	44.9	42.4
21:45-21:50 HOUR	43.6	42.4
21:50-21:55 HOUR	45.5	42.9
21:55-22:00 HOUR	45.6	43.6
22:00-22:05 HOUR	44.8	42.6
22:05-22:10 HOUR	43.7	42.2
22:10-22:15 HOUR	45.7	43.1
22:15-22:20 HOUR	46.4	44.5
22:20-22:25 HOUR	45.1	43.5
22:25-22:30 HOUR	45.9	44.0
22:30-22:35 HOUR	45.9	44.1
22:35-22:40 HOUR	46.3	44.2
22:40-22:45 HOUR	48.0	43.7
22:45-22:50 HOUR	50.0	46.2
22:50-22:55 HOUR	46.8	45.0
22:55-23:00 HOUR	46.1	43.9
23:00-23:05 HOUR	45.1	43.0
23:05-23:10 HOUR	44.9	43.1
23:10-23:15 HOUR	44.6	42.8
23:15-23:20 HOUR	46.5	42.7
23:20-23:25 HOUR	46.1	44.2
23:25-23:30 HOUR	46.1	44.4
23:30-23:35 HOUR	46.6	44.9
23:35-23:40 HOUR	45.8	43.5
23:40-23:45 HOUR	45.7	43.5
23:45-23:50 HOUR	46.6	44.7
23:50-23:55 HOUR	46.0	44.0
23:55-00:00 HOUR	46.5	44.8

TIME*	RESULT dB(A)	
	BAN KHAM YAI SCHOOL (N12)	
	OCTOBER 27 - 28, 2023	
	T23AV636-0003	
	L _{Aeq} 5 min	L _{A90} 5 min
00:00-00:05 HOUR	46.1	44.0
00:05-00:10 HOUR	46.5	44.5
00:10-00:15 HOUR	46.1	44.3
00:15-00:20 HOUR	46.4	44.8
00:20-00:25 HOUR	46.6	44.7
00:25-00:30 HOUR	47.1	44.9
00:30-00:35 HOUR	45.1	43.3
00:35-00:40 HOUR	45.6	43.3
00:40-00:45 HOUR	45.7	43.6
00:45-00:50 HOUR	44.2	42.3
00:50-00:55 HOUR	45.1	42.5
00:55-01:00 HOUR	45.8	43.7
01:00-01:05 HOUR	45.8	43.7
01:05-01:10 HOUR	45.5	43.1
01:10-01:15 HOUR	45.8	43.2
01:15-01:20 HOUR	45.8	43.5
01:20-01:25 HOUR	45.6	43.4
01:25-01:30 HOUR	45.1	42.7
01:30-01:35 HOUR	45.4	43.2
01:35-01:40 HOUR	45.9	43.8
01:40-01:45 HOUR	46.5	44.3
01:45-01:50 HOUR	45.5	43.3
01:50-01:55 HOUR	45.2	42.9
01:55-02:00 HOUR	45.4	43.4
02:00-02:05 HOUR	45.8	43.2
02:05-02:10 HOUR	46.0	44.3
02:10-02:15 HOUR	47.1	45.0
02:15-02:20 HOUR	49.0	45.5
02:20-02:25 HOUR	48.5	45.6
02:25-02:30 HOUR	49.6	46.4
02:30-02:35 HOUR	49.4	45.4
02:35-02:40 HOUR	50.4	46.6
02:40-02:45 HOUR	49.1	45.8
02:45-02:50 HOUR	48.9	44.5
02:50-02:55 HOUR	49.4	45.5
02:55-03:00 HOUR	50.5	45.9
03:00-03:05 HOUR	49.4	45.4
03:05-03:10 HOUR	49.4	46.1
03:10-03:15 HOUR	49.4	46.7
03:15-03:20 HOUR	50.3	45.9
03:20-03:25 HOUR	47.6	45.4
03:25-03:30 HOUR	48.8	44.2
03:30-03:35 HOUR	50.6	44.3
03:35-03:40 HOUR	50.5	45.9
03:40-03:45 HOUR	48.1	45.4
03:45-03:50 HOUR	50.1	45.1
03:50-03:55 HOUR	47.9	45.2
03:55-04:00 HOUR	48.2	45.5
04:00-04:05 HOUR	48.8	44.4
04:05-04:10 HOUR	49.8	45.3
04:10-04:15 HOUR	49.7	44.4

TIME*	RESULT dB(A)	
	BAN KHAM YAI SCHOOL (N12)	
	OCTOBER 27 - 28, 2023	
	T23AV636-0003	
	L _{Aeq} 5 min	L _{A90} 5 min
04:15-04:20 HOUR	47.9	44.3
04:20-04:25 HOUR	48.5	44.5
04:25-04:30 HOUR	51.3	44.9
04:30-04:35 HOUR	49.6	45.1
04:35-04:40 HOUR	47.1	44.0
04:40-04:45 HOUR	47.2	43.9
04:45-04:50 HOUR	46.0	43.8
04:50-04:55 HOUR	48.2	44.2
04:55-05:00 HOUR	45.5	43.5
05:00-05:05 HOUR	46.4	43.5
05:05-05:10 HOUR	47.9	42.7
05:10-05:15 HOUR	45.7	42.7
05:15-05:20 HOUR	45.1	42.3
05:20-05:25 HOUR	46.7	43.3
05:25-05:30 HOUR	46.6	42.8
05:30-05:35 HOUR	49.2	41.7
05:35-05:40 HOUR	48.7	42.8
05:40-05:45 HOUR	46.7	41.8
05:45-05:50 HOUR	46.2	41.0
05:50-05:55 HOUR	47.7	42.3
05:55-06:00 HOUR	46.3	41.1
06:00-06:05 HOUR	50.2	40.9
06:05-06:10 HOUR	50.1	42.5
06:10-06:15 HOUR	50.7	43.5
06:15-06:20 HOUR	46.5	42.8
06:20-06:25 HOUR	49.4	42.5
06:25-06:30 HOUR	43.5	41.2
06:30-06:35 HOUR	43.6	41.8
06:35-06:40 HOUR	44.2	39.5
06:40-06:45 HOUR	42.8	39.5
06:45-06:50 HOUR	49.4	40.4
06:50-06:55 HOUR	48.1	40.3
06:55-07:00 HOUR	43.8	38.7

(MR SILA BANDONGJAIKUK)
LABORATORY SUPERVISOR

NOVEMBER 8, 2023

ANALYSIS REPORT

PROJECT NAME	: EIA COMPLIANCE AUDIT AND MONITORING OF SPH DEVELOPMENT DRILLING CAMPAIGN 2023 (WELLPAD C)	RECEIVED DATE	: OCTOBER 25-28, 2023
CUSTOMER NAME	: PTTEP SP LIMITED	ANALYTICAL DATE	: OCTOBER 25-28, 2023
ADDRESS	: 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD CHATUCHAK CHATUCHAK BANGKOK 10900	REPORT NO.	: 2023-U095726
CONTACT INFORMATION	: TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com	WORK NO.	: 2019-001655
MEASURING SOURCE	: BOUNDARY OF GPP (N13)	ANALYSIS NO.	: T23AV636-0004 - T23AV636-0006
MEASURING TYPE	: AMBIENT (NOISE)		
MEASURING DATE	: OCTOBER 25-28, 2023		
MEASURING TIME	: *		
MEASURING METHOD	: INTEGRATED SOUND LEVEL METER		
MEASURED BY	: MR SURIYAN NITHICHERDCHOOWONG		

TIME*	RESULT dB(A)		
	BOUNDARY OF GPP (N13)		
	OCTOBER 25 - 26, 2023		
	T23AV636-0004		
	L _{Aeq} 1 hour	L _{Amax} 1 hour	L _{A90} 1 hour
07:00-08:00 HOUR	51.4	71.8	49.2
08:00-09:00 HOUR	50.4	60.2	48.6
09:00-10:00 HOUR	49.8	72.0	48.4
10:00-11:00 HOUR	49.5	62.6	48.0
11:00-12:00 HOUR	49.3	62.6	47.8
12:00-13:00 HOUR	48.8	73.8	46.8
13:00-14:00 HOUR	48.6	59.5	46.9
14:00-15:00 HOUR	49.8	63.2	47.2
15:00-16:00 HOUR	49.3	62.1	47.0
16:00-17:00 HOUR	50.5	64.8	47.5
17:00-18:00 HOUR	52.9	62.3	51.2
18:00-19:00 HOUR	51.2	62.0	49.2
19:00-20:00 HOUR	50.3	60.6	48.3
20:00-21:00 HOUR	49.3	60.1	46.8
21:00-22:00 HOUR	49.0	62.2	47.1
22:00-23:00 HOUR	47.8	60.5	46.4
23:00-00:00 HOUR	48.8	61.1	47.6
00:00-01:00 HOUR	48.4	57.8	47.5
01:00-02:00 HOUR	47.6	59.1	46.8
02:00-03:00 HOUR	47.5	58.5	46.7
03:00-04:00 HOUR	48.5	60.0	47.4
04:00-05:00 HOUR	49.9	61.3	48.9
05:00-06:00 HOUR	52.0	71.2	50.5
06:00-07:00 HOUR	49.9	62.8	48.0
L _{Aeq} 24 hours		49.8	
L _{Adn}		55.7	



TIME*	RESULT dB(A)		
	BOUNDARY OF GPP (N13)		
	OCTOBER 26 - 27, 2023		
	T23AV636-0005		
	L _{Aeq} 1 hour	L _{Amax} 1 hour	L _{A90} 1 hour
07:00-08:00 HOUR	51.2	73.5	48.5
08:00-09:00 HOUR	57.7	74.8	47.9
09:00-10:00 HOUR	61.0	71.2	60.3
10:00-11:00 HOUR	58.4	66.9	55.9
11:00-12:00 HOUR	60.0	69.5	56.4
12:00-13:00 HOUR	57.9	63.9	55.4
13:00-14:00 HOUR	54.1	86.0	47.2
14:00-15:00 HOUR	49.4	67.3	47.0
15:00-16:00 HOUR	51.2	66.6	48.3
16:00-17:00 HOUR	51.0	68.1	48.4
17:00-18:00 HOUR	53.4	64.9	50.5
18:00-19:00 HOUR	50.1	64.7	48.2
19:00-20:00 HOUR	49.6	60.8	48.3
20:00-21:00 HOUR	49.8	60.9	48.3
21:00-22:00 HOUR	49.5	56.4	48.1
22:00-23:00 HOUR	49.1	69.4	47.5
23:00-00:00 HOUR	48.5	57.4	47.6
00:00-01:00 HOUR	48.5	58.1	47.5
01:00-02:00 HOUR	48.1	63.0	47.2
02:00-03:00 HOUR	48.0	55.3	47.3
03:00-04:00 HOUR	49.4	63.4	47.9
04:00-05:00 HOUR	50.1	68.7	48.7
05:00-06:00 HOUR	51.6	68.4	50.3
06:00-07:00 HOUR	50.4	63.6	48.8
L _{Aeq} 24 hours		54.2	
L _{Adn}		57.5	

TIME*	RESULT dB(A)		
	BOUNDARY OF GPP (N13)		
	OCTOBER 27 - 28, 2023		
	T23AV636-0006		
	L _{Aeq} 1 hour	L _{Amax} 1 hour	L _{A90} 1 hour
07:00-08:00 HOUR	56.9	96.3	48.7
08:00-09:00 HOUR	57.4	70.4	48.8
09:00-10:00 HOUR	58.1	66.5	56.3
10:00-11:00 HOUR	54.2	72.1	46.6
11:00-12:00 HOUR	49.7	64.8	47.1
12:00-13:00 HOUR	48.8	58.6	46.4
13:00-14:00 HOUR	56.9	69.7	52.0
14:00-15:00 HOUR	58.5	66.9	56.5
15:00-16:00 HOUR	51.1	66.9	47.5
16:00-17:00 HOUR	50.8	62.8	48.1
17:00-18:00 HOUR	52.1	64.9	50.8
18:00-19:00 HOUR	50.7	62.2	49.3
19:00-20:00 HOUR	50.6	60.0	49.4
20:00-21:00 HOUR	51.1	60.5	49.5
21:00-22:00 HOUR	49.8	54.9	48.7
22:00-23:00 HOUR	49.0	58.6	47.9
23:00-00:00 HOUR	48.2	60.0	47.1
00:00-01:00 HOUR	48.2	64.4	47.2
01:00-02:00 HOUR	47.7	58.1	46.8
02:00-03:00 HOUR	47.3	56.0	46.1
03:00-04:00 HOUR	49.0	63.2	46.5
04:00-05:00 HOUR	50.1	69.7	48.4
05:00-06:00 HOUR	52.4	73.5	50.4
06:00-07:00 HOUR	50.1	63.2	47.8
L _{Aeq} 24 hours		53.1	
L _{Adn}		57.0	

(MR SILA BANJONGJAIKUK)
LABORATORY SUPERVISOR

NOVEMBER 8, 2023

ANALYSIS REPORT

PROJECT NAME	: EIA COMPLIANCE AUDIT AND MONITORING OF SPH DEVELOPMENT DRILLING CAMPAIGN 2023 (WELLPAD C)	RECEIVED DATE	: OCTOBER 25-28, 2023
CUSTOMER NAME	: PTTEP SP LIMITED	ANALYTICAL DATE	: OCTOBER 25-28, 2023
ADDRESS	: 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD CHATUCHAK CHATUCHAK BANGKOK 10900	REPORT NO.	: 2023-U095724
CONTACT INFORMATION	: TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com	WORK NO.	: 2019-001655
MEASURING SOURCE	: BOUNDARY OF GPP (N13)	ANALYSIS NO.	: T23AV636-0004 - T23AV636-0006
MEASURING TYPE	: AMBIENT (NOISE)		
MEASURING DATE	: OCTOBER 25-28, 2023		
MEASURING TIME	: *		
MEASURING METHOD	: INTEGRATED SOUND LEVEL METER		
MEASURED BY	: MR SURIYAN NITHICHERDCHOOWONG		

TIME*	RESULT dB(A)	
	BOUNDARY OF GPP (N13)	
	T23AV636-0004	
	L _{Aeq} 5 min	L _{A90} 5 min
07:00-07:05 HOUR	50.8	49.1
07:05-07:10 HOUR	50.2	48.8
07:10-07:15 HOUR	51.0	49.4
07:15-07:20 HOUR	51.3	49.3
07:20-07:25 HOUR	51.8	49.3
07:25-07:30 HOUR	54.0	48.9
07:30-07:35 HOUR	51.8	49.2
07:35-07:40 HOUR	50.9	48.7
07:40-07:45 HOUR	51.2	49.5
07:45-07:50 HOUR	51.4	49.4
07:50-07:55 HOUR	50.7	49.2
07:55-08:00 HOUR	50.3	48.5
08:00-08:05 HOUR	50.7	48.3
08:05-08:10 HOUR	50.3	48.6
08:10-08:15 HOUR	49.8	48.1
08:15-08:20 HOUR	51.0	48.7
08:20-08:25 HOUR	49.9	48.5
08:25-08:30 HOUR	50.4	48.6
08:30-08:35 HOUR	50.8	48.8
08:35-08:40 HOUR	50.9	48.7
08:40-08:45 HOUR	50.7	49.0
08:45-08:50 HOUR	50.1	48.9
08:50-08:55 HOUR	49.6	48.1
08:55-09:00 HOUR	50.8	48.5
09:00-09:05 HOUR	49.2	47.4
09:05-09:10 HOUR	49.0	47.6
09:10-09:15 HOUR	49.3	48.2
09:15-09:20 HOUR	49.9	48.4
09:20-09:25 HOUR	50.3	49.2
09:25-09:30 HOUR	49.6	48.5
09:30-09:35 HOUR	50.5	48.7
09:35-09:40 HOUR	50.6	48.4
09:40-09:45 HOUR	49.8	48.5
09:45-09:50 HOUR	50.8	49.3
09:50-09:55 HOUR	49.5	48.1
09:55-10:00 HOUR	49.0	47.5
10:00-10:05 HOUR	49.2	48.0
10:05-10:10 HOUR	48.6	47.3



TIME*	RESULT dB(A)	
	BOUNDARY OF GPP (N13)	
	T23AV636-0004	
	L _{Aeq} 5 min	L _{A90} 5 min
10:10-10:15 HOUR	49.7	47.7
10:15-10:20 HOUR	48.9	47.8
10:20-10:25 HOUR	49.1	47.7
10:25-10:30 HOUR	49.2	48.2
10:30-10:35 HOUR	49.3	48.0
10:35-10:40 HOUR	50.3	48.2
10:40-10:45 HOUR	49.9	48.2
10:45-10:50 HOUR	50.2	48.2
10:50-10:55 HOUR	49.6	48.2
10:55-11:00 HOUR	49.6	47.8
11:00-11:05 HOUR	49.7	47.8
11:05-11:10 HOUR	49.6	48.1
11:10-11:15 HOUR	49.0	47.9
11:15-11:20 HOUR	49.0	47.2
11:20-11:25 HOUR	49.7	47.8
11:25-11:30 HOUR	49.4	47.7
11:30-11:35 HOUR	49.5	47.9
11:35-11:40 HOUR	49.4	48.0
11:40-11:45 HOUR	49.7	48.1
11:45-11:50 HOUR	49.5	47.5
11:50-11:55 HOUR	48.0	46.5
11:55-12:00 HOUR	48.2	46.5
12:00-12:05 HOUR	48.1	46.6
12:05-12:10 HOUR	48.8	46.9
12:10-12:15 HOUR	48.7	47.0
12:15-12:20 HOUR	49.0	46.9
12:20-12:25 HOUR	48.7	46.7
12:25-12:30 HOUR	48.3	46.7
12:30-12:35 HOUR	48.4	46.9
12:35-12:40 HOUR	49.0	47.2
12:40-12:45 HOUR	48.8	47.2
12:45-12:50 HOUR	48.8	46.5
12:50-12:55 HOUR	50.1	46.6
12:55-13:00 HOUR	48.6	46.6
13:00-13:05 HOUR	48.1	46.4
13:05-13:10 HOUR	48.1	46.8
13:10-13:15 HOUR	48.6	47.2
13:15-13:20 HOUR	48.8	47.4
13:20-13:25 HOUR	47.8	46.2
13:25-13:30 HOUR	48.8	47.0
13:30-13:35 HOUR	48.6	47.1
13:35-13:40 HOUR	48.9	46.7
13:40-13:45 HOUR	48.7	47.1
13:45-13:50 HOUR	49.2	47.3
13:50-13:55 HOUR	48.5	46.5
13:55-14:00 HOUR	49.3	46.5
14:00-14:05 HOUR	50.0	46.9
14:05-14:10 HOUR	49.0	47.1
14:10-14:15 HOUR	49.8	47.5
14:15-14:20 HOUR	50.9	48.0
14:20-14:25 HOUR	50.4	48.5

TIME*	RESULT dB(A)	
	BOUNDARY OF GPP (N13)	
	T23AV636-0004	
	L _{Aeq} 5 min	L _{A90} 5 min
14:25-14:30 HOUR	49.1	46.9
14:30-14:35 HOUR	48.8	47.0
14:35-14:40 HOUR	50.3	47.6
14:40-14:45 HOUR	49.6	47.3
14:45-14:50 HOUR	49.1	46.9
14:50-14:55 HOUR	49.1	46.9
14:55-15:00 HOUR	50.4	47.5
15:00-15:05 HOUR	50.4	46.9
15:05-15:10 HOUR	48.5	47.0
15:10-15:15 HOUR	49.1	47.3
15:15-15:20 HOUR	49.5	46.8
15:20-15:25 HOUR	49.1	46.9
15:25-15:30 HOUR	49.1	47.7
15:30-15:35 HOUR	49.9	47.2
15:35-15:40 HOUR	48.8	46.5
15:40-15:45 HOUR	50.4	48.3
15:45-15:50 HOUR	48.7	46.3
15:50-15:55 HOUR	48.9	47.3
15:55-16:00 HOUR	48.8	46.8
16:00-16:05 HOUR	50.1	47.5
16:05-16:10 HOUR	50.3	47.3
16:10-16:15 HOUR	50.4	47.6
16:15-16:20 HOUR	49.9	46.9
16:20-16:25 HOUR	49.8	47.4
16:25-16:30 HOUR	51.3	48.0
16:30-16:35 HOUR	50.9	47.3
16:35-16:40 HOUR	51.0	47.1
16:40-16:45 HOUR	50.5	48.0
16:45-16:50 HOUR	50.8	49.1
16:50-16:55 HOUR	49.8	47.4
16:55-17:00 HOUR	50.3	47.9
17:00-17:05 HOUR	51.5	48.6
17:05-17:10 HOUR	51.2	48.6
17:10-17:15 HOUR	51.3	49.4
17:15-17:20 HOUR	53.3	51.3
17:20-17:25 HOUR	53.7	52.2
17:25-17:30 HOUR	54.4	52.3
17:30-17:35 HOUR	53.8	52.3
17:35-17:40 HOUR	53.3	52.4
17:40-17:45 HOUR	53.7	52.2
17:45-17:50 HOUR	52.5	51.1
17:50-17:55 HOUR	52.4	50.9
17:55-18:00 HOUR	52.0	50.5
18:00-18:05 HOUR	51.6	50.3
18:05-18:10 HOUR	51.8	50.1
18:10-18:15 HOUR	51.5	49.8
18:15-18:20 HOUR	51.5	49.2
18:20-18:25 HOUR	51.5	50.0
18:25-18:30 HOUR	50.4	48.8
18:30-18:35 HOUR	51.5	49.0
18:35-18:40 HOUR	50.6	48.7

TIME*	RESULT dB(A)	
	BOUNDARY OF GPP (N13)	
	T23AV636-0004	
	L _{Aeq} 5 min	L _{A90} 5 min
18:40-18:45 HOUR	50.7	48.9
18:45-18:50 HOUR	51.4	49.6
18:50-18:55 HOUR	51.4	49.1
18:55-19:00 HOUR	50.3	47.6
19:00-19:05 HOUR	50.3	48.4
19:05-19:10 HOUR	50.4	48.9
19:10-19:15 HOUR	49.7	48.2
19:15-19:20 HOUR	49.9	48.0
19:20-19:25 HOUR	50.3	48.8
19:25-19:30 HOUR	49.6	47.3
19:30-19:35 HOUR	50.7	48.8
19:35-19:40 HOUR	50.4	48.3
19:40-19:45 HOUR	50.5	48.8
19:45-19:50 HOUR	50.7	48.0
19:50-19:55 HOUR	49.9	47.9
19:55-20:00 HOUR	50.5	46.7
20:00-20:05 HOUR	49.4	47.0
20:05-20:10 HOUR	48.9	46.8
20:10-20:15 HOUR	49.3	46.7
20:15-20:20 HOUR	49.2	47.1
20:20-20:25 HOUR	49.3	46.8
20:25-20:30 HOUR	49.0	47.4
20:30-20:35 HOUR	49.9	47.4
20:35-20:40 HOUR	50.6	46.6
20:40-20:45 HOUR	48.9	46.4
20:45-20:50 HOUR	48.6	46.5
20:50-20:55 HOUR	49.3	47.0
20:55-21:00 HOUR	48.1	46.4
21:00-21:05 HOUR	47.4	46.4
21:05-21:10 HOUR	48.2	46.2
21:10-21:15 HOUR	48.1	46.7
21:15-21:20 HOUR	48.9	47.1
21:20-21:25 HOUR	50.2	48.4
21:25-21:30 HOUR	49.7	47.7
21:30-21:35 HOUR	48.5	47.0
21:35-21:40 HOUR	49.4	47.1
21:40-21:45 HOUR	49.7	48.1
21:45-21:50 HOUR	48.2	47.1
21:50-21:55 HOUR	48.5	47.3
21:55-22:00 HOUR	50.5	47.3
22:00-22:05 HOUR	48.3	46.9
22:05-22:10 HOUR	47.6	46.3
22:10-22:15 HOUR	48.4	47.0
22:15-22:20 HOUR	48.0	47.0
22:20-22:25 HOUR	48.1	46.7
22:25-22:30 HOUR	47.0	46.4
22:30-22:35 HOUR	48.1	46.6
22:35-22:40 HOUR	47.7	45.6
22:40-22:45 HOUR	46.5	45.4
22:45-22:50 HOUR	47.5	46.0
22:50-22:55 HOUR	47.4	46.2

TIME*	RESULT dB(A)	
	BOUNDARY OF GPP (N13)	
	T23AV636-0004	
	L _{Aeq} 5 min	L _{A90} 5 min
22:55-23:00 HOUR	48.5	46.3
23:00-23:05 HOUR	48.5	47.1
23:05-23:10 HOUR	48.2	47.5
23:10-23:15 HOUR	48.2	47.6
23:15-23:20 HOUR	49.2	47.1
23:20-23:25 HOUR	48.7	47.3
23:25-23:30 HOUR	48.8	47.6
23:30-23:35 HOUR	49.4	48.1
23:35-23:40 HOUR	48.9	48.0
23:40-23:45 HOUR	49.4	47.7
23:45-23:50 HOUR	48.5	47.4
23:50-23:55 HOUR	49.1	47.4
23:55-00:00 HOUR	48.4	47.6
00:00-00:05 HOUR	48.3	47.8
00:05-00:10 HOUR	49.4	47.5
00:10-00:15 HOUR	49.1	47.9
00:15-00:20 HOUR	48.4	47.5
00:20-00:25 HOUR	48.4	47.8
00:25-00:30 HOUR	49.0	48.0
00:30-00:35 HOUR	48.1	47.4
00:35-00:40 HOUR	47.5	46.9
00:40-00:45 HOUR	48.1	47.0
00:45-00:50 HOUR	49.3	47.4
00:50-00:55 HOUR	47.9	47.0
00:55-01:00 HOUR	47.3	46.9
01:00-01:05 HOUR	47.9	47.0
01:05-01:10 HOUR	46.8	46.3
01:10-01:15 HOUR	48.6	46.5
01:15-01:20 HOUR	47.2	46.8
01:20-01:25 HOUR	47.0	46.4
01:25-01:30 HOUR	47.3	46.5
01:30-01:35 HOUR	48.0	47.2
01:35-01:40 HOUR	48.0	47.0
01:40-01:45 HOUR	47.8	46.8
01:45-01:50 HOUR	47.6	46.8
01:50-01:55 HOUR	47.3	46.8
01:55-02:00 HOUR	47.3	46.8
02:00-02:05 HOUR	47.4	46.8
02:05-02:10 HOUR	47.8	46.7
02:10-02:15 HOUR	47.4	46.7
02:15-02:20 HOUR	48.0	47.2
02:20-02:25 HOUR	47.3	46.8
02:25-02:30 HOUR	48.3	47.4
02:30-02:35 HOUR	47.8	47.0
02:35-02:40 HOUR	46.6	46.0
02:40-02:45 HOUR	47.0	46.5
02:45-02:50 HOUR	48.0	45.5
02:50-02:55 HOUR	47.1	45.4
02:55-03:00 HOUR	46.4	45.7
03:00-03:05 HOUR	47.2	45.8
03:05-03:10 HOUR	46.9	45.9

TIME*	RESULT dB(A)	
	BOUNDARY OF GPP (N13)	
	T23AV636-0004	
	L _{Aeq} 5 min	L _{A90} 5 min
03:10-03:15 HOUR	47.3	46.6
03:15-03:20 HOUR	47.9	46.9
03:20-03:25 HOUR	49.4	47.2
03:25-03:30 HOUR	48.0	47.3
03:30-03:35 HOUR	49.2	48.1
03:35-03:40 HOUR	49.0	48.0
03:40-03:45 HOUR	48.7	47.5
03:45-03:50 HOUR	48.5	47.5
03:50-03:55 HOUR	48.9	47.6
03:55-04:00 HOUR	49.5	47.4
04:00-04:05 HOUR	48.4	47.6
04:05-04:10 HOUR	49.4	48.0
04:10-04:15 HOUR	49.4	48.2
04:15-04:20 HOUR	49.2	47.9
04:20-04:25 HOUR	49.5	48.3
04:25-04:30 HOUR	50.3	48.8
04:30-04:35 HOUR	49.9	48.9
04:35-04:40 HOUR	50.2	49.2
04:40-04:45 HOUR	50.4	49.4
04:45-04:50 HOUR	50.4	49.2
04:50-04:55 HOUR	50.1	49.1
04:55-05:00 HOUR	50.6	49.5
05:00-05:05 HOUR	51.5	50.0
05:05-05:10 HOUR	51.1	50.0
05:10-05:15 HOUR	51.6	50.1
05:15-05:20 HOUR	51.8	50.4
05:20-05:25 HOUR	53.2	51.2
05:25-05:30 HOUR	52.1	50.4
05:30-05:35 HOUR	52.0	51.1
05:35-05:40 HOUR	51.6	50.2
05:40-05:45 HOUR	51.8	50.8
05:45-05:50 HOUR	52.4	51.1
05:50-05:55 HOUR	52.5	51.5
05:55-06:00 HOUR	51.5	50.6
06:00-06:05 HOUR	50.1	49.2
06:05-06:10 HOUR	50.8	49.1
06:10-06:15 HOUR	50.3	48.3
06:15-06:20 HOUR	49.1	47.6
06:20-06:25 HOUR	49.9	47.7
06:25-06:30 HOUR	49.9	48.3
06:30-06:35 HOUR	50.2	48.2
06:35-06:40 HOUR	50.2	48.4
06:40-06:45 HOUR	49.8	47.8
06:45-06:50 HOUR	49.1	47.1
06:50-06:55 HOUR	49.7	47.1
06:55-07:00 HOUR	49.2	47.0

TIME*	RESULT dB(A)	
	BOUNDARY OF GPP (N13)	
	T23AV636-0005	
	L _{Aeq} 5 min	L _{A90} 5 min
07:00-07:05 HOUR	48.5	46.4
07:05-07:10 HOUR	50.5	47.8
07:10-07:15 HOUR	50.2	47.6
07:15-07:20 HOUR	51.6	48.5
07:20-07:25 HOUR	52.0	48.6
07:25-07:30 HOUR	51.5	48.6
07:30-07:35 HOUR	50.9	47.6
07:35-07:40 HOUR	51.2	48.7
07:40-07:45 HOUR	51.2	48.4
07:45-07:50 HOUR	52.7	49.0
07:50-07:55 HOUR	51.5	48.7
07:55-08:00 HOUR	51.2	47.6
08:00-08:05 HOUR	51.0	47.2
08:05-08:10 HOUR	50.5	47.6
08:10-08:15 HOUR	53.8	46.3
08:15-08:20 HOUR	50.4	47.5
08:20-08:25 HOUR	51.0	47.3
08:25-08:30 HOUR	51.4	48.2
08:30-08:35 HOUR	49.8	47.4
08:35-08:40 HOUR	57.3	48.3
08:40-08:45 HOUR	61.4	60.5
08:45-08:50 HOUR	61.5	60.6
08:50-08:55 HOUR	61.5	60.7
08:55-09:00 HOUR	61.4	60.7
09:00-09:05 HOUR	61.4	60.6
09:05-09:10 HOUR	61.3	60.5
09:10-09:15 HOUR	61.3	60.4
09:15-09:20 HOUR	61.2	60.4
09:20-09:25 HOUR	61.1	60.2
09:25-09:30 HOUR	60.8	60.1
09:30-09:35 HOUR	60.7	59.9
09:35-09:40 HOUR	60.8	60.0
09:40-09:45 HOUR	60.9	60.1
09:45-09:50 HOUR	61.1	60.3
09:50-09:55 HOUR	61.1	60.3
09:55-10:00 HOUR	60.1	56.6
10:00-10:05 HOUR	57.8	55.8
10:05-10:10 HOUR	59.9	56.8
10:10-10:15 HOUR	58.3	56.0
10:15-10:20 HOUR	58.3	56.1
10:20-10:25 HOUR	58.5	55.7
10:25-10:30 HOUR	57.8	55.8
10:30-10:35 HOUR	58.6	55.9
10:35-10:40 HOUR	58.0	55.8
10:40-10:45 HOUR	59.2	56.2
10:45-10:50 HOUR	57.9	55.7
10:50-10:55 HOUR	58.8	55.9
10:55-11:00 HOUR	57.7	55.6
11:00-11:05 HOUR	58.1	56.0
11:05-11:10 HOUR	59.1	56.0
11:10-11:15 HOUR	57.7	55.6

TIME*	RESULT dB(A)	
	BOUNDARY OF GPP (N13)	
	T23AV636-0005	
	L _{Aeq} 5 min	L _{A90} 5 min
11:15-11:20 HOUR	60.2	56.7
11:20-11:25 HOUR	61.5	60.5
11:25-11:30 HOUR	62.1	60.9
11:30-11:35 HOUR	61.2	60.4
11:35-11:40 HOUR	61.5	60.7
11:40-11:45 HOUR	61.4	60.6
11:45-11:50 HOUR	59.3	55.8
11:50-11:55 HOUR	57.2	55.0
11:55-12:00 HOUR	57.0	54.9
12:00-12:05 HOUR	58.1	55.4
12:05-12:10 HOUR	58.3	55.4
12:10-12:15 HOUR	57.0	55.1
12:15-12:20 HOUR	57.4	55.5
12:20-12:25 HOUR	59.2	56.3
12:25-12:30 HOUR	57.8	55.6
12:30-12:35 HOUR	57.8	55.9
12:35-12:40 HOUR	57.7	55.8
12:40-12:45 HOUR	58.5	55.1
12:45-12:50 HOUR	57.1	55.1
12:50-12:55 HOUR	57.0	55.1
12:55-13:00 HOUR	58.0	55.3
13:00-13:05 HOUR	49.9	46.5
13:05-13:10 HOUR	48.3	46.8
13:10-13:15 HOUR	62.5	50.1
13:15-13:20 HOUR	55.4	46.6
13:20-13:25 HOUR	49.8	47.2
13:25-13:30 HOUR	49.0	47.2
13:30-13:35 HOUR	48.8	47.0
13:35-13:40 HOUR	49.5	47.5
13:40-13:45 HOUR	52.4	47.7
13:45-13:50 HOUR	49.3	47.6
13:50-13:55 HOUR	51.0	47.4
13:55-14:00 HOUR	48.9	45.5
14:00-14:05 HOUR	48.1	46.7
14:05-14:10 HOUR	48.9	47.0
14:10-14:15 HOUR	49.9	47.7
14:15-14:20 HOUR	49.7	47.6
14:20-14:25 HOUR	49.3	46.7
14:25-14:30 HOUR	49.9	46.9
14:30-14:35 HOUR	49.8	47.1
14:35-14:40 HOUR	48.4	45.9
14:40-14:45 HOUR	49.0	46.8
14:45-14:50 HOUR	49.8	46.0
14:50-14:55 HOUR	50.3	47.5
14:55-15:00 HOUR	49.3	47.2
15:00-15:05 HOUR	50.6	47.2
15:05-15:10 HOUR	48.8	46.9
15:10-15:15 HOUR	48.0	46.6
15:15-15:20 HOUR	49.2	47.0
15:20-15:25 HOUR	48.1	46.5
15:25-15:30 HOUR	49.9	48.3

TIME*	RESULT dB(A)	
	BOUNDARY OF GPP (N13)	
	T23AV636-0005	
	L _{Aeq} 5 min	L _{A90} 5 min
15:30-15:35 HOUR	49.9	48.2
15:35-15:40 HOUR	50.4	48.6
15:40-15:45 HOUR	50.4	48.4
15:45-15:50 HOUR	56.1	49.1
15:50-15:55 HOUR	53.6	50.9
15:55-16:00 HOUR	51.5	48.6
16:00-16:05 HOUR	49.7	47.9
16:05-16:10 HOUR	49.1	47.7
16:10-16:15 HOUR	49.5	47.7
16:15-16:20 HOUR	50.3	48.0
16:20-16:25 HOUR	51.6	48.8
16:25-16:30 HOUR	50.7	47.5
16:30-16:35 HOUR	50.3	48.0
16:35-16:40 HOUR	50.8	48.9
16:40-16:45 HOUR	50.6	48.8
16:45-16:50 HOUR	52.8	49.0
16:50-16:55 HOUR	51.4	49.6
16:55-17:00 HOUR	53.1	50.7
17:00-17:05 HOUR	52.2	48.8
17:05-17:10 HOUR	52.9	49.7
17:10-17:15 HOUR	53.2	50.5
17:15-17:20 HOUR	55.4	52.6
17:20-17:25 HOUR	55.3	53.2
17:25-17:30 HOUR	54.0	52.0
17:30-17:35 HOUR	53.8	51.6
17:35-17:40 HOUR	52.3	50.4
17:40-17:45 HOUR	52.4	50.1
17:45-17:50 HOUR	52.7	50.4
17:50-17:55 HOUR	52.7	50.8
17:55-18:00 HOUR	51.4	49.9
18:00-18:05 HOUR	51.2	49.7
18:05-18:10 HOUR	50.8	49.4
18:10-18:15 HOUR	50.8	48.8
18:15-18:20 HOUR	50.0	48.7
18:20-18:25 HOUR	51.1	49.1
18:25-18:30 HOUR	51.0	48.4
18:30-18:35 HOUR	50.5	48.0
18:35-18:40 HOUR	49.2	47.4
18:40-18:45 HOUR	49.1	47.3
18:45-18:50 HOUR	49.0	47.9
18:50-18:55 HOUR	48.6	47.4
18:55-19:00 HOUR	49.1	47.7
19:00-19:05 HOUR	49.0	47.8
19:05-19:10 HOUR	49.1	47.5
19:10-19:15 HOUR	49.4	47.5
19:15-19:20 HOUR	50.4	48.4
19:20-19:25 HOUR	49.6	48.4
19:25-19:30 HOUR	49.9	48.1
19:30-19:35 HOUR	49.7	48.4
19:35-19:40 HOUR	50.0	48.7
19:40-19:45 HOUR	49.1	48.3

TIME*	RESULT dB(A)	
	BOUNDARY OF GPP (N13)	
	T23AV636-0005	
	L _{Aeq} 5 min	L _{A90} 5 min
19:45-19:50 HOUR	49.9	48.3
19:50-19:55 HOUR	49.6	48.3
19:55-20:00 HOUR	49.5	47.7
20:00-20:05 HOUR	50.4	48.6
20:05-20:10 HOUR	49.8	48.3
20:10-20:15 HOUR	49.8	48.4
20:15-20:20 HOUR	49.9	48.5
20:20-20:25 HOUR	49.7	48.5
20:25-20:30 HOUR	50.1	48.5
20:30-20:35 HOUR	49.7	48.3
20:35-20:40 HOUR	51.0	48.1
20:40-20:45 HOUR	49.5	47.9
20:45-20:50 HOUR	49.5	47.8
20:50-20:55 HOUR	49.1	47.9
20:55-21:00 HOUR	48.7	47.9
21:00-21:05 HOUR	48.6	47.8
21:05-21:10 HOUR	49.0	48.2
21:10-21:15 HOUR	49.4	48.5
21:15-21:20 HOUR	49.3	48.1
21:20-21:25 HOUR	49.4	47.8
21:25-21:30 HOUR	48.6	47.7
21:30-21:35 HOUR	48.9	48.2
21:35-21:40 HOUR	49.3	47.8
21:40-21:45 HOUR	49.8	47.9
21:45-21:50 HOUR	50.4	48.9
21:50-21:55 HOUR	50.3	48.8
21:55-22:00 HOUR	50.0	48.0
22:00-22:05 HOUR	50.4	48.4
22:05-22:10 HOUR	49.0	47.7
22:10-22:15 HOUR	48.6	47.6
22:15-22:20 HOUR	48.9	47.6
22:20-22:25 HOUR	49.0	47.9
22:25-22:30 HOUR	48.3	47.6
22:30-22:35 HOUR	48.0	47.3
22:35-22:40 HOUR	51.5	47.4
22:40-22:45 HOUR	48.5	47.4
22:45-22:50 HOUR	48.1	47.3
22:50-22:55 HOUR	48.0	46.8
22:55-23:00 HOUR	48.8	46.9
23:00-23:05 HOUR	47.9	47.2
23:05-23:10 HOUR	49.1	47.6
23:10-23:15 HOUR	48.6	47.6
23:15-23:20 HOUR	48.6	47.0
23:20-23:25 HOUR	48.2	47.4
23:25-23:30 HOUR	48.0	47.4
23:30-23:35 HOUR	48.4	47.5
23:35-23:40 HOUR	48.5	47.6
23:40-23:45 HOUR	48.8	47.7
23:45-23:50 HOUR	49.0	48.0
23:50-23:55 HOUR	48.7	47.9
23:55-00:00 HOUR	48.5	47.8

TIME*	RESULT dB(A)	
	BOUNDARY OF GPP (N13)	
	T23AV636-0005	
	L _{Aeq} 5 min	L _{A90} 5 min
00:00-00:05 HOUR	49.1	48.2
00:05-00:10 HOUR	49.5	48.4
00:10-00:15 HOUR	48.6	47.7
00:15-00:20 HOUR	48.7	47.5
00:20-00:25 HOUR	48.6	47.5
00:25-00:30 HOUR	49.4	47.7
00:30-00:35 HOUR	48.1	47.0
00:35-00:40 HOUR	47.8	47.0
00:40-00:45 HOUR	47.9	47.2
00:45-00:50 HOUR	47.8	46.8
00:50-00:55 HOUR	47.5	47.0
00:55-01:00 HOUR	48.2	47.5
01:00-01:05 HOUR	48.3	47.4
01:05-01:10 HOUR	48.0	47.2
01:10-01:15 HOUR	48.7	47.8
01:15-01:20 HOUR	48.5	48.0
01:20-01:25 HOUR	47.9	47.3
01:25-01:30 HOUR	48.0	47.2
01:30-01:35 HOUR	48.0	47.2
01:35-01:40 HOUR	47.8	47.3
01:40-01:45 HOUR	47.7	46.9
01:45-01:50 HOUR	49.5	47.0
01:50-01:55 HOUR	47.0	46.6
01:55-02:00 HOUR	47.1	46.6
02:00-02:05 HOUR	47.9	47.0
02:05-02:10 HOUR	48.7	47.5
02:10-02:15 HOUR	47.7	47.2
02:15-02:20 HOUR	47.7	47.2
02:20-02:25 HOUR	47.9	47.3
02:25-02:30 HOUR	48.2	47.3
02:30-02:35 HOUR	48.7	47.5
02:35-02:40 HOUR	47.9	47.4
02:40-02:45 HOUR	48.3	47.3
02:45-02:50 HOUR	47.7	47.1
02:50-02:55 HOUR	47.7	47.0
02:55-03:00 HOUR	48.0	47.1
03:00-03:05 HOUR	47.6	46.8
03:05-03:10 HOUR	48.5	47.1
03:10-03:15 HOUR	48.5	47.3
03:15-03:20 HOUR	49.5	47.4
03:20-03:25 HOUR	49.7	48.1
03:25-03:30 HOUR	49.2	47.9
03:30-03:35 HOUR	51.6	48.2
03:35-03:40 HOUR	49.0	48.0
03:40-03:45 HOUR	48.9	47.9
03:45-03:50 HOUR	49.2	48.1
03:50-03:55 HOUR	49.8	47.8
03:55-04:00 HOUR	49.7	48.2
04:00-04:05 HOUR	49.6	48.5
04:05-04:10 HOUR	49.8	48.4
04:10-04:15 HOUR	49.2	48.1

TIME*	RESULT dB(A)	
	BOUNDARY OF GPP (N13)	
	T23AV636-0005	
	L _{Aeq} 5 min	L _{A90} 5 min
04:15-04:20 HOUR	49.3	48.3
04:20-04:25 HOUR	49.4	48.4
04:25-04:30 HOUR	49.2	48.5
04:30-04:35 HOUR	51.6	48.8
04:35-04:40 HOUR	50.2	49.0
04:40-04:45 HOUR	50.0	49.0
04:45-04:50 HOUR	50.9	49.3
04:50-04:55 HOUR	50.5	49.4
04:55-05:00 HOUR	50.9	49.6
05:00-05:05 HOUR	51.1	49.6
05:05-05:10 HOUR	51.2	49.5
05:10-05:15 HOUR	51.3	50.1
05:15-05:20 HOUR	51.0	50.0
05:20-05:25 HOUR	51.3	49.9
05:25-05:30 HOUR	51.0	50.3
05:30-05:35 HOUR	51.2	50.3
05:35-05:40 HOUR	52.3	50.7
05:40-05:45 HOUR	51.5	50.6
05:45-05:50 HOUR	52.4	51.1
05:50-05:55 HOUR	52.4	51.5
05:55-06:00 HOUR	51.6	50.7
06:00-06:05 HOUR	51.2	50.0
06:05-06:10 HOUR	51.2	49.8
06:10-06:15 HOUR	49.9	48.8
06:15-06:20 HOUR	49.8	48.7
06:20-06:25 HOUR	50.9	48.8
06:25-06:30 HOUR	50.0	48.6
06:30-06:35 HOUR	49.8	48.2
06:35-06:40 HOUR	50.2	48.4
06:40-06:45 HOUR	50.5	48.9
06:45-06:50 HOUR	50.4	48.7
06:50-06:55 HOUR	50.6	48.9
06:55-07:00 HOUR	49.9	48.3

TIME*	RESULT dB(A)	
	BOUNDARY OF GPP (N13)	
	T23AV636-0006	
	L _{Aeq} 5 min	L _{A90} 5 min
07:00-07:05 HOUR	50.8	48.4
07:05-07:10 HOUR	50.6	48.7
07:10-07:15 HOUR	50.7	49.0
07:15-07:20 HOUR	66.3	48.7
07:20-07:25 HOUR	52.3	49.6
07:25-07:30 HOUR	51.1	48.4
07:30-07:35 HOUR	50.6	48.0
07:35-07:40 HOUR	54.0	48.3
07:40-07:45 HOUR	50.9	48.8
07:45-07:50 HOUR	51.4	49.0
07:50-07:55 HOUR	52.0	48.6
07:55-08:00 HOUR	51.3	47.9
08:00-08:05 HOUR	50.3	48.2
08:05-08:10 HOUR	50.7	48.6
08:10-08:15 HOUR	53.2	48.2
08:15-08:20 HOUR	49.7	47.3
08:20-08:25 HOUR	49.9	47.1
08:25-08:30 HOUR	50.5	48.1
08:30-08:35 HOUR	57.9	48.9
08:35-08:40 HOUR	60.7	60.0
08:40-08:45 HOUR	60.3	59.6
08:45-08:50 HOUR	60.2	59.5
08:50-08:55 HOUR	60.3	59.6
08:55-09:00 HOUR	59.3	56.5
09:00-09:05 HOUR	57.9	56.2
09:05-09:10 HOUR	58.1	56.5
09:10-09:15 HOUR	58.1	56.7
09:15-09:20 HOUR	58.9	56.9
09:20-09:25 HOUR	58.1	56.5
09:25-09:30 HOUR	57.9	56.3
09:30-09:35 HOUR	58.8	56.6
09:35-09:40 HOUR	57.6	55.9
09:40-09:45 HOUR	57.6	55.9
09:45-09:50 HOUR	57.6	56.1
09:50-09:55 HOUR	58.6	56.2
09:55-10:00 HOUR	57.5	56.0
10:00-10:05 HOUR	57.4	56.0
10:05-10:10 HOUR	57.4	55.8
10:10-10:15 HOUR	60.8	54.4
10:15-10:20 HOUR	51.5	46.5
10:20-10:25 HOUR	48.5	46.4
10:25-10:30 HOUR	48.3	45.7
10:30-10:35 HOUR	49.4	47.1
10:35-10:40 HOUR	51.5	47.9
10:40-10:45 HOUR	50.2	46.5
10:45-10:50 HOUR	48.5	46.3
10:50-10:55 HOUR	50.4	46.2
10:55-11:00 HOUR	49.4	46.7
11:00-11:05 HOUR	48.8	47.2
11:05-11:10 HOUR	50.8	47.3
11:10-11:15 HOUR	49.8	47.4

TIME*	RESULT dB(A)	
	BOUNDARY OF GPP (N13)	
	T23AV636-0006	
	L _{Aeq} 5 min	L _{A90} 5 min
11:15-11:20 HOUR	49.6	47.2
11:20-11:25 HOUR	48.5	46.5
11:25-11:30 HOUR	49.4	46.6
11:30-11:35 HOUR	49.7	46.6
11:35-11:40 HOUR	51.4	48.4
11:40-11:45 HOUR	50.3	47.2
11:45-11:50 HOUR	49.1	46.2
11:50-11:55 HOUR	48.9	47.0
11:55-12:00 HOUR	49.7	46.5
12:00-12:05 HOUR	49.3	45.6
12:05-12:10 HOUR	48.9	46.3
12:10-12:15 HOUR	49.4	46.9
12:15-12:20 HOUR	48.5	45.8
12:20-12:25 HOUR	48.2	46.4
12:25-12:30 HOUR	48.9	46.5
12:30-12:35 HOUR	48.4	45.9
12:35-12:40 HOUR	49.2	46.4
12:40-12:45 HOUR	48.1	46.0
12:45-12:50 HOUR	48.6	46.5
12:50-12:55 HOUR	49.5	46.8
12:55-13:00 HOUR	48.9	46.2
13:00-13:05 HOUR	48.2	46.3
13:05-13:10 HOUR	50.2	47.1
13:10-13:15 HOUR	52.5	47.8
13:15-13:20 HOUR	50.1	47.3
13:20-13:25 HOUR	49.2	45.8
13:25-13:30 HOUR	53.4	47.0
13:30-13:35 HOUR	60.2	59.4
13:35-13:40 HOUR	60.5	59.6
13:40-13:45 HOUR	59.5	56.8
13:45-13:50 HOUR	58.4	56.5
13:50-13:55 HOUR	59.0	56.6
13:55-14:00 HOUR	57.9	56.2
14:00-14:05 HOUR	58.8	56.5
14:05-14:10 HOUR	58.1	56.2
14:10-14:15 HOUR	59.0	56.8
14:15-14:20 HOUR	58.3	56.5
14:20-14:25 HOUR	58.2	56.5
14:25-14:30 HOUR	58.7	56.6
14:30-14:35 HOUR	57.9	56.2
14:35-14:40 HOUR	59.0	56.8
14:40-14:45 HOUR	58.0	56.3
14:45-14:50 HOUR	58.9	56.6
14:50-14:55 HOUR	58.3	56.5
14:55-15:00 HOUR	58.1	56.4
15:00-15:05 HOUR	55.3	47.5
15:05-15:10 HOUR	49.8	47.3
15:10-15:15 HOUR	50.8	47.9
15:15-15:20 HOUR	49.5	46.6
15:20-15:25 HOUR	49.4	46.6
15:25-15:30 HOUR	51.6	47.1

TIME*	RESULT dB(A)	
	BOUNDARY OF GPP (N13)	
	T23AV636-0006	
	L _{Aeq} 5 min	L _{A90} 5 min
15:30-15:35 HOUR	50.4	46.4
15:35-15:40 HOUR	50.9	48.6
15:40-15:45 HOUR	51.9	48.4
15:45-15:50 HOUR	50.1	48.2
15:50-15:55 HOUR	50.2	47.7
15:55-16:00 HOUR	49.6	47.4
16:00-16:05 HOUR	50.6	47.4
16:05-16:10 HOUR	50.6	48.2
16:10-16:15 HOUR	50.7	48.1
16:15-16:20 HOUR	51.2	48.4
16:20-16:25 HOUR	51.1	48.5
16:25-16:30 HOUR	50.8	48.1
16:30-16:35 HOUR	50.9	47.9
16:35-16:40 HOUR	51.2	48.4
16:40-16:45 HOUR	51.1	47.8
16:45-16:50 HOUR	51.7	49.6
16:50-16:55 HOUR	49.9	48.1
16:55-17:00 HOUR	49.3	47.3
17:00-17:05 HOUR	50.7	48.2
17:05-17:10 HOUR	50.5	48.0
17:10-17:15 HOUR	50.3	48.6
17:15-17:20 HOUR	52.5	50.6
17:20-17:25 HOUR	52.4	51.4
17:25-17:30 HOUR	53.4	51.3
17:30-17:35 HOUR	53.0	51.8
17:35-17:40 HOUR	52.7	51.4
17:40-17:45 HOUR	52.3	51.0
17:45-17:50 HOUR	52.1	50.7
17:50-17:55 HOUR	52.0	50.7
17:55-18:00 HOUR	52.3	50.9
18:00-18:05 HOUR	51.9	50.6
18:05-18:10 HOUR	51.4	49.8
18:10-18:15 HOUR	50.3	48.6
18:15-18:20 HOUR	49.7	48.1
18:20-18:25 HOUR	50.7	48.7
18:25-18:30 HOUR	50.8	48.4
18:30-18:35 HOUR	50.2	48.7
18:35-18:40 HOUR	50.4	49.4
18:40-18:45 HOUR	50.4	49.5
18:45-18:50 HOUR	50.4	49.4
18:50-18:55 HOUR	51.1	50.2
18:55-19:00 HOUR	50.3	49.2
19:00-19:05 HOUR	50.0	49.0
19:05-19:10 HOUR	50.8	49.6
19:10-19:15 HOUR	51.3	49.7
19:15-19:20 HOUR	50.5	49.6
19:20-19:25 HOUR	50.8	49.6
19:25-19:30 HOUR	50.8	49.6
19:30-19:35 HOUR	50.1	48.2
19:35-19:40 HOUR	51.0	49.4
19:40-19:45 HOUR	50.3	49.1

TIME*	RESULT dB(A)	
	BOUNDARY OF GPP (N13)	
	T23AV636-0006	
	L _{Aeq} 5 min	L _{A90} 5 min
19:45-19:50 HOUR	50.3	48.7
19:50-19:55 HOUR	49.7	48.7
19:55-20:00 HOUR	51.0	49.3
20:00-20:05 HOUR	50.4	49.1
20:05-20:10 HOUR	50.9	49.4
20:10-20:15 HOUR	50.4	49.1
20:15-20:20 HOUR	50.4	49.3
20:20-20:25 HOUR	51.1	49.6
20:25-20:30 HOUR	50.5	49.5
20:30-20:35 HOUR	50.8	49.4
20:35-20:40 HOUR	52.6	49.8
20:40-20:45 HOUR	52.4	51.0
20:45-20:50 HOUR	51.3	50.2
20:50-20:55 HOUR	51.4	49.9
20:55-21:00 HOUR	50.5	49.4
21:00-21:05 HOUR	50.0	49.0
21:05-21:10 HOUR	49.8	48.7
21:10-21:15 HOUR	49.8	48.4
21:15-21:20 HOUR	49.5	48.4
21:20-21:25 HOUR	50.0	49.0
21:25-21:30 HOUR	50.2	48.9
21:30-21:35 HOUR	50.1	48.8
21:35-21:40 HOUR	49.6	48.9
21:40-21:45 HOUR	49.5	48.5
21:45-21:50 HOUR	49.4	48.3
21:50-21:55 HOUR	49.2	48.2
21:55-22:00 HOUR	49.9	48.7
22:00-22:05 HOUR	50.2	48.9
22:05-22:10 HOUR	49.3	48.5
22:10-22:15 HOUR	49.5	48.5
22:15-22:20 HOUR	49.2	48.0
22:20-22:25 HOUR	48.8	47.8
22:25-22:30 HOUR	49.0	47.9
22:30-22:35 HOUR	49.0	48.1
22:35-22:40 HOUR	48.7	47.9
22:40-22:45 HOUR	48.3	47.5
22:45-22:50 HOUR	48.5	47.8
22:50-22:55 HOUR	48.3	47.5
22:55-23:00 HOUR	48.5	47.6
23:00-23:05 HOUR	48.6	47.6
23:05-23:10 HOUR	48.2	47.4
23:10-23:15 HOUR	48.2	47.4
23:15-23:20 HOUR	48.1	47.5
23:20-23:25 HOUR	48.0	47.3
23:25-23:30 HOUR	48.1	47.1
23:30-23:35 HOUR	47.8	46.8
23:35-23:40 HOUR	48.6	47.1
23:40-23:45 HOUR	47.9	47.1
23:45-23:50 HOUR	49.4	47.1
23:50-23:55 HOUR	47.8	47.0
23:55-00:00 HOUR	47.8	47.1

TIME*	RESULT dB(A)	
	BOUNDARY OF GPP (N13)	
	T23AV636-0006	
	L _{Aeq} 5 min	L _{A90} 5 min
00:00-00:05 HOUR	48.1	46.7
00:05-00:10 HOUR	48.9	47.6
00:10-00:15 HOUR	48.8	47.4
00:15-00:20 HOUR	48.1	47.3
00:20-00:25 HOUR	48.5	47.6
00:25-00:30 HOUR	48.2	47.5
00:30-00:35 HOUR	48.5	47.1
00:35-00:40 HOUR	47.2	46.6
00:40-00:45 HOUR	48.0	47.0
00:45-00:50 HOUR	47.6	46.9
00:50-00:55 HOUR	48.1	47.1
00:55-01:00 HOUR	48.3	47.2
01:00-01:05 HOUR	49.0	47.3
01:05-01:10 HOUR	48.2	47.5
01:10-01:15 HOUR	48.3	47.4
01:15-01:20 HOUR	48.1	47.3
01:20-01:25 HOUR	47.8	47.1
01:25-01:30 HOUR	47.5	46.8
01:30-01:35 HOUR	47.4	46.7
01:35-01:40 HOUR	47.2	46.4
01:40-01:45 HOUR	47.0	46.0
01:45-01:50 HOUR	47.2	45.6
01:50-01:55 HOUR	47.3	45.8
01:55-02:00 HOUR	46.4	45.7
02:00-02:05 HOUR	46.6	45.9
02:05-02:10 HOUR	46.7	46.1
02:10-02:15 HOUR	47.3	46.6
02:15-02:20 HOUR	47.8	46.5
02:20-02:25 HOUR	47.5	45.9
02:25-02:30 HOUR	47.7	46.3
02:30-02:35 HOUR	47.4	46.3
02:35-02:40 HOUR	48.0	46.3
02:40-02:45 HOUR	47.2	46.1
02:45-02:50 HOUR	47.3	45.4
02:50-02:55 HOUR	46.4	45.5
02:55-03:00 HOUR	47.4	45.8
03:00-03:05 HOUR	46.4	45.7
03:05-03:10 HOUR	47.1	46.2
03:10-03:15 HOUR	47.3	46.2
03:15-03:20 HOUR	47.3	45.9
03:20-03:25 HOUR	47.5	45.9
03:25-03:30 HOUR	47.5	46.0
03:30-03:35 HOUR	48.9	46.7
03:35-03:40 HOUR	51.2	47.4
03:40-03:45 HOUR	50.5	47.4
03:45-03:50 HOUR	48.5	46.9
03:50-03:55 HOUR	49.5	47.2
03:55-04:00 HOUR	51.8	48.6
04:00-04:05 HOUR	49.5	47.9
04:05-04:10 HOUR	49.7	48.5
04:10-04:15 HOUR	49.3	48.1

TIME*	RESULT dB(A)	
	BOUNDARY OF GPP (N13)	
	T23AV636-0006	
	L _{Aeq} 5 min	L _{A90} 5 min
04:15-04:20 HOUR	49.0	47.9
04:20-04:25 HOUR	48.8	47.9
04:25-04:30 HOUR	49.4	48.2
04:30-04:35 HOUR	50.3	47.9
04:35-04:40 HOUR	50.2	48.7
04:40-04:45 HOUR	50.8	49.3
04:45-04:50 HOUR	51.3	49.7
04:50-04:55 HOUR	51.2	49.7
04:55-05:00 HOUR	51.0	49.3
05:00-05:05 HOUR	53.1	49.9
05:05-05:10 HOUR	51.8	50.0
05:10-05:15 HOUR	51.9	50.4
05:15-05:20 HOUR	52.5	50.8
05:20-05:25 HOUR	51.4	50.3
05:25-05:30 HOUR	51.9	50.8
05:30-05:35 HOUR	53.2	50.4
05:35-05:40 HOUR	53.2	51.5
05:40-05:45 HOUR	51.8	50.4
05:45-05:50 HOUR	52.3	50.0
05:50-05:55 HOUR	52.8	51.2
05:55-06:00 HOUR	52.5	51.1
06:00-06:05 HOUR	51.7	50.1
06:05-06:10 HOUR	51.4	49.5
06:10-06:15 HOUR	50.2	48.3
06:15-06:20 HOUR	49.5	47.4
06:20-06:25 HOUR	51.1	48.3
06:25-06:30 HOUR	49.9	48.3
06:30-06:35 HOUR	50.0	47.5
06:35-06:40 HOUR	49.7	48.0
06:40-06:45 HOUR	49.2	47.5
06:45-06:50 HOUR	48.6	46.9
06:50-06:55 HOUR	48.1	46.6
06:55-07:00 HOUR	49.8	47.5

NOVEMBER 8, 2023

ANALYSIS REPORT

PROJECT NAME : EIA COMPLIANCE AUDIT AND MONITORING OF SPH DEVELOPMENT DRILLING CAMPAIGN 2023 (WELLPAD C)
CUSTOMER NAME : PTTEP SP LIMITED
ADDRESS : 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD
 CHATUCHAK CHATUCHAK BANGKOK 10900.
CONTACT INFORMATION : TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com
MEASURING PLACE : BAN KHAM YAI SCHOOL (N12)
MEASURING TYPE : AMBIENT (ANNOYANCE SOUND LEVEL) **RECEIVED DATE** : OCTOBER 25-28, 2023
MEASURING DATE : OCTOBER 25-28, 2023 **ANALYTICAL DATE** : OCTOBER 25-28, 2023
MEASURING TIME : * **REPORT NO.** : 2023-U095727
MEASURING EQUIPMENT : INTEGRATED SOUND LEVEL METER AND CALCULATION **WORK NO.** : 2019-001655
MEASURED BY : MR SURIYAN NITHICHERDCHOOWONG **ANALYSIS NO.** : T23AV636-0001-T23AV636-0003

DATE	TIME *	RESULT				
		BAN KHAM YAI SCHOOL (N12)				
		SPECIFIC SOUND LEVEL	RESIDUAL SOUND LEVEL ^{3/}	SPECIFIC SOUND LEVEL (IMPROVE SOUND LEVEL)	BACKGROUND SOUND LEVEL	ANNOYANCE SOUND LEVEL
OCTOBER 25-26, 2023 (T23AV636-0001)	09:00-10:00 HOUR ^{1/}	46.4	44.9	41.1	40.5 ^{4/}	<0.8 ^{10/}
	01:35-01:40 HOUR ^{2/}	42.6	41.2	40.0	39.0 ^{5/}	1.0
OCTOBER 26-27, 2023 (T23AV636-0002)	16:00-17:00 HOUR ^{1/}	46.5	45.2	40.6	41.3 ^{6/}	<0.8 ^{10/}
	01:50-02:00 HOUR ^{2/}	40.7	39.6	37.2	37.9 ^{7/}	<0.8 ^{10/}
OCTOBER 27-28, 2023 (T23AV636-0003)	14:00-15:00 HOUR ^{1/}	48.0	45.8	44.0	43.7 ^{8/}	<0.8 ^{10/}
	01:40-01:45 HOUR ^{2/}	46.5	45.3	43.3	43.1 ^{9/}	<0.8 ^{10/}
UNIT		dB(A)				

REMARK:

- 1/ CASE I (DURING 06:00 TO 22:00 HOUR) : NOISE CONTINUOUSLY GENERATED MORE THAN 1 HOUR,
- 2/ CASE IV (DURING 22:00 TO 06:00 HOUR) : NOISE GENERATED IN SIRENITY AREA OR NIGHT TIME,
- 3/ RESIDUAL SOUND LEVEL MEASURED AT THE SAME TIME AS BACKGROUND SOUND LEVEL.
- 4/ MEDIAN VALUE OF BACKGROUND SOUND LEVEL (FROM 09:00 TO 10:00 HOUR)
FROM 3 MEASUREMENTS ON OCTOBER 25, 2023
- 5/ MEDIAN VALUE OF BACKGROUND SOUND LEVEL (FROM 00:35 TO 00:40 HOUR)
FROM 3 MEASUREMENTS OCTOBER 26, 2023
- 6/ MEDIAN VALUE OF BACKGROUND SOUND LEVEL (FROM 16:00 TO 17:00 HOUR)
FROM 3 MEASUREMENTS OCTOBER 26, 2023
- 7/ MEDIAN VALUE OF BACKGROUND SOUND LEVEL (FROM 01:50 TO 02:00 HOUR)
FROM 3 MEASUREMENTS ON OCTOBER 27, 2023
- 8/ MEDIAN VALUE OF BACKGROUND SOUND LEVEL (FROM 14:00 TO 15:00 HOUR)
FROM 3 MEASUREMENTS ON OCTOBER 27, 2023
- 9/ MEDIAN VALUE OF BACKGROUND SOUND LEVEL (FROM 01:40 TO 01:45 HOUR)
FROM 3 MEASUREMENTS ON OCTOBER 28, 2023
- 10/ THERE IS NO IMPACT CAUSE ANNOYANCE SOUND LEVEL

(MR SILA BANJONGJAIKUK)
LABORATORY SUPERVISOR
NOVEMBER 7, 2023

ANALYSIS REPORT

PROJECT NAME : EIA COMPLIANCE AUDIT AND MONITORING OF SPH DEVELOPMENT DRILLING CAMPAIGN 2023 (WELLPAD C)
CUSTOMER NAME : PTTEP SP LIMITED
ADDRESS : 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD
 CHATUCHAK CHATUCHAK BANGKOK 10900.
CONTACT INFORMATION : TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com
MEASURING PLACE : BOUNDARY OF GPP (N13)
MEASURING TYPE : AMBIENT (ANNOYANCE SOUND LEVEL) **RECEIVED DATE** : OCTOBER 25-28, 2023
MEASURING DATE : OCTOBER 25-28, 2023 **ANALYTICAL DATE** : OCTOBER 25-28, 2023
MEASURING TIME : * **REPORT NO.** : 2023-U095728
MEASURING EQUIPMENT : INTEGRATED SOUND LEVEL METER AND CALCULATION **WORK NO.** : 2019-001655
MEASURED BY : MR SURIYAN NITHICHERDCHOOWONG **ANALYSIS NO.** : T23AV636-0004-T23AV636-0006

DATE	TIME *	RESULT				
		BOUNDARY OF GPP (N13)				
		SPECIFIC SOUND LEVEL	RESIDUAL SOUND LEVEL ^{3/}	SPECIFIC SOUND LEVEL (IMPROVE SOUND LEVEL)	BACKGROUND SOUND LEVEL	ANNOYANCE SOUND LEVEL
OCTOBER 25-26, 2023 (T23AV636-0004)	14:00-15:00 HOUR ^{1/}	49.8	47.6	45.8	45.4 ^{4/}	<0.8 ^{10/}
	00:40-00:45 HOUR ^{2/}	48.1	46.5	46.0	45.7 ^{5/}	<0.8 ^{10/}
OCTOBER 26-27, 2023 (T23AV636-0005)	15:00-16:00 HOUR ^{1/}	51.2	48.7	47.6	46.9 ^{6/}	<0.8 ^{10/}
	02:00-02:05 HOUR ^{2/}	47.9	46.2	46.0	45.3 ^{7/}	<0.8 ^{10/}
OCTOBER 27-28, 2023 (T23AV636-0006)	11:00-12:00 HOUR ^{1/}	49.7	47.8	45.2	45.0 ^{8/}	<0.8 ^{10/}
	02:20-02:25 HOUR ^{2/}	47.5	46.1	44.9	44.8 ^{9/}	<0.8 ^{10/}
UNIT		dB(A)				

REMARK:

^{1/} CASE I (DURING 06:00 TO 22:00 HOUR) : NOISE CONTINUOUSLY GENERATED MORE THAN 1 HOUR,
^{2/} CASE IV (DURING 22:00 TO 06:00 HOUR) : NOISE GENERATED IN SIRENITY AREA OR NIGHT TIME,
^{3/} RESIDUAL SOUND LEVEL MEASURED AT THE SAME TIME AS BACKGROUND SOUND LEVEL.
^{4/} MEDIAN VALUE OF BACKGROUND SOUND LEVEL (FROM 14:00 TO 15:00 HOUR)
 FROM 3 MEASUREMENTS ON OCTOBER 25, 2023
^{5/} MEDIAN VALUE OF BACKGROUND SOUND LEVEL (FROM 00:40 TO 00:45 HOUR)
 FROM 3 MEASUREMENTS OCTOBER 26, 2023
^{6/} MEDIAN VALUE OF BACKGROUND SOUND LEVEL (FROM 15:00 TO 16:00 HOUR)
 FROM 3 MEASUREMENTS OCTOBER 26, 2023
^{7/} MEDIAN VALUE OF BACKGROUND SOUND LEVEL (FROM 02:00 TO 02:05 HOUR)
 FROM 3 MEASUREMENTS ON OCTOBER 27, 2023
^{8/} MEDIAN VALUE OF BACKGROUND SOUND LEVEL (FROM 11:00 TO 12:00 HOUR)
 FROM 3 MEASUREMENTS ON OCTOBER 27, 2023
^{9/} MEDIAN VALUE OF BACKGROUND SOUND LEVEL (FROM 02:20 TO 02:25 HOUR)
 FROM 3 MEASUREMENTS ON OCTOBER 28, 2023
^{10/} THERE IS NO IMPACT CAUSE ANNOYANCE SOUND LEVEL

(MR SILA BANJONGJAIKUK)
LABORATORY SUPERVISOR
NOVEMBER 7, 2023



ภาคผนวก จ-4
ใบรายงานผลการวิเคราะห์คุณภาพน้ำทิ้ง
ในระยะดำเนินการ



ANALYSIS REPORT

PROJECT NAME : EIA COMPLIANCE AUDIT AND MONITORING OF PART B: SPH = SINPHUHORM (1 FEB 2020 - 31 DEC 2023)
CUSTOMER NAME : PTTEP SP LIMITED
ADDRESS : 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD
CHATUCHAK CHATUCHAK BANGKOK 10900
CONTACT INFORMATION : TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com
SAMPLING SOURCE : SIN PHU HORM
SAMPLE TYPE : EFFLUENT
SAMPLING DATE : OCTOBER 26, 2023
SAMPLING TIME : 09:10 HOUR
SAMPLING METHOD ° : GRAB, GRAB AND STERILE TECHNIQUE
SAMPLING BY ° : MR APISIT SRIKONGKAEW
ANALYZED BY : MISS AKSARIN BUNKONG

RECEIVED DATE : OCTOBER 27, 2023
ANALYTICAL DATE : OCTOBER 27 - NOVEMBER 7, 2023
REPORT NO. : 2023-U095788
WORK NO. : 2019-001655
ANALYSIS NO. : T23AV333-0001

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			SUMP COLLECTING STORM WATER PRIOR TO DISCHARGE OUT OF GPP (SW62) T23AV333-0001	
pH °	-	ELECTROMETRIC METHOD (AT SITE) SM: PART 4500 -H+ B AND 1060 B	8.0 (30°C)	-
ELECTRICAL CONDUCTIVITY °	µS/cm	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2510 B)	277 (30°C)	0.1
DISSOLVED OXYGEN °	mg/L	MEMBRANE ELECTRODE METHOD AT SITE (SM: PART 4500-O G)	5.2	0.5
BIOCHEMICAL OXYGEN DEMAND °	mg/L	MEMBRANE ELECTRODE METHOD (SM: PART 5210 B AND PART 4500-O G)	3.4	2.0
CHEMICAL OXYGEN DEMAND °	mg/L	CLOSED REFLUX, COLOURIMETRIC METHOD (SM: PART 5220 D)	ND	25.0
SUSPENDED SOLIDS °	mg/L	SUSPENDED SOLIDS DRIED AT 103-105 °C (SM: PART 2540 D)	8.9	5.0
TOTAL DISSOLVED SOLIDS °	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	145	25
FAT, OIL AND GREASE °	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	ND	3
METALS				
CADMIUM °	mg/L Cd	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.002
HEXAVALENT CHROMIUM °	mg/L Cr ⁶⁺	COLOURIMETRIC METHOD (SM: PART 3500-Cr B)	ND	0.006
COPPER °	mg/L Cu	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005
LEAD °	mg/L Pb	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.015
MANGANESE °	mg/L Mn	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	0.110	0.004
TOTAL MERCURY °	mg/L Hg	COLD VAPOUR AAS METHOD (SM: PART 3112 B)	ND	0.0005
ZINC °	mg/L Zn	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.003



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			SUMP COLLECTING STORM WATER PRIOR TO DISCHARGE OUT OF GPP (SW62) T23AV333-0001	
MICROBIOLOGY				
COLIFORM BACTERIA ^b	MPN/100 mL	MULTIPLE-TUBE FERMENTATION TECHNIQUE (SM: PART 9221B)	460	1.8
FAECAL COLIFORM BACTERIA ^b	MPN/100 mL	MULTIPLE-TUBE FERMENTATION TECHNIQUE (SM: PART 9221E)	110	1.8
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, 23rd EDITION, 2017.

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

ND : NON-DETECTABLE.

(MR. BHUCHONK PANICHLERTUMPI)
LABORATORY SUPERVISOR

NOVEMBER 9, 2023

ANALYSIS REPORT

CUSTOMER NAME	: PTTEP SP LIMITED	RECEIVED DATE	: OCTOBER 26, 2023
ADDRESS	: 323 MOO 1 KUT NAM SAI NAM PHONG KHON KAEN 40310	ANALYTICAL DATE	: OCTOBER 26 - NOVEMBER 5, 2023
CONTACT INFORMATION	: TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com	REPORT NO.	: 2023-U094821
SAMPLING SOURCE	: -	WORK NO.	: 2023-002248
SAMPLE TYPE	: EFFLUENT	ANALYSIS NO.	: T23AV224-0001
SAMPLING DATE	: OCTOBER 25, 2023		
SAMPLING TIME	: 12:00 HOUR		
SAMPLING METHOD °	: GRAB, GRAB AND STERILE TECHNIQUE		
SAMPLING BY °	: MR APISIT SRIKONGKAEW		
ANALYZED BY	: MISS AKSARIN BUNKONG		

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			WATER PIT AT WELLPAD B T23AV224-0001	
pH °	-	ELECTROMETRIC METHOD AT SITE (SM: PART 4500-H ⁺ B)	7.2 (29°C)	-
TEMPERATURE °	°C	THERMOMETER AT SITE (SM: PART 2550 B)	29	-
ELECTRICAL CONDUCTIVITY °	µS/cm	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2510 B)	265 (29°C)	0.1
DISSOLVED OXYGEN °	mg/L	MEMBRANE ELECTRODE METHOD AT SITE (SM: PART 4500-O G)	2.2	0.5
BIOCHEMICAL OXYGEN DEMAND °	mg/L	MEMBRANE ELECTRODE METHOD (SM: PART 5210 B AND PART 4500-O G)	2.3	2.0
CHEMICAL OXYGEN DEMAND °	mg/L	CLOSED REFLUX, COLOURIMETRIC METHOD (SM: PART 5220 D)	26.0	25.0
TOTAL SUSPENDED SOLIDS °	mg/L	TOTAL SUSPENDED SOLIDS DRIED AT 103-105 °C (SM: PART 2540 D)	7.8	5.0
TOTAL DISSOLVED SOLIDS °	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	156	25
FAT, OIL AND GREASE °	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	ND	3
METALS				
CADMIUM °	mg/L Cd	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.002
HEXAVALENT CHROMIUM °	mg/L Cr ⁶⁺	COLOURIMETRIC METHOD (SM: PART 3500-Cr B)	ND	0.006
COPPER °	mg/L Cu	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005
LEAD °	mg/L Pb	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	< LOQ	0.015
MANGANESE °	mg/L Mn	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	0.168	0.004
MERCURY °	mg/L Hg	COLD VAPOUR AAS METHOD (SM: PART 3112 B)	ND	0.0005
ZINC °	mg/L Zn	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	< LOQ	0.003



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			WATER PIT AT WELLPAD B T23AV224-0001	
MICROBIOLOGY				
COLIFORM BACTERIA ^b	MPN/100 mL	MULTIPLE-TUBE FERMENTATION TECHNIQUE (SM: PART 9221B)	23	1.8
FAECAL COLIFORM BACTERIA ^b	MPN/100 mL	MULTIPLE-TUBE FERMENTATION TECHNIQUE (SM: PART 9221E)	< 1.8	1.8
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, 23rd EDITION, 2017.

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

ND : NON-DETECTABLE.

< LOQ : < LIMIT OF QUANTITATION (LEAD \geq 0.015 AND < 0.200 mg/L. ZINC \geq 0.003 AND < 0.050 mg/L).

LABORATORY SUPERVISOR

NOVEMBER 7, 2023

ANALYSIS REPORT

CUSTOMER NAME	: PTTEP SP LIMITED	RECEIVED DATE	: OCTOBER 26, 2023
ADDRESS	: 323 MOO 1 KUT NAM SAI NAM PHONG KHON KAEN 40310	ANALYTICAL DATE	: OCTOBER 26 - NOVEMBER 5, 2023
CONTACT INFORMATION	: TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com	REPORT NO.	: 2023-U094822
SAMPLING SOURCE	: -	WORK NO.	: 2023-002248
SAMPLE TYPE	: EFFLUENT	ANALYSIS NO.	: T23AV224-0002
SAMPLING DATE	: OCTOBER 25, 2023		
SAMPLING TIME	: 11:50 HOUR		
SAMPLING METHOD °	: GRAB, GRAB AND STERILE TECHNIQUE		
SAMPLING BY °	: MR APISIT SRIKONGKAEW		
ANALYZED BY	: MISS NAPAPORN KHUNNOKKHUM		

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			CUTTING PIT AT WELLPAD B T23AV224-0002	
pH °	-	ELECTROMETRIC METHOD AT SITE (SM: PART 4500-H ⁺ B)	7.7 (30°C)	-
TEMPERATURE °	°C	THERMOMETER AT SITE (SM: PART 2550 B)	30	-
ELECTRICAL CONDUCTIVITY °	µS/cm	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2510 B)	118 (30°C)	0.1
DISSOLVED OXYGEN °	mg/L	MEMBRANE ELECTRODE METHOD AT SITE (SM: PART 4500-O G)	5.2	0.5
BIOCHEMICAL OXYGEN DEMAND °	mg/L	MEMBRANE ELECTRODE METHOD (SM: PART 5210 B AND PART 4500-O G)	ND	2.0
CHEMICAL OXYGEN DEMAND °	mg/L	CLOSED REFLUX, COLOURIMETRIC METHOD (SM: PART 5220 D)	ND	25.0
TOTAL SUSPENDED SOLIDS °	mg/L	TOTAL SUSPENDED SOLIDS DRIED AT 103-105 °C (SM: PART 2540 D)	7.5	5.0
TOTAL DISSOLVED SOLIDS °	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	71	25
FAT, OIL AND GREASE °	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	ND	3
METALS				
CADMIUM °	mg/L Cd	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.002
HEXAVALENT CHROMIUM °	mg/L Cr ⁶⁺	COLOURIMETRIC METHOD (SM: PART 3500-Cr B)	ND	0.006
COPPER °	mg/L Cu	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005
LEAD °	mg/L Pb	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.015
MANGANESE °	mg/L Mn	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	< LOQ	0.004
MERCURY °	mg/L Hg	COLD VAPOUR AAS METHOD (SM: PART 3112 B)	ND	0.0005
ZINC °	mg/L Zn	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	< LOQ	0.003



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			CUTTING PIT AT WELLPAD B T23AV224-0002	
MICROBIOLOGY				
COLIFORM BACTERIA ^b	MPN/100 mL	MULTIPLE-TUBE FERMENTATION TECHNIQUE (SM: PART 9221 B)	79	1.8
FAECAL COLIFORM BACTERIA ^b	MPN/100 mL	MULTIPLE-TUBE FERMENTATION TECHNIQUE (SM: PART 9221 E)	< 1.8	1.8
SAMPLE CONDITION				
WATER'S COLOUR/TURBID SEDIMENT			YELLOW/TURBID BROWN	

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

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

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

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

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

ND : NON-DETECTABLE.

< LOQ : < LIMIT OF QUANTITATION (MANGANESE \geq 0.004 AND < 0.050 mg/L, ZINC \geq 0.003 AND < 0.050 mg/L).

[REDACTED]

(MR BHUCHONK PANICHLERTUMPI)
LABORATORY SUPERVISOR

NOVEMBER 7, 2023

ANALYSIS REPORT

CUSTOMER NAME	: PTTEP SP LIMITED	RECEIVED DATE	: OCTOBER 26, 2023
ADDRESS	: 323 MOO 1 KUT NAM SAI NAM PHONG KHON KAEN 40310	ANALYTICAL DATE	: OCTOBER 26 - NOVEMBER 5, 2023
CONTACT INFORMATION	: TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com	REPORT NO.	: 2023-U094823
SAMPLING SOURCE	: -	WORK NO.	: 2023-002248
SAMPLE TYPE	: BLANK (EFFLUENT)	ANALYSIS NO.	: 2023-FB1092, 2023-TB1033
SAMPLING DATE	: -		
SAMPLING TIME	: -		
SAMPLING METHOD	: -		
SAMPLING BY	: -		
ANALYZED BY	: MISS AKSARIN BUNKONG		

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT		DETECTION LIMIT
			1 2023-FB1092	2 2023-TB1033	
BIOCHEMICAL OXYGEN DEMAND	mg/L	MEMBRANE ELECTRODE METHOD (SM: PART 5210 B AND PART 4500-O G)	ND	ND	2.0
CHEMICAL OXYGEN DEMAND	mg/L	CLOSED REFLUX, COLOURIMETRIC METHOD (SM: PART 5220 D)	ND	ND	25.0
TOTAL SUSPENDED SOLIDS	mg/L	TOTAL SUSPENDED SOLIDS DRIED AT 103-105 °C (SM: PART 2540 D)	ND	ND	5.0
TOTAL DISSOLVED SOLIDS	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	ND	ND	25
FAT, OIL AND GREASE	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	ND	ND	3
METALS					
CADMIUM	mg/L Cd	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	ND	0.002
HEXAVALENT CHROMIUM	mg/L Cr ⁶⁺	COLOURIMETRIC METHOD (SM: PART 3500-Cr B)	ND	ND	0.006
COPPER	mg/L Cu	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	ND	0.005
LEAD	mg/L Pb	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	ND	0.015
MANGANESE	mg/L Mn	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	ND	0.004
MERCURY	mg/L Hg	COLD VAPOUR AAS METHOD (SM: PART 3112 B)	ND	ND	0.0005
ZINC	mg/L Zn	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	ND	0.003



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT		DETECTION LIMIT
			1 2023-FB1092	2 2023-TB1033	
MICROBIOLOGY					
COLIFORM BACTERIA	MPN/100 mL	MULTIPLE-TUBE FERMENTATION TECHNIQUE (SM: PART 9221 B)	< 1.8	< 1.8	1.8
FAECAL COLIFORM BACTERIA	MPN/100 mL	MULTIPLE-TUBE FERMENTATION TECHNIQUE (SM: PART 9221 E)	< 1.8	< 1.8	1.8
SAMPLE CONDITION					
WATER'S COLOUR/TURBID SEDIMENT			COLOURLESS/CLEAR	COLOURLESS/CLEAR	

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

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

RESULT 1 : FIELD BLANK

RESULT 2 : TRIP BLANK

ND : NON-DETECTABLE.

(MR BHUCHONK PANICHLERTUMPI)
LABORATORY SUPERVISOR

NOVEMBER 7, 2023

ANALYSIS REPORT

CUSTOMER NAME	: PTTEP SP LIMITED	RECEIVED DATE	: OCTOBER 26, 2023
ADDRESS	: 323 MOO 1 KUT NAM SAI NAM PHONG KHON KAEN 40310	ANALYTICAL DATE	: OCTOBER 26 - NOVEMBER 5, 2023
CONTACT INFORMATION	: TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com	REPORT NO.	: 2023-U094821
SAMPLING SOURCE	: -	WORK NO.	: 2023-002248
SAMPLE TYPE	: EFFLUENT	ANALYSIS NO.	: T23AV224-0001
SAMPLING DATE	: OCTOBER 25, 2023		
SAMPLING TIME	: 12:00 HOUR		
SAMPLING METHOD °	: GRAB, GRAB AND STERILE TECHNIQUE		
SAMPLING BY °	: MR APISIT SRIKONGKAEW		
ANALYZED BY	: MISS AKSARIN BUNKONG		

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			WATER PIT AT WELLPAD B T23AV224-0001	
pH °	-	ELECTROMETRIC METHOD AT SITE (SM: PART 4500-H ⁺ B)	7.2 (29°C)	-
TEMPERATURE °	°C	THERMOMETER AT SITE (SM: PART 2550 B)	29	-
ELECTRICAL CONDUCTIVITY °	µS/cm	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2510 B)	265 (29°C)	0.1
DISSOLVED OXYGEN °	mg/L	MEMBRANE ELECTRODE METHOD AT SITE (SM: PART 4500-O G)	2.2	0.5
BIOCHEMICAL OXYGEN DEMAND °	mg/L	MEMBRANE ELECTRODE METHOD (SM: PART 5210 B AND PART 4500-O G)	2.3	2.0
CHEMICAL OXYGEN DEMAND °	mg/L	CLOSED REFLUX, COLOURIMETRIC METHOD (SM: PART 5220 D)	26.0	25.0
TOTAL SUSPENDED SOLIDS °	mg/L	TOTAL SUSPENDED SOLIDS DRIED AT 103-105 °C (SM: PART 2540 D)	7.8	5.0
TOTAL DISSOLVED SOLIDS °	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	156	25
FAT, OIL AND GREASE °	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	ND	3
METALS				
CADMIUM °	mg/L Cd	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.002
HEXAVALENT CHROMIUM °	mg/L Cr ⁶⁺	COLOURIMETRIC METHOD (SM: PART 3500-Cr B)	ND	0.006
COPPER °	mg/L Cu	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005
LEAD °	mg/L Pb	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	< LOQ	0.015
MANGANESE °	mg/L Mn	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	0.168	0.004
MERCURY °	mg/L Hg	COLD VAPOUR AAS METHOD (SM: PART 3112 B)	ND	0.0005
ZINC °	mg/L Zn	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	< LOQ	0.003



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			WATER PIT AT WELLPAD B T23AV224-0001	
MICROBIOLOGY				
COLIFORM BACTERIA ^b	MPN/100 mL	MULTIPLE-TUBE FERMENTATION TECHNIQUE (SM: PART 9221B)	23	1.8
FAECAL COLIFORM BACTERIA ^b	MPN/100 mL	MULTIPLE-TUBE FERMENTATION TECHNIQUE (SM: PART 9221E)	< 1.8	1.8
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, 23rd EDITION, 2017.

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

ND : NON-DETECTABLE.

< LOQ : < LIMIT OF QUANTITATION (LEAD ≥ 0.015 AND < 0.200 mg/L, ZINC ≥ 0.003 AND < 0.050 mg/L).

(MR BHUCHONK PANICHLERTUMPI)
LABORATORY SUPERVISOR

NOVEMBER 7, 2023

ANALYSIS REPORT

CUSTOMER NAME	: PTTEP SP LIMITED	RECEIVED DATE	: OCTOBER 26, 2023
ADDRESS	: 323 MOO 1 KUT NAM SAI NAM PHONG KHON KAEN 40310	ANALYTICAL DATE	: OCTOBER 26 - NOVEMBER 5, 2023
CONTACT INFORMATION	: TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com	REPORT NO.	: 2023-U094822
SAMPLING SOURCE	: -	WORK NO.	: 2023-002248
SAMPLE TYPE	: EFFLUENT	ANALYSIS NO.	: T23AV224-0002
SAMPLING DATE	: OCTOBER 25, 2023		
SAMPLING TIME	: 11:50 HOUR		
SAMPLING METHOD °	: GRAB, GRAB AND STERILE TECHNIQUE		
SAMPLING BY °	: MR APISIT SRIKONGKAEW		
ANALYZED BY	: MISS NAPAPORN KHUNNOKKHUM		

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			CUTTING PIT AT WELLPAD B T23AV224-0002	
pH °	-	ELECTROMETRIC METHOD AT SITE (SM: PART 4500-H ⁺ B)	7.7 (30°C)	-
TEMPERATURE °	°C	THERMOMETER AT SITE (SM: PART 2550 B)	30	-
ELECTRICAL CONDUCTIVITY °	µS/cm	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2510 B)	118 (30°C)	0.1
DISSOLVED OXYGEN °	mg/L	MEMBRANE ELECTRODE METHOD AT SITE (SM: PART 4500-O G)	5.2	0.5
BIOCHEMICAL OXYGEN DEMAND °	mg/L	MEMBRANE ELECTRODE METHOD (SM: PART 5210 B AND PART 4500-O G)	ND	2.0
CHEMICAL OXYGEN DEMAND °	mg/L	CLOSED REFLUX, COLOURIMETRIC METHOD (SM: PART 5220 D)	ND	25.0
TOTAL SUSPENDED SOLIDS °	mg/L	TOTAL SUSPENDED SOLIDS DRIED AT 103-105 °C (SM: PART 2540 D)	7.5	5.0
TOTAL DISSOLVED SOLIDS °	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	71	25
FAT, OIL AND GREASE °	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	ND	3
METALS				
CADMIUM °	mg/L Cd	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.002
HEXAVALENT CHROMIUM °	mg/L Cr ⁶⁺	COLOURIMETRIC METHOD (SM: PART 3500-Cr B)	ND	0.006
COPPER °	mg/L Cu	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005
LEAD °	mg/L Pb	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.015
MANGANESE °	mg/L Mn	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	< LOQ	0.004
MERCURY °	mg/L Hg	COLD VAPOUR AAS METHOD (SM: PART 3112 B)	ND	0.0005
ZINC °	mg/L Zn	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	< LOQ	0.003



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			CUTTING PIT AT WELLPAD B T23AV224-0002	
MICROBIOLOGY				
COLIFORM BACTERIA ^b	MPN/100 mL	MULTIPLE-TUBE FERMENTATION TECHNIQUE (SM: PART 9221 B)	79	1.8
FAECAL COLIFORM BACTERIA ^b	MPN/100 mL	MULTIPLE-TUBE FERMENTATION TECHNIQUE (SM: PART 9221 E)	< 1.8	1.8
SAMPLE CONDITION				
WATER'S COLOUR/TURBID SEDIMENT			YELLOW/TURBID BROWN	

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

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

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

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

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

ND : NON-DETECTABLE.

< LOQ : < LIMIT OF QUANTITATION (MANGANESE \geq 0.004 AND < 0.050 mg/L, ZINC \geq 0.003 AND < 0.050 mg/L).

(MR BHUCHONK PANICHLERTUMPI)
LABORATORY SUPERVISOR

NOVEMBER 7, 2023

ANALYSIS REPORT

CUSTOMER NAME	: PTTEP SP LIMITED	RECEIVED DATE	: OCTOBER 26, 2023
ADDRESS	: 323 MOO 1 KUT NAM SAI NAM PHONG KHON KAEN 40310	ANALYTICAL DATE	: OCTOBER 26 - NOVEMBER 5, 2023
CONTACT INFORMATION	: TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com	REPORT NO.	: 2023-U094823
SAMPLING SOURCE	: -	WORK NO.	: 2023-002248
SAMPLE TYPE	: BLANK (EFFLUENT)	ANALYSIS NO.	: 2023-FB1092, 2023-TB1033
SAMPLING DATE	: -		
SAMPLING TIME	: -		
SAMPLING METHOD	: -		
SAMPLING BY	: -		
ANALYZED BY	: MISS AKSARIN BUNKONG		

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT		DETECTION LIMIT
			1 2023-FB1092	2 2023-TB1033	
BIOCHEMICAL OXYGEN DEMAND	mg/L	MEMBRANE ELECTRODE METHOD (SM: PART 5210 B AND PART 4500-O G)	ND	ND	2.0
CHEMICAL OXYGEN DEMAND	mg/L	CLOSED REFLUX, COLOURIMETRIC METHOD (SM: PART 5220 D)	ND	ND	25.0
TOTAL SUSPENDED SOLIDS	mg/L	TOTAL SUSPENDED SOLIDS DRIED AT 103-105 °C (SM: PART 2540 D)	ND	ND	5.0
TOTAL DISSOLVED SOLIDS	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	ND	ND	25
FAT, OIL AND GREASE	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	ND	ND	3
METALS					
CADMIUM	mg/L Cd	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	ND	0.002
HEXAVALENT CHROMIUM	mg/L Cr ⁶⁺	COLOURIMETRIC METHOD (SM: PART 3500-Cr B)	ND	ND	0.006
COPPER	mg/L Cu	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	ND	0.005
LEAD	mg/L Pb	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	ND	0.015
MANGANESE	mg/L Mn	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	ND	0.004
MERCURY	mg/L Hg	COLD VAPOUR AAS METHOD (SM: PART 3112 B)	ND	ND	0.0005
ZINC	mg/L Zn	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	ND	0.003



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT		DETECTION LIMIT
			1 2023-FB1092	2 2023-TB1033	
MICROBIOLOGY					
COLIFORM BACTERIA	MPN/100 mL	MULTIPLE-TUBE FERMENTATION TECHNIQUE (SM: PART 9221 B)	< 1.8	< 1.8	1.8
FAECAL COLIFORM BACTERIA	MPN/100 mL	MULTIPLE-TUBE FERMENTATION TECHNIQUE (SM: PART 9221 E)	< 1.8	< 1.8	1.8
SAMPLE CONDITION					
WATER'S COLOUR/TURBID SEDIMENT			COLOURLESS/CLEAR	COLOURLESS/CLEAR	

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

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

RESULT 1 : FIELD BLANK

RESULT 2 : TRIP BLANK

ND : NON-DETECTABLE.

(MR BROCHONK PANICHERTUMPI)
LABORATORY SUPERVISOR

NOVEMBER 7, 2023

ANALYSIS REPORT

PROJECT NAME : EIA COMPLIANCE AUDIT AND MONITORING OF PART B: SPH = SINPHUHORM (1 FEB 2020 - 31 DEC 2023)

CUSTOMER NAME : PTTEP SP LIMITED

ADDRESS : 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD
CHATUCHAK CHATUCHAK BANGKOK 10900

CONTACT INFORMATION : TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com

SAMPLING SOURCE : SIN PHU HORM

SAMPLE TYPE : EFFLUENT

SAMPLING DATE : JULY 19, 2023

SAMPLING TIME : 08:40 HOUR

SAMPLING METHOD ° : GRAB, GRAB AND STERILE TECHNIQUE

SAMPLING BY ° : MR ACHITA SAENGJAN

ANALYZED BY : MISS AKSARIN BUNKONG

RECEIVED DATE : JULY 19, 2023

ANALYTICAL DATE : JULY 19-27, 2023

REPORT NO. : 2023-U063313

WORK NO. : 2019-001655

ANALYSIS NO. : T23AN889-0001

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			SUMP COLLECTING STORMWATER PRIOR TO DISCHARGE OUT OF GPP (SW62) T23AN889-0001	
pH °	-	ELECTROMETRIC METHOD AT SITE (SM: PART 4500-H ⁺ B)	8.5 (32°C)	-
ELECTRICAL CONDUCTIVITY °	µmhos/cm	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2510 B)	162 (32°C)	0.1
DISSOLVED OXYGEN °	mg/L	MEMBRANE ELECTRODE METHOD AT SITE (SM: PART 4500-O G)	5.2	0.5
BIOCHEMICAL OXYGEN DEMAND °	mg/L	MEMBRANE ELECTRODE METHOD (SM: PART 5210 B AND PART 4500-O G)	5.0	2.0
CHEMICAL OXYGEN DEMAND °	mg/L	CLOSED REFLUX, COLOURIMETRIC METHOD (SM: PART 5220 D)	ND	25.0
SUSPENDED SOLIDS °	mg/L	SUSPENDED SOLIDS DRIED AT 103-105 °C (SM: PART 2540 D)	8.8	5.0
TOTAL DISSOLVED SOLIDS °	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	105	25
FAT, OIL AND GREASE °	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	ND	3
METALS				
CADMIUM °	mg/L Cd	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.002
HEXAVALENT CHROMIUM °	mg/L Cr ⁶⁺	COLOURIMETRIC METHOD (SM: PART 3500-Cr B)	ND	0.006
COPPER °	mg/L Cu	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005
LEAD °	mg/L Pb	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.015
MANGANESE °	mg/L Mn	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	0.066	0.004
TOTAL MERCURY °	mg/L Hg	COLD VAPOUR AAS METHOD (SM: PART 3112 B)	ND	0.0005
ZINC °	mg/L Zn	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.003



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			SUMP COLLECTING STORMWATER PRIOR TO DISCHARGE OUT OF GPP (SW62) T23AN889-0001	
MICROBIOLOGY				
FAECAL COLIFORM BACTERIA ^b	MPN/100 mL	MULTIPLE-TUBE FERMENTATION TECHNIQUE (SM: PART 9221 E)	130	1.8
COLIFORM BACTERIA ^b	MPN/100 mL	MULTIPLE-TUBE FERMENTATION TECHNIQUE (SM: PART 9221 B)	240	1.8
SAMPLE CONDITION				
WATER'S COLOUR/TURBID			YELLOW/CLEAR	
SEDIMENT			GREEN	

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

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

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

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

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

ND : NON-DETECTABLE.

(MISS BENJAWAN VIRIYOTHAJ)
LABORATORY SUPERVISOR

AUGUST 3, 2023

ANALYSIS REPORT

PROJECT NAME : EIA COMPLIANCE AUDIT AND MONITORING OF PART B: SPH = SINPHUHORM (1 FEB 2020 - 31 DEC 2023)
CUSTOMER NAME : PTTEP SP LIMITED
ADDRESS : 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD
CHATUCHAK CHATUCHAK BANGKOK 10900
CONTACT INFORMATION : TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com
SAMPLING SOURCE : SIN PHU HORM
SAMPLE TYPE : EFFLUENT
SAMPLING DATE : JULY 19, 2023
SAMPLING TIME : 09:10 HOUR
SAMPLING METHOD ° : GRAB, GRAB AND STERILE TECHNIQUE
SAMPLING BY ° : MR ACHITA SAENGJAN
ANALYZED BY : MISS AKSARIN BUNKONG

RECEIVED DATE : JULY 19, 2023
ANALYTICAL DATE : JULY 19-27, 2023
REPORT NO. : 2023-U063316
WORK NO. : 2019-001655
ANALYSIS NO. : T23AN889-0002

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			OFF SITE FROM GPP AT POTENTIAL STORMWATER DISCHARGE POINT (SW63) T23AN889-0002	
pH °	-	ELECTROMETRIC METHOD AT SITE (SM: PART 4500-H ⁺ B)	8.4 (32°C)	-
ELECTRICAL CONDUCTIVITY °	µmhos/cm	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2510 B)	161 (32°C)	0.1
DISSOLVED OXYGEN °	mg/L	MEMBRANE ELECTRODE METHOD AT SITE (SM: PART 4500-O G)	5.0	0.5
BIOCHEMICAL OXYGEN DEMAND °	mg/L	MEMBRANE ELECTRODE METHOD (SM: PART 5210 B AND PART 4500-O G)	4.6	2.0
CHEMICAL OXYGEN DEMAND °	mg/L	CLOSED REFLUX, COLOURIMETRIC METHOD (SM: PART 5220 D)	ND	25.0
SUSPENDED SOLIDS °	mg/L	SUSPENDED SOLIDS DRIED AT 103-105 °C (SM: PART 2540 D)	9.1	5.0
TOTAL DISSOLVED SOLIDS °	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	101	25
FAT, OIL AND GREASE °	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	ND	3
METALS				
CADMIUM °	mg/L Cd	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.002
HEXAVALENT CHROMIUM °	mg/L Cr ⁶⁺	COLOURIMETRIC METHOD (SM: PART 3500-Cr B)	ND	0.006
COPPER °	mg/L Cu	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005
LEAD °	mg/L Pb	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.015
MANGANESE °	mg/L Mn	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	0.078	0.004
TOTAL MERCURY °	mg/L Hg	COLD VAPOUR AAS METHOD (SM: PART 3112 B)	ND	0.0005



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			OFF SITE FROM GPP AT POTENTIAL STORMWATER DISCHARGE POINT (SW63) T23AN889-0002	
ZINC ^c	mg/L Zn	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.003
MICROBIOLOGY				
FAECAL COLIFORM BACTERIA ^b	MPN/100 mL	MULTIPLE-TUBE FERMENTATION TECHNIQUE (SM: PART 9221 E)	>160,000	1.8
COLIFORM BACTERIA ^b	MPN/100 mL	MULTIPLE-TUBE FERMENTATION TECHNIQUE (SM: PART 9221 B)	>160,000	1.8
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			YELLOW/CLEAR GREEN	

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

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

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

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

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

ND : NON-DETECTABLE.

(MISS BENJAWAN VIRIYOTHAJ)
LABORATORY SUPERVISOR

AUGUST 3, 2023

ANALYSIS REPORT

PROJECT NAME : EIA COMPLIANCE AUDIT AND MONITORING OF PART B: SPH = SINPHUHORM (1 FEB 2020 - 31 DEC 2023)

CUSTOMER NAME : PTTEP SP LIMITED

ADDRESS : 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD
CHATUCHAK CHATUCHAK BANGKOK 10900

CONTACT INFORMATION : TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com

SAMPLING SOURCE : -

SAMPLE TYPE : BLANK (EFFLUENT)

SAMPLING DATE : -

SAMPLING TIME : -

SAMPLING METHOD : -

SAMPLING BY : -

ANALYZED BY : MISS AKSARIN BUNKONG

RECEIVED DATE : JULY 19, 2023

ANALYTICAL DATE : JULY 19-27, 2023

REPORT NO. : 2023-U063312

WORK NO. : 2019-001655

ANALYSIS NO. : 2023-FB0722, 2023-TB0683

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT		DETECTION LIMIT
			1 2023-FB0722	2 2023-TB0683	
BIOCHEMICAL OXYGEN DEMAND	mg/L	MEMBRANE ELECTRODE METHOD (SM: PART 5210 B AND PART 4500-O G)	ND	ND	2.0
CHEMICAL OXYGEN DEMAND	mg/L	CLOSED REFLUX, COLOURIMETRIC METHOD (SM: PART 5220 D)	ND	ND	25.0
SUSPENDED SOLIDS	mg/L	SUSPENDED SOLIDS DRIED AT 103-105 °C (SM: PART 2540 D)	ND	ND	5.0
TOTAL DISSOLVED SOLIDS	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	ND	ND	25
FAT, OIL AND GREASE	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	ND	ND	3
METALS					
CADMIUM	mg/L Cd	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	ND	0.002
HEXAVALENT CHROMIUM	mg/L Cr ⁶⁺	COLOURIMETRIC METHOD (SM: PART 3500-Cr B)	ND	ND	0.006
COPPER	mg/L Cu	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	ND	0.005
LEAD	mg/L Pb	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	ND	0.015
MANGANESE	mg/L Mn	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	ND	0.004
TOTAL MERCURY	mg/L Hg	COLD VAPOUR AAS METHOD (SM: PART 3112 B)	ND	ND	0.0005
ZINC	mg/L Zn	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	ND	0.003



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT		DETECTION LIMIT
			1 2023-FB0722	2 2023-TB0683	
MICROBIOLOGY					
FAECAL COLIFORM BACTERIA	MPN/100 mL	MULTIPLE-TUBE FERMENTATION TECHNIQUE (SM: PART 9221 E)	< 1.8	< 1.8	1.8
COLIFORM BACTERIA	MPN/100 mL	MULTIPLE-TUBE FERMENTATION TECHNIQUE (SM: PART 9221 B)	< 1.8	< 1.8	1.8
SAMPLE CONDITION					
WATER'S COLOUR/TURBID SEDIMENT			COLOURLESS/CLEAR	COLOURLESS/CLEAR	

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

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

RESULT 1 : FIELD BLANK

RESULT 2 : TRIP BLANK

ND : NON-DETECTABLE.

(MISS BENJAWAN VIRIYOTHAI)
LABORATORY SUPERVISOR

AUGUST 3, 2023

ANALYSIS REPORT

CUSTOMER NAME	: PTTEP SP LIMITED	RECEIVED DATE	: JULY 26, 2023
ADDRESS	: 323 MOO 1 KUT NAM SAI NAM PHONG KHON KAEN 40310	ANALYTICAL DATE	: JULY 26 - AUGUST 7, 2023
CONTACT INFORMATION	: TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com	REPORT NO.	: 2023-U065054
SAMPLING SOURCE	: -	WORK NO.	: 2023-002248
SAMPLE TYPE	: EFFLUENT	ANALYSIS NO.	: T23A0348-0001
SAMPLING DATE	: JULY 25, 2023		
SAMPLING TIME	: 13:40 HOUR		
SAMPLING METHOD °	: GRAB, GRAB AND STERILE TECHNIQUE		
SAMPLING BY °	: MR PRACHCHAPOL SOPHA		
ANALYZED BY	: MISS NAPAPORN KHUNNOKKHUM		

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			WATER PIT AT WELLPAD B T23A0348-0001	
pH °	-	ELECTROMETRIC METHOD AT SITE (SM: PART 4500-H ⁺ B)	8.9 (32°C)	-
TEMPERATURE °	°C	LABORATORY AND FIELD METHODS (SM: PART 2550 B)	32	-
ELECTRICAL CONDUCTIVITY °	µmhos/cm	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2510 B)	260 (32°C)	0.1
DISSOLVED OXYGEN °	mg/L	MEMBRANE ELECTRODE METHOD AT SITE (SM: PART 4500-O G)	4.9	0.5
BIOCHEMICAL OXYGEN DEMAND °	mg/L	5-DAY BOD TEST, MEMBRANE ELECTRODE METHOD (SM: PART 5210 B AND PART 4500-O G)	ND	2.0
CHEMICAL OXYGEN DEMAND °	mg/L	CLOSED REFLUX, COLOURIMETRIC METHOD (SM: PART 5220 D)	47.5	25.0
TOTAL SUSPENDED SOLIDS °	mg/L	DRIED AT 103-105 °C (SM: PART 2540 D)	30.1	5.0
TOTAL DISSOLVED SOLIDS °	mg/L	DRIED AT 180 °C (SM: PART 2540 C)	167	25
FAT, OIL AND GREASE °	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	ND	3
METALS				
CADMIUM °	mg/L Cd	DIGESTION, DIRECT AIR-ACETYLENE FLAME METHOD (SM: PART 3030 E AND PART 3111 B)	ND	0.002
HEXAVALENT CHROMIUM °	mg/L Cr ⁶⁺	FILTRATION, COLOURIMETRIC METHOD (SM: 3500-Cr B)	ND	0.006
COPPER °	mg/L Cu	DIGESTION, DIRECT AIR-ACETYLENE FLAME METHOD (SM: PART 3030 E AND PART 3111 B)	ND	0.005
LEAD °	mg/L Pb	DIGESTION, DIRECT AIR-ACETYLENE FLAME METHOD (SM: PART 3030 E AND PART 3111 B)	ND	0.015
MANGANESE °	mg/L Mn	DIGESTION, DIRECT AIR-ACETYLENE FLAME METHOD (SM: PART 3030 E AND PART 3111 B)	0.176	0.004
MERCURY °	mg/L Hg	DIGESTION, COLD-VAPOUR ATOMIC ABSORPTION SPECTROMETRIC METHOD (SM: PART 3112 B)	ND	0.0005
ZINC °	mg/L Zn	DIGESTION, DIRECT AIR-ACETYLENE FLAME METHOD (SM: PART 3030 E AND PART 3111 B)	ND	0.003



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			WATER PIT AT WELLPAD B T23A0348-0001	
MICROBIOLOGY				
FAECAL COLIFORM BACTERIA ^b	MPN/100 mL	MULTIPLE-TUBE FERMENTATION TECHNIQUE (SM: 9221 E)	2.0	1.8
COLIFORM BACTERIA ^b	MPN/100 mL	MULTIPLE-TUBE FERMENTATION TECHNIQUE (SM: PART 9221 B)	140	1.8
SAMPLE CONDITION				
WATER'S COLOUR/TURBID SEDIMENT			YELLOW/CLEAR BROWN	

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

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

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

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

ND : NON-DETECTABLE.

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(MISS BENJAWAN VIRIYOTHA)
LABORATORY SUPERVISOR

AUGUST 9, 2023

ANALYSIS REPORT

CUSTOMER NAME : PTTEP SP LIMITED
ADDRESS : 323 MOO 1 KUT NAM SAI NAM PHONG KHON KAEN 40310
CONTACT INFORMATION : TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com
SAMPLING SOURCE : -
SAMPLE TYPE : EFFLUENT
SAMPLING DATE : JULY 25, 2023
SAMPLING TIME : 13:30 HOUR
SAMPLING METHOD ° : GRAB, GRAB AND STERILE TECHNIQUE
SAMPLING BY ° : MR PRACHCHAPOL SOPHA
ANALYZED BY : MISS NAPAPORN KHUNNOKKHUM

RECEIVED DATE : JULY 26, 2023
ANALYTICAL DATE : JULY 26 - AUGUST 7, 2023
REPORT NO. : 2023-U065067
WORK NO. : 2023-002248
ANALYSIS NO. : T23A0348-0002

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			CUTTING PIT AT WELLPAD B T23A0348-0002	
pH °	-	ELECTROMETRIC METHOD AT SITE (SM: PART 4500-H ⁺ B)	9.0 (32°C)	-
TEMPERATURE °	°C	LABORATORY AND FIELD METHODS (SM: PART 2550 B)	32	-
ELECTRICAL CONDUCTIVITY °	µmhos/cm	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2510 B)	178 (32°C)	0.1
DISSOLVED OXYGEN °	mg/L	MEMBRANE ELECTRODE METHOD AT SITE (SM: PART 4500-O G)	4.8	0.5
BIOCHEMICAL OXYGEN DEMAND °	mg/L	5-DAY BOD TEST, MEMBRANE ELECTRODE METHOD (SM: PART 5210 B AND PART 4500-O G)	2.6	2.0
CHEMICAL OXYGEN DEMAND °	mg/L	CLOSED REFLUX, COLOURIMETRIC METHOD (SM: PART 5220 D)	28.2	25.0
TOTAL SUSPENDED SOLIDS °	mg/L	DRIED AT 103-105 °C (SM: PART 2540 D)	5.6	5.0
TOTAL DISSOLVED SOLIDS °	mg/L	DRIED AT 180 °C (SM: PART 2540 C)	128	25
FAT, OIL AND GREASE °	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	ND	3
METALS				
CADMIUM °	mg/L Cd	DIGESTION, DIRECT AIR-ACETYLENE FLAME METHOD (SM: PART 3030 E AND PART 3111 B)	ND	0.002
HEXAVALENT CHROMIUM °	mg/L Cr ⁶⁺	FILTRATION, COLOURIMETRIC METHOD (SM: 3500-Cr B)	ND	0.006
COPPER °	mg/L Cu	DIGESTION, DIRECT AIR-ACETYLENE FLAME METHOD (SM: PART 3030 E AND PART 3111 B)	ND	0.005
LEAD °	mg/L Pb	DIGESTION, DIRECT AIR-ACETYLENE FLAME METHOD (SM: PART 3030 E AND PART 3111 B)	ND	0.015
MANGANESE °	mg/L Mn	DIGESTION, DIRECT AIR-ACETYLENE FLAME METHOD (SM: PART 3030 E AND PART 3111 B)	< LOQ	0.004
MERCURY °	mg/L Hg	DIGESTION, COLD-VAPOUR ATOMIC ABSORPTION SPECTROMETRIC METHOD (SM: PART 3112 B)	ND	0.0005
ZINC °	mg/L Zn	DIGESTION, DIRECT AIR-ACETYLENE FLAME METHOD (SM: PART 3030 E AND PART 3111 B)	ND	0.003



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			CUTTING PIT AT WELLPAD B T23A0348-0002	
MICROBIOLOGY				
FAECAL COLIFORM BACTERIA ^b	MPN/100 mL	MULTIPLE-TUBE FERMENTATION TECHNIQUE (SM: 9221 E)	< 1.8	1.8
COLIFORM BACTERIA ^b	MPN/100 mL	MULTIPLE-TUBE FERMENTATION TECHNIQUE (SM: PART 9221 B)	22	1.8
SAMPLE CONDITION				
WATER'S COLOUR/TURBID SEDIMENT			YELLOW/CLEAR BROWN	

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

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

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

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

ND : NON-DETECTABLE.

< LOQ : < LIMIT OF QUANTITATION (MANGANESE \geq 0.004 AND < 0.050 mg/L).

(MISS BENJAWAN VIRIYOTHA)

LABORATORY SUPERVISOR

AUGUST 9, 2023

ANALYSIS REPORT

PROJECT NAME : EIA COMPLIANCE AUDIT AND MONITORING OF PART B: SPH = SINPHUHORM (1 FEB 2020 - 31 DEC 2023)
CUSTOMER NAME : PTTEP SP LIMITED
ADDRESS : 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD
CHATUCHAK CHATUCHAK BANGKOK 10900
CONTACT INFORMATION : TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com
SAMPLING SOURCE : SIN PHU HORM
SAMPLE TYPE : EFFLUENT
SAMPLING DATE : AUGUST 16, 2023
SAMPLING TIME : 09:30 HOUR
SAMPLING METHOD : GRAB, GRAB AND STERILE TECHNIQUE
SAMPLING BY : MR MANIT PANCHOT
ANALYZED BY : MISS AKSARIN BUNKONG

RECEIVED DATE : AUGUST 16, 2023
ANALYTICAL DATE : AUGUST 16-24, 2023
REPORT NO. : 2023-U070986
WORK NO. : 2019-001655
ANALYSIS NO. : T23AP781-0001

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			SUMP COLLECTING STORMWATER PRIOR TO DISCHARGE OUT OF GPP (SW62) T23AP781-0001	
pH ^a	-	ELECTROMETRIC METHOD AT SITE (SM: PART 4500-H ⁺ B)	8.8 (31°C)	-
ELECTRICAL CONDUCTIVITY ^c	µmhos/cm	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2510 B)	187 (31°C)	0.1
DISSOLVED OXYGEN ^c	mg/L	MEMBRANE ELECTRODE METHOD AT SITE (SM: PART 4500-O ₂ G)	4.6	0.5
BIOCHEMICAL OXYGEN DEMAND ^a	mg/L	MEMBRANE ELECTRODE METHOD (SM: PART 5210 B AND PART 4500-O ₂ G)	9.6	2.0
CHEMICAL OXYGEN DEMAND ^a	mg/L	CLOSED REFLUX, COLOURIMETRIC METHOD (SM: PART 5220 D)	30.5	25.0
SUSPENDED SOLIDS ^a	mg/L	SUSPENDED SOLIDS DRIED AT 103-105 °C (SM: PART 2540 D)	16.0	5.0
TOTAL DISSOLVED SOLIDS ^b	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	97	25
FAT, OIL AND GREASE ^c	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	ND	3
METALS				
CADMIUM ^c	mg/L Cd	IN-HOUSE METHOD: UAE.TP.IV.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.002
HEXAVALENT CHROMIUM ^c	mg/L Cr ⁶⁺	COLOURIMETRIC METHOD (SM: PART 3500-Cr B)	ND	0.006
COPPER ^c	mg/L Cu	IN-HOUSE METHOD: UAE.TP.IV.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	< LOQ	0.005
LEAD ^c	mg/L Pb	IN-HOUSE METHOD: UAE.TP.IV.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.015
MANGANESE ^c	mg/L Mn	IN-HOUSE METHOD: UAE.TP.IV.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	< LOQ	0.004
TOTAL MERCURY ^c	mg/L Hg	COLD VAPOUR AAS METHOD (SM: PART 3112 B)	ND	0.0005
ZINC ^c	mg/L Zn	IN-HOUSE METHOD: UAE.TP.IV.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.003



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			SUMP COLLECTING STORMWATER PRIOR TO DISCHARGE OUT OF GPP (SW62) T23AP781-0001	
MICROBIOLOGY				
FAECAL COLIFORM BACTERIA ^b	MPN/100 mL	MULTIPLE-TUBE FERMENTATION TECHNIQUE (SM: PART 9221 E)	< 1.8	1.8
COLIFORM BACTERIA ^b	MPN/100 mL	MULTIPLE-TUBE FERMENTATION TECHNIQUE (SM: PART 9221 B)	7.8	1.8
SAMPLE CONDITION				
WATER'S COLOUR/TURBID SEDIMENT			YELLOW/TURBID GREEN	

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

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

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

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

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

ND : NON-DETECTABLE.

< LOQ : < LIMIT OF QUANTITATION (COPPER \geq 0.005 AND < 0.050 mg/L, MANGANESE \geq 0.004 AND < 0.050 mg/L).

(MR BHUCHONK PANICHLERTUMPI)
LABORATORY SUPERVISOR

AUGUST 29, 2023

ANALYSIS REPORT

PROJECT NAME : EIA COMPLIANCE AUDIT AND MONITORING OF PART B: SPH = SINPHUHORM (1 FEB 2020 - 31 DEC 2023)

CUSTOMER NAME : PTTEP SP LIMITED

ADDRESS : 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD
CHATUCHAK CHATUCHAK BANGKOK 10900

CONTACT INFORMATION : TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com

SAMPLING SOURCE : -

SAMPLE TYPE : BLANK (EFFLUENT)

SAMPLING DATE : -

SAMPLING TIME : -

SAMPLING METHOD : -

SAMPLING BY : -

ANALYZED BY : MISS AKSARIN BUNKONG

RECEIVED DATE : AUGUST 16, 2023

ANALYTICAL DATE : AUGUST 16-24, 2023

REPORT NO. : 2023-U070987

WORK NO. : 2019-001655

ANALYSIS NO. : 2023-FB0808, 2023-TB0755

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT		DETECTION LIMIT
			1 2023-FB0808	2 2023-TB0755	
BIOCHEMICAL OXYGEN DEMAND	mg/L	MEMBRANE ELECTRODE METHOD (SM: PART 5210 B AND PART 4500-O G)	ND	ND	2.0
CHEMICAL OXYGEN DEMAND	mg/L	CLOSED REFLUX, COLOURIMETRIC METHOD (SM: PART 5220 D)	ND	ND	25.0
SUSPENDED SOLIDS	mg/L	SUSPENDED SOLIDS DRIED AT 103-105 °C (SM: PART 2540 D)	ND	ND	5.0
TOTAL DISSOLVED SOLIDS	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	ND	ND	25
FAT, OIL AND GREASE	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	ND	ND	3
METALS					
CADMIUM	mg/L Cd	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	ND	0.002
HEXAVALENT CHROMIUM	mg/L Cr ⁶⁺	COLOURIMETRIC METHOD (SM: PART 3500-Cr B)	ND	ND	0.006
COPPER	mg/L Cu	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	ND	0.005
LEAD	mg/L Pb	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	ND	0.015
MANGANESE	mg/L Mn	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	ND	0.004
TOTAL MERCURY	mg/L Hg	COLD VAPOUR AAS METHOD (SM: PART 3112 B)	ND	ND	0.0005
ZINC	mg/L Zn	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	ND	0.003



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT		DETECTION LIMIT
			1 2023-FB0808	2 2023-TB0755	
MICROBIOLOGY					
FAECAL COLIFORM BACTERIA	MPN/100 mL	MULTIPLE-TUBE FERMENTATION TECHNIQUE (SM: PART 9221E)	< 1.8	< 1.8	1.8
COLIFORM BACTERIA	MPN/100 mL	MULTIPLE-TUBE FERMENTATION TECHNIQUE (SM: PART 9221B)	< 1.8	< 1.8	1.8
SAMPLE CONDITION					
WATER'S COLOUR/TURBID SEDIMENT			COLOURLESS/CLEAR	COLOURLESS/CLEAR	

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

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

RESULT 1 : FIELD BLANK

RESULT 2 : TRIP BLANK

ND : NON-DETECTABLE.



(MR BHUCHONK PANICHLERTUMPI)
LABORATORY SUPERVISOR

AUGUST 29, 2023

ANALYSIS REPORT

PROJECT NAME : EIA COMPLIANCE AUDIT AND MONITORING OF PART B: SPH = SINPHUHORM (1 FEB 2020 - 31 DEC 2023)

CUSTOMER NAME : PTTEP SP LIMITED

ADDRESS : 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD
CHATUCHAK CHATUCHAK BANGKOK 10900

CONTACT INFORMATION : TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com

SAMPLING SOURCE : SIN PHU HORM

SAMPLE TYPE : EFFLUENT

SAMPLING DATE : SEPTEMBER 20, 2023

SAMPLING TIME : 09:10 HOUR

SAMPLING METHOD : GRAB, GRAB AND STERILE TECHNIQUE

SAMPLING BY : MR MANIT PANCHOT

ANALYZED BY : MISS AKSARIN BUNKONG

RECEIVED DATE : SEPTEMBER 21, 2023

ANALYTICAL DATE : SEPTEMBER 21-29, 2023

REPORT NO. : 2023-U083957

WORK NO. : 2019-001655

ANALYSIS NO. : T23AS789-0001

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			SUMP COLLECTING STORMWATER PRIOR TO DISCHARGE OUT OF GPP (SW62) T23AS789-0001	
pH ^a	-	ELECTROMETRIC METHOD AT SITE (SM: PART 4500-H ⁺ B)	8.2 (30°C)	-
ELECTRICAL CONDUCTIVITY ^c	µS/cm	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2510 B)	206 (30°C)	0.1
DISSOLVED OXYGEN ^c	mg/L	MEMBRANE ELECTRODE METHOD AT SITE (SM: PART 4500-O G)	5.4	0.5
BIOCHEMICAL OXYGEN DEMAND ^a	mg/L	MEMBRANE ELECTRODE METHOD (SM: PART 5210 B AND PART 4500-O G)	3.4	2.0
CHEMICAL OXYGEN DEMAND ^c	mg/L	CLOSED REFLUX, COLOURIMETRIC METHOD (SM: PART 5220 D)	ND	25.0
SUSPENDED SOLIDS ^c	mg/L	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)	119	25
FAT, OIL AND GREASE ^c	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	ND	3
METALS				
TOTAL MERCURY ^c	mg/L Hg	COLD VAPOUR AAS METHOD (SM: PART 3112 B)	ND	0.0005
CADMIUM ^c	mg/L Cd	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.002
HEXAVALENT CHROMIUM ^c	mg/L Cr ⁶⁺	COLOURIMETRIC METHOD (SM: PART 3500-Cr B)	ND	0.006
COPPER ^c	mg/L Cu	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005
LEAD ^c	mg/L Pb	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.015
MANGANESE ^c	mg/L Mn	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	< LOQ	0.004
ZINC ^c	mg/L Zn	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.003



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			SUMP COLLECTING STORMWATER PRIOR TO DISCHARGE OUT OF GPP (SW62) T23AS789-0001	
MICROBIOLOGY				
FAECAL COLIFORM BACTERIA ^b	MPN/100 mL	MULTIPLE-TUBE FERMENTATION TECHNIQUE (SM: PART 9221 E)	460	1.8
COLIFORM BACTERIA ^b	MPN/100 mL	MULTIPLE-TUBE FERMENTATION TECHNIQUE (SM: PART 9221 B)	460	1.8
SAMPLE CONDITION				
WATER'S COLOUR/TURBID			YELLOW/CLEAR	
SEDIMENT			GREEN	

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

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

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

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

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

ND : NON-DETECTABLE.

< LOQ : < LIMIT OF QUANTITATION (MANGANESE ≥ 0.004 AND < 0.050 mg/L).

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OCTOBER 4, 2023

ANALYSIS REPORT

PROJECT NAME : EIA COMPLIANCE AUDIT AND MONITORING OF PART B: SPH = SINPHUHORM (1 FEB 2020 - 31 DEC 2023)
CUSTOMER NAME : PTTEP SP LIMITED
ADDRESS : 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD
 CHATUCHAK CHATUCHAK BANGKOK 10900
CONTACT INFORMATION : TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com
SAMPLING SOURCE : -
SAMPLE TYPE : BLANK (EFFLUENT)
SAMPLING DATE : -
SAMPLING TIME : -
SAMPLING METHOD : -
SAMPLING BY : -
ANALYZED BY : MISS AKSARIN BUNKONG

RECEIVED DATE : SEPTEMBER 21, 2023
ANALYTICAL DATE : SEPTEMBER 21-29, 2023
REPORT NO. : 2023-U083958
WORK NO. : 2019-001655
ANALYSIS NO. : 2023-FB0953, 2023-TB0896

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT		DETECTION LIMIT
			1 2023-FB0953	2 2023-TB0896	
BIOCHEMICAL OXYGEN DEMAND	mg/L	MEMBRANE ELECTRODE METHOD (SM: PART 5210 B AND PART 4500-O G)	ND	ND	2.0
CHEMICAL OXYGEN DEMAND	mg/L	CLOSED REFLUX, COLOURIMETRIC METHOD (SM: PART 5220 D)	ND	ND	25.0
SUSPENDED SOLIDS	mg/L	SUSPENDED SOLIDS DRIED AT 103-105 °C (SM: PART 2540 D)	ND	ND	5.0
TOTAL DISSOLVED SOLIDS	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	ND	ND	25
FAT, OIL AND GREASE	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	ND	ND	3
METALS					
CADMIUM	mg/L Cd	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	ND	0.002
HEXAVALENT CHROMIUM	mg/L Cr ⁶⁺	COLOURIMETRIC METHOD (SM: PART 3500-Cr B)	ND	ND	0.006
COPPER	mg/L Cu	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	ND	0.005
LEAD	mg/L Pb	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	ND	0.015
MANGANESE	mg/L Mn	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	ND	0.004
TOTAL MERCURY	mg/L Hg	COLD VAPOUR AAS METHOD (SM: PART 3112 B)	ND	ND	0.0005
ZINC	mg/L Zn	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	ND	0.003



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT		DETECTION LIMIT
			1 2023-FB0953	2 2023-TB0896	
MICROBIOLOGY					
FAECAL COLIFORM BACTERIA	MPN/100 mL	MULTIPLE-TUBE FERMENTATION TECHNIQUE (SM: PART 9221 E)	< 1.8	< 1.8	1.8
COLIFORM BACTERIA	MPN/100 mL	MULTIPLE-TUBE FERMENTATION TECHNIQUE (SM: PART 9221 B)	< 1.8	< 1.8	1.8
SAMPLE CONDITION					
WATER'S COLOUR/TURBID SEDIMENT			COLOURLESS/CLEAR	COLOURLESS/CLEAR	

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

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

RESULT 1 : FIELD BLANK

RESULT 2 : TRIP BLANK

ND : NON-DETECTABLE.

[Signature]

LABORATORY SUPERVISOR

OCTOBER 4, 2023

ANALYSIS REPORT

PROJECT NAME	: EIA COMPLIANCE AUDIT AND MONITORING OF PART B: SPH = SINPHUHORM (1 FEB 2020 - 31 DEC 2023)		
CUSTOMER NAME	: PTTEP SP LIMITED		
ADDRESS	: 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD CHATUCHAK CHATUCHAK BANGKOK 10900		
CONTACT INFORMATION	: TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com		
SAMPLING SOURCE	: SIN PHU HORM		
SAMPLE TYPE	: EFFLUENT	RECEIVED DATE	: NOVEMBER 24, 2023
SAMPLING DATE	: NOVEMBER 24, 2023	ANALYTICAL DATE	: NOVEMBER 24 - DECEMBER 1, 2023
SAMPLING TIME	: 09:00 HOUR	REPORT NO.	: 2023-U104998
SAMPLING METHOD °	: GRAB, GRAB AND STERILE TECHNIQUE	WORK NO.	: 2019-001655
SAMPLING BY °	: MR ACHITA SAENGJAN	ANALYSIS NO.	: T23AX563-0001
ANALYZED BY	: MISS AKSARIN BUNKONG		

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			SUMP COLLECTING STORMWATER PRIOR TO DISCHARGE OUT OF GPP (SW62) T23AX563-0001	
pH °	-	ELECTROMETRIC METHOD (AT SITE) SM: PART 4500 -H ⁺ B AND 1060 B	8.1 (27°C)	-
ELECTRICAL CONDUCTIVITY °	µS/cm	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2510 B)	224 (27°C)	0.1
DISSOLVED OXYGEN °	mg/L	MEMBRANE ELECTRODE METHOD AT SITE (SM: PART 4500-O G)	2.8	0.5
BIOCHEMICAL OXYGEN DEMAND °	mg/L	MEMBRANE ELECTRODE METHOD (SM: PART 5210 B AND PART 4500-O G)	4.5	2.0
CHEMICAL OXYGEN DEMAND °	mg/L	CLOSED REFLUX, COLOURIMETRIC METHOD (SM: PART 5220 D)	28.8	25.0
SUSPENDED SOLIDS °	mg/L	SUSPENDED SOLIDS DRIED AT 103-105 °C (SM: PART 2540 D)	20.4	5.0
TOTAL DISSOLVED SOLIDS °	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	138	25
FAT, OIL AND GREASE °	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	ND	3
METALS				
CADMIUM °	mg/L Cd	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.002
HEXAVALENT CHROMIUM °	mg/L Cr ⁶⁺	COLOURIMETRIC METHOD (SM: PART 3500-Cr B)	ND	0.006
COPPER °	mg/L Cu	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005
LEAD °	mg/L Pb	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.015
MANGANESE °	mg/L Mn	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	0.108	0.004
TOTAL MERCURY °	mg/L Hg	COLD VAPOUR AAS METHOD (SM: PART 3112 B)	0.0006	0.0005
ZINC °	mg/L Zn	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	0.060	0.003



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			SUMP COLLECTING STORMWATER PRIOR TO DISCHARGE OUT OF GPP (SW62) T23AX563-0001	
MICROBIOLOGY				
COLIFORM BACTERIA ^b	MPN/100 mL	MULTIPLE-TUBE FERMENTATION TECHNIQUE (SM: PART 9221B)	790	1.8
FAECAL COLIFORM BACTERIA ^b	MPN/100 mL	MULTIPLE-TUBE FERMENTATION TECHNIQUE (SM: PART 9221E)	790	1.8
SAMPLE CONDITION				
WATER'S COLOUR/TURBID			GREEN/TURBID	
SEDIMENT			GREEN	

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

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

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

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

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

ND : NON-DETECTABLE.

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DECEMBER 6, 2023

ANALYSIS REPORT

PROJECT NAME : EIA COMPLIANCE AUDIT AND MONITORING OF PART B: SPH = SINPHUHORM (1 FEB 2020 - 31 DEC 2023)
CUSTOMER NAME : PTTEP SP LIMITED
ADDRESS : 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD
 CHATUCHAK CHATUCHAK BANGKOK 10900
CONTACT INFORMATION : TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com
SAMPLING SOURCE : -
SAMPLE TYPE : BLANK (EFFLUENT)
SAMPLING DATE : -
SAMPLING TIME : -
SAMPLING METHOD : -
SAMPLING BY : -
ANALYZED BY : MISS AKSARIN BUNKONG

RECEIVED DATE : NOVEMBER 24, 2023
ANALYTICAL DATE : NOVEMBER 24 - DECEMBER 1, 2023
REPORT NO. : 2023-U104999
WORK NO. : 2019-001655
ANALYSIS NO. : 2023-FB1210, 2023-TB1152

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT		DETECTION LIMIT
			1 2023-FB1210	2 2023-TB1152	
BIOCHEMICAL OXYGEN DEMAND	mg/L	MEMBRANE ELECTRODE METHOD (SM: PART 5210 B AND PART 4500-O G)	ND	ND	2.0
CHEMICAL OXYGEN DEMAND	mg/L	CLOSED REFLUX, COLOURIMETRIC METHOD (SM: PART 5220 D)	ND	ND	25.0
SUSPENDED SOLIDS	mg/L	SUSPENDED SOLIDS DRIED AT 103-105 °C (SM: PART 2540 D)	ND	ND	5.0
TOTAL DISSOLVED SOLIDS	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	ND	ND	25
FAT, OIL AND GREASE	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	ND	ND	3
METALS					
CADMIUM	mg/L Cd	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	ND	0.002
HEXAVALENT CHROMIUM	mg/L Cr ⁶⁺	COLOURIMETRIC METHOD (SM: PART 3500-Cr B)	ND	ND	0.006
COPPER	mg/L Cu	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	ND	0.005
LEAD	mg/L Pb	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	ND	0.015
MANGANESE	mg/L Mn	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	ND	0.004
TOTAL MERCURY	mg/L Hg	COLD VAPOUR AAS METHOD (SM: PART 3112 B)	ND	ND	0.0005
ZINC	mg/L Zn	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	ND	0.003



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT		DETECTION LIMIT
			1 2023-FB1210	2 2023-TB1152	
MICROBIOLOGY					
COLIFORM BACTERIA	MPN/100 mL	MULTIPLE-TUBE FERMENTATION TECHNIQUE (SM: PART 9221B)	< 1.8	< 1.8	1.8
FAECAL COLIFORM BACTERIA	MPN/100 mL	MULTIPLE-TUBE FERMENTATION TECHNIQUE (SM: PART 9221E)	< 1.8	< 1.8	1.8
SAMPLE CONDITION					
WATER'S COLOUR/TURBID SEDIMENT			COLOURLESS/CLEAR	COLOURLESS/CLEAR	

IN-HOUSE : BASED ON STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.
 SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.
 RESULT 1 : FIELD BLANK
 RESULT 2 : TRIP BLANK
 ND : NON-DETECTABLE.

(MR. CHICHONRYANICHETORN P.)
LABORATORY SUPERVISOR

DECEMBER 6, 2023

ANALYSIS REPORT

PROJECT NAME : EIA COMPLIANCE AUDIT AND MONITORING OF PART B: SPH = SINPHUHORM (1 FEB 2020 - 31 DEC 2023)
CUSTOMER NAME : PTTEP SP LIMITED
ADDRESS : 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD
CHATUCHAK CHATUCHAK BANGKOK 10900
CONTACT INFORMATION : TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com
SAMPLING SOURCE : SIN PHU HORM
SAMPLE TYPE : EFFLUENT
SAMPLING DATE : DECEMBER 21, 2023
SAMPLING TIME : 09:00 HOUR
SAMPLING METHOD ° : GRAB, GRAB AND STERILE TECHNIQUE
SAMPLING BY ° : MR APISIT SRIKONGKAEW
ANALYZED BY : MISS AKSARIN BUNKONG

RECEIVED DATE : DECEMBER 22, 2023
ANALYTICAL DATE : DECEMBER 22, 2023 - JANUARY 2, 2024
REPORT NO. : 2024-U001965
WORK NO. : 2019-001655
ANALYSIS NO. : T23AZ789-0001

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			SUMP COLLECTING STORMWATER PRIOR TO DISCHARGE OUT OF GPP (SW62) T23AZ789-0001	
pH °	-	ELECTROMETRIC METHOD (AT SITE) SM: PART 4500 -H+ B AND 1060 B	8.5 (25°C)	-
ELECTRICAL CONDUCTIVITY °	µS/cm	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2510 B)	266 (25°C)	0.1
DISSOLVED OXYGEN °	mg/L	MEMBRANE ELECTRODE METHOD AT SITE (SM: PART 4500-O G)	6.0	0.5
BIOCHEMICAL OXYGEN DEMAND °	mg/L	MEMBRANE ELECTRODE METHOD (SM: PART 5210 B AND PART 4500-O G)	7.3	2.0
CHEMICAL OXYGEN DEMAND °	mg/L	CLOSED REFLUX, COLOURIMETRIC METHOD (SM: PART 5220 D)	37.0	25.0
SUSPENDED SOLIDS °	mg/L	SUSPENDED SOLIDS DRIED AT 103-105 °C (SM: PART 2540 D)	30.6	5.0
TOTAL DISSOLVED SOLIDS °	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	142	25
FAT, OIL AND GREASE °	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	ND	3
METALS				
CADMIUM °	mg/L Cd	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.002
HEXAVALENT CHROMIUM °	mg/L Cr6+	COLOURIMETRIC METHOD (SM: PART 3500-Cr B)	ND	0.006
COPPER °	mg/L Cu	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005
LEAD °	mg/L Pb	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.015
MANGANESE °	mg/L Mn	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	0.085	0.004
TOTAL MERCURY °	mg/L Hg	COLD VAPOUR AAS METHOD (SM: PART 3112 B)	0.0008	0.0005
ZINC °	mg/L Zn	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.003



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			SUMP COLLECTING STORMWATER PRIOR TO DISCHARGE OUT OF GPP (SW62) T23AZ789-0001	
MICROBIOLOGY				
COLIFORM BACTERIA ^b	MPN/100 mL	MULTIPLE-TUBE FERMENTATION TECHNIQUE (SM: PART 9221 B)	490	1.8
FAECAL COLIFORM BACTERIA ^b	MPN/100 mL	MULTIPLE-TUBE FERMENTATION TECHNIQUE (SM: PART 9221 E)	490	1.8
SAMPLE CONDITION				
WATER'S COLOUR/TURBID			GREEN/TURBID	
SEDIMENT			GREEN	

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

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

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

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

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

ND : NON-DETECTABLE.



LABORATORY SUPERVISOR

JANUARY 8, 2024

ANALYSIS REPORT

PROJECT NAME : EIA COMPLIANCE AUDIT AND MONITORING OF PART B: SPH = SINPHUHORM (1 FEB 2020 - 31 DEC 2023)
CUSTOMER NAME : PTTEP SP LIMITED
ADDRESS : 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD
CHATUCHAK CHATUCHAK BANGKOK 10900
CONTACT INFORMATION : TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com
SAMPLING SOURCE : SIN PHU HORM
SAMPLE TYPE : EFFLUENT
SAMPLING DATE : DECEMBER 21, 2023
SAMPLING TIME : 10:45 HOUR
SAMPLING METHOD ° : GRAB, GRAB AND STERILE TECHNIQUE
SAMPLING BY ° : MR APISIT SRIKONGKAEW
ANALYZED BY : MISS AKSARIN BUNKONG

RECEIVED DATE : DECEMBER 22, 2023
ANALYTICAL DATE : DECEMBER 22, 2023 - JANUARY 2, 2024
REPORT NO. : 2024-U001966
WORK NO. : 2019-001655
ANALYSIS NO. : T23AZ789-0002

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			OPEN DRAIN AT GPP T23AZ789-0002	
pH °	-	ELECTROMETRIC METHOD (AT SITE) SM: PART 4500 -H ⁺ B AND 1060 B	7.4 (28°C)	-
ELECTRICAL CONDUCTIVITY °	µS/cm	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2510 B)	607 (28°C)	0.1
BIOCHEMICAL OXYGEN DEMAND °	mg/L	MEMBRANE ELECTRODE METHOD (SM: PART 5210 B AND PART 4500-O G)	33.1	2.0
CHEMICAL OXYGEN DEMAND °	mg/L	CLOSED REFLUX, COLOURIMETRIC METHOD (SM: PART 5220 D)	144	25.0
SUSPENDED SOLIDS °	mg/L	SUSPENDED SOLIDS DRIED AT 103-105 °C (SM: PART 2540 D)	30.7	5.0
TOTAL DISSOLVED SOLIDS °	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	229	25
FAT, OIL AND GREASE °	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	ND	3
METALS				
CADMIUM °	mg/L Cd	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.002
HEXAVALENT CHROMIUM °	mg/L Cr ⁶⁺	COLOURIMETRIC METHOD (SM: PART 3500-Cr B)	ND	0.006
COPPER °	mg/L Cu	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005
LEAD °	mg/L Pb	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	< LOQ	0.015
MANGANESE °	mg/L Mn	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	0.236	0.004
TOTAL MERCURY °	mg/L Hg	COLD VAPOUR AAS METHOD (SM: PART 3112 B)	0.0017	0.0005
ZINC °	mg/L Zn	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	0.225	0.003



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			OPEN DRAIN AT GPP T23AZ789-0002	
MICROBIOLOGY				
COLIFORM BACTERIA ^b	MPN/100 mL	MULTIPLE-TUBE FERMENTATION TECHNIQUE (SM: PART 9221 B)	>160,000	1.8
FAECAL COLIFORM BACTERIA ^b	MPN/100 mL	MULTIPLE-TUBE FERMENTATION TECHNIQUE (SM: PART 9221 E)	>160,000	1.8
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, 23rd EDITION, 2017.

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

ND : NON-DETECTABLE.

< LOQ : < LIMIT OF QUANTITATION (LEAD \geq 0.015 AND < 0.200 mg/L).

LABORATORY SUPERVISOR

JANUARY 8, 2024

ANALYSIS REPORT

PROJECT NAME : EIA COMPLIANCE AUDIT AND MONITORING OF PART B: SPH = SINPHUHORM (1 FEB 2020 - 31 DEC 2023)
CUSTOMER NAME : PTTEP SP LIMITED
ADDRESS : 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD
 CHATUCHAK CHATUCHAK BANGKOK 10900
CONTACT INFORMATION : TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com
SAMPLING SOURCE : -
SAMPLE TYPE : BLANK (EFFLUENT) **RECEIVED DATE** : DECEMBER 22, 2023
SAMPLING DATE : - **ANALYTICAL DATE** : DECEMBER 22, 2023 - JANUARY 2, 2024
SAMPLING TIME : - **REPORT NO.** : 2024-U001967
SAMPLING METHOD : - **WORK NO.** : 2019-001655
SAMPLING BY : - **ANALYSIS NO.** : 2023-FB1302, 2023-TB1244
ANALYZED BY : MISS AKSARIN BUNKONG

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT		DETECTION LIMIT
			1 2023-FB1302	2 2023-TB1244	
BIOCHEMICAL OXYGEN DEMAND	mg/L	MEMBRANE ELECTRODE METHOD (SM: PART 5210 B AND PART 4500-O G)	ND	ND	2.0
CHEMICAL OXYGEN DEMAND	mg/L	CLOSED REFLUX, COLOURIMETRIC METHOD (SM: PART 5220 D)	ND	ND	25.0
SUSPENDED SOLIDS	mg/L	SUSPENDED SOLIDS DRIED AT 103-105 °C (SM: PART 2540 D)	ND	ND	5.0
TOTAL DISSOLVED SOLIDS	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	ND	ND	25
FAT, OIL AND GREASE	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	ND	ND	3
METALS					
CADMIUM	mg/L Cd	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	ND	0.002
HEXAVALENT CHROMIUM	mg/L Cr ⁶⁺	COLOURIMETRIC METHOD (SM: PART 3500-Cr B)	ND	ND	0.006
COPPER	mg/L Cu	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	ND	0.005
LEAD	mg/L Pb	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	ND	0.015
MANGANESE	mg/L Mn	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	ND	0.004
TOTAL MERCURY	mg/L Hg	COLD VAPOUR AAS METHOD (SM: PART 3112 B)	ND	ND	0.0005
ZINC	mg/L Zn	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	ND	0.003



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT		DETECTION LIMIT
			1 2023-FB1302	2 2023-TB1244	
MICROBIOLOGY					
COLIFORM BACTERIA	MPN/100 mL	MULTIPLE-TUBE FERMENTATION TECHNIQUE (SM: PART 9221B)	< 1.8	< 1.8	1.8
FAECAL COLIFORM BACTERIA	MPN/100 mL	MULTIPLE-TUBE FERMENTATION TECHNIQUE (SM: PART 9221E)	< 1.8	< 1.8	1.8
SAMPLE CONDITION					
WATER'S COLOUR/TURBID SEDIMENT			COLOURLESS/CLEAR	COLOURLESS/CLEAR	

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

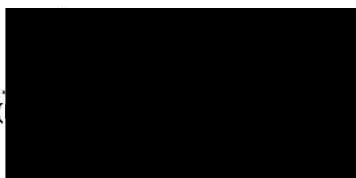
SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

RESULT 1 : FIELD BLANK

RESULT 2 : TRIP BLANK

ND : NON-DETECTABLE.

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(



JANUARY 8, 2024



ภาคผนวก จ-5
ใบรายงานผลการวิเคราะห์คุณภาพน้ำใต้ดิน
ในระยะดำเนินการ



ANALYSIS REPORT

PROJECT NAME : EIA COMPLIANCE AUDIT AND MONITORING OF PART B: SPH = SINPHUHORM (1 FEB 2020-31 DEC 2023)
CUSTOMER NAME : PTTEP SP LIMITED
ADDRESS : 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD
 CHATUCHAK CHATUCHAK BANGKOK 10900
CONTACT INFORMATION : TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com
SAMPLING SOURCE : SIN PHU HORM
SAMPLE TYPE : GROUNDWATER
SAMPLING DATE : OCTOBER 25, 2023
SAMPLING TIME : 11:00 HOUR
SAMPLING METHOD ° : BAILER
SAMPLING BY ° : MR APISIT SRIKONGKAEW
ANALYZED BY : MISS WORAKON PADSONGCHAN

RECEIVED DATE : OCTOBER 26, 2023
ANALYTICAL DATE : OCTOBER 26 - NOVEMBER 7, 2023
REPORT NO. : 2023-U096034
WORK NO. : 2023-002248
ANALYSIS NO. : T23AV219-0001

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT	LIMIT OF QUANTITATION (LOQ)
			CAMP SITE MONITORING WELL (GW1) T23AV219-0001		
ELECTRICAL CONDUCTIVITY °	µS/cm	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2510 B)	365 (30°C)	0.1	-
SALINITY °	ppt	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2520 B)	0.2	0.1	-
TEMPERATURE °	°C	THERMOMETER AT SITE (SM: PART 2550 B)	30	-	-
TOTAL PETROLEUM HYDROCARBONS °	mg/L	SOXHLET EXTRACTION METHOD (SM: PART 5520 D AND PART 5520 F)	ND	3	-
METALS					
CHROMIUM °	mg/L Cr	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005	0.050
NICKEL °	mg/L Ni	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005	0.050
SELENIUM °	mg/L Se	HYDRIDE GENERATION AAS METHOD (SM: PART 3114 C)	ND	0.0005	-
BARIUM °	mg/L Ba	NITRIC ACID-HYDROCHLORIC ACID DIGESTION AND INDUCTIVELY COUPLED PLASMA (ICP) METHOD (SM: PART 3030 F AND PART 3120 B)	0.682	0.003	-
VOLATILE ORGANIC COMPOUNDS					
BENZENE °	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002
ETHYLBENZENE °	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002
TOLUENE °	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT	LIMIT OF QUANTITATION (LOQ)
			CAMP SITE MONITORING WELL (GW1) T23AV219-0001		
TOTAL XYLENES ^a	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0006	-	0.0006
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			COLOURLESS/CLEAR YELLOW		

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

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

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

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

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

ND : NON-DETECTABLE.

NOVEMBER 14, 2023

ANALYSIS REPORT

PROJECT NAME : EIA COMPLIANCE AUDIT AND MONITORING OF PART B: SPH = SINPHUHORM (1 FEB 2020-31 DEC 2023)
CUSTOMER NAME : PTTEP SP LIMITED
ADDRESS : 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD
 CHATUCHAK CHATUCHAK BANGKOK 10900
CONTACT INFORMATION : TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com
SAMPLING SOURCE : SIN PHU HORM
SAMPLE TYPE : GROUNDWATER
SAMPLING DATE : OCTOBER 25, 2023
SAMPLING TIME : 09:30 HOUR
SAMPLING METHOD ° : BAILER
SAMPLING BY ° : MR APISIT SRIKONGKAEW
ANALYZED BY : MISS WORAKON PADSONGCHAN

RECEIVED DATE : OCTOBER 26, 2023
ANALYTICAL DATE : OCTOBER 26 - NOVEMBER 7, 2023
REPORT NO. : 2023-U096035
WORK NO. : 2023-002248
ANALYSIS NO. : T23AV219-0002

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT	LIMIT OF QUANTITATION (LOQ)
			GROUNDWATER WELL AT BAN PA MAI (GW2) T23AV219-0002		
ELECTRICAL CONDUCTIVITY °	µS/cm	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2510 B)	124 (28°C)	0.1	-
SALINITY °	ppt	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2520 B)	0.1	0.1	-
TEMPERATURE °	°C	THERMOMETER AT SITE (SM: PART 2550 B)	28	-	-
TOTAL PETROLEUM HYDROCARBONS °	mg/L	SOXHLET EXTRACTION METHOD (SM: PART 5520 D AND PART 5520 F)	ND	3	-
METALS					
CHROMIUM °	mg/L Cr	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005	0.050
NICKEL °	mg/L Ni	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005	0.050
SELENIUM °	mg/L Se	HYDRIDE GENERATION AAS METHOD (SM: PART 3114 C)	ND	0.0005	-
BARIUM °	mg/L Ba	NITRIC ACID-HYDROCHLORIC ACID DIGESTION AND INDUCTIVELY COUPLED PLASMA (ICP) METHOD (SM: PART 3030 F AND PART 3120 B)	0.043	0.003	-
VOLATILE ORGANIC COMPOUNDS					
BENZENE °	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002
ETHYLBENZENE °	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002
TOLUENE °	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT	LIMIT OF QUANTITATION (LOQ)
			GROUNDWATER WELL AT BAN PA MAI (GW2) T23AV219-0002		
TOTAL XYLENES ^a	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0006	-	0.0006
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			COLOURLESS/CLEAR YELLOW		

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

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

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

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

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

ND : NON-DETECTABLE.



NOVEMBER 14, 2023

ANALYSIS REPORT

PROJECT NAME : EIA COMPLIANCE AUDIT AND MONITORING OF PART B: SPH = SINPHUHORM (1 FEB 2020-31 DEC 2023)
CUSTOMER NAME : PTTEP SP LIMITED
ADDRESS : 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD
CHATUCHAK CHATUCHAK BANGKOK 10900
CONTACT INFORMATION : TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com
SAMPLING SOURCE : SIN PHU HORM
SAMPLE TYPE : GROUNDWATER
SAMPLING DATE : OCTOBER 26, 2023
SAMPLING TIME : 13:30 HOUR
SAMPLING METHOD ° : SUBMERSIBLE PUMP
SAMPLING BY ° : MR APISIT SRIKONGKAEW
ANALYZED BY : MISS WORAKON PADSONGCHAN

RECEIVED DATE : OCTOBER 27, 2023
ANALYTICAL DATE : OCTOBER 27 - NOVEMBER 10, 2023
REPORT NO. : 2023-U096863
WORK NO. : 2023-002248
ANALYSIS NO. : T23AV332-0001

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT	LIMIT OF QUANTITATION (LOQ)
			GROUNDWATER WELL AT BAN KHAM YAI (GW5) T23AV332-0001		
ELECTRICAL CONDUCTIVITY °	µS/cm	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2510 B)	754 (30°C)	0.1	-
TEMPERATURE °	°C	THERMOMETER AT SITE (SM: PART 2550 B)	30	-	-
SALINITY °	ppt	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2520 B)	0.4	0.1	-
TOTAL PETROLEUM HYDROCARBONS °	mg/L	SOXHLET EXTRACTION METHOD (SM: PART 5520 D AND PART 5520 F)	ND	3	-
METALS					
CHROMIUM °	mg/L Cr	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005	0.050
NICKEL °	mg/L Ni	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005	0.050
SELENIUM °	mg/L Se	HYDRIDE GENERATION AAS METHOD (SM: PART 3114 C)	ND	0.0005	-
BARIUM °	mg/L Ba	NITRIC ACID-HYDROCHLORIC ACID DIGESTION AND INDUCTIVELY COUPLED PLASMA (ICP) METHOD (SM: PART 3030 F AND PART 3120 B)	1.71	0.003	-
VOLATILE ORGANIC COMPOUNDS					
BENZENE °	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002
ETHYLBENZENE °	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002
TOLUENE °	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT	LIMIT OF QUANTITATION (LOQ)
			GROUNDWATER WELL AT BAN KHAM YAI (GW5) T23AV332-0001		
TOTAL XYLENES ^a	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0006	-	0.0006
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			YELLOW/CLEAR YELLOW		

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

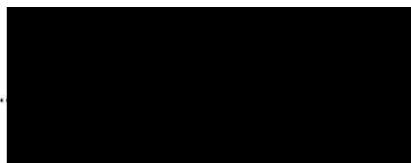
^b : ISO/IEC 17025 ACCREDITED BY DEPARTMENT OF SCIENCE SERVICE (DSS)

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

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

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

ND : NON-DETECTABLE.



NOVEMBER 13, 2023

ANALYSIS REPORT

PROJECT NAME	: EIA COMPLIANCE AUDIT AND MONITORING OF PART B: SPH = SINPHUHORM (1 FEB 2020-31 DEC 2023)		
CUSTOMER NAME	: PTTEP SP LIMITED		
ADDRESS	: 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD CHATUCHAK CHATUCHAK BANGKOK 10900		
CONTACT INFORMATION	: TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com		
SAMPLING SOURCE	: SIN PHU HORM		
SAMPLE TYPE	: GROUNDWATER	RECEIVED DATE	: OCTOBER 27, 2023
SAMPLING DATE	: OCTOBER 26, 2023	ANALYTICAL DATE	: OCTOBER 27 - NOVEMBER 10, 2023
SAMPLING TIME	: 14:00 HOUR	REPORT NO.	: 2023-U096865
SAMPLING METHOD °	: SUBMERSIBLE PUMP	WORK NO.	: 2023-002248
SAMPLING BY °	: MR APISIT SRIKONGKAEW	ANALYSIS NO.	: T23AV332-0002
ANALYZED BY	: MISS WORAKON PADSONGCHAN		

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT	LIMIT OF QUANTITATION (LOQ)
			GROUNDWATER WELL AT BAN KUD NAM SAI (OW55) T23AV332-0002		
ELECTRICAL CONDUCTIVITY °	µS/cm	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2510 B)	2,890 (29°C)	0.1	-
TEMPERATURE °	°C	THERMOMETER AT SITE (SM: PART 2550 B)	29	-	-
SALINITY °	ppt	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2520 B)	1.6	0.1	-
TOTAL PETROLEUM HYDROCARBONS °	mg/L	SOXHLET EXTRACTION METHOD (SM: PART 5520 D AND PART 5520 F)	ND	3	-
METALS					
CHROMIUM °	mg/L Cr	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005	0.050
NICKEL °	mg/L Ni	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005	0.050
SELENIUM °	mg/L Se	HYDRIDE GENERATION AAS METHOD (SM: PART 3114 C)	ND	0.0005	-
BARIUM °	mg/L Ba	NITRIC ACID-HYDROCHLORIC ACID DIGESTION AND INDUCTIVELY COUPLED PLASMA (ICP) METHOD (SM: PART 3030 F AND PART 3120 B)	155	0.003	-
VOLATILE ORGANIC COMPOUNDS					
BENZENE °	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002
ETHYLBENZENE °	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002
TOLUENE °	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT	LIMIT OF QUANTITATION (LOQ)
			GROUNDWATER WELL AT BAN KUD NAM SAI (OW55) T23AV332-0002		
TOTAL XYLENES ^a	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0006	-	0.0006
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			YELLOW/CLEAR YELLOW		

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

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

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

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

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

ND : NON-DETECTABLE.



NOVEMBER 13, 2023

ANALYSIS REPORT

PROJECT NAME : EIA COMPLIANCE AUDIT AND MONITORING OF PART B: SPH = SINPHUHORM (1 FEB 2020-31 DEC 2023)
CUSTOMER NAME : PTTEP SP LIMITED
ADDRESS : 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD
 CHATUCHAK CHATUCHAK BANGKOK 10900
CONTACT INFORMATION : TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com
SAMPLING SOURCE : SIN PHU HORM
SAMPLE TYPE : GROUNDWATER
SAMPLING DATE : OCTOBER 26, 2023
SAMPLING TIME : 14:40 HOUR
SAMPLING METHOD ° : SUBMERSIBLE PUMP
SAMPLING BY ° : MR APISIT SRIKONGKAEW
ANALYZED BY : MISS WORAKON PADSONGCHAN
RECEIVED DATE : OCTOBER 27, 2023
ANALYTICAL DATE : OCTOBER 27 - NOVEMBER 10, 2023
REPORT NO. : 2023-U096866
WORK NO. : 2023-002248
ANALYSIS NO. : T23AV332-0003

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT	LIMIT OF QUANTITATION (LOQ)
			GROUNDWATER WELL AT BAN KAM KAEN KOON NOI(OW9S) T23AV332-0003		
ELECTRICAL CONDUCTIVITY °	µS/cm	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2510 B)	1,033 (30°C)	0.1	-
TEMPERATURE °	°C	THERMOMETER AT SITE (SM: PART 2550 B)	30	-	-
SALINITY °	ppt	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2520 B)	0.6	0.1	-
TOTAL PETROLEUM HYDROCARBONS °	mg/L	SOXHLET EXTRACTION METHOD (SM: PART 5520 D AND PART 5520 F)	ND	3	-
METALS					
CHROMIUM °	mg/L Cr	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005	0.050
NICKEL °	mg/L Ni	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005	0.050
SELENIUM °	mg/L Se	HYDRIDE GENERATION AAS METHOD (SM: PART 3114 C)	ND	0.0005	-
BARIUM °	mg/L Ba	NITRIC ACID-HYDROCHLORIC ACID DIGESTION AND INDUCTIVELY COUPLED PLASMA (ICP) METHOD (SM: PART 3030 F AND PART 3120 B)	0.464	0.003	-
VOLATILE ORGANIC COMPOUNDS					
BENZENE °	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002
ETHYLBENZENE °	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002
TOLUENE °	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT	LIMIT OF QUANTITATION (LOQ)
			GROUNDWATER WELL AT BAN KAM KAEN KOON NOI(OW9S) T23AV332-0003		
TOTAL XYLENES ^a	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0006	-	0.0006
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			YELLOW/CLEAR YELLOW		

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

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

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

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

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

ND : NON-DETECTABLE.

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[REDACTED]
.....
(PI)
LABORATORY SUPERVISOR

NOVEMBER 13, 2023

ANALYSIS REPORT

PROJECT NAME : EIA COMPLIANCE AUDIT AND MONITORING OF PART B: SPH = SINPHUHORM (1 FEB 2020-31 DEC 2023)
CUSTOMER NAME : PTTEP SP LIMITED
ADDRESS : 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD
CHATUCHAK CHATUCHAK BANGKOK 10900
CONTACT INFORMATION : TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com
SAMPLING SOURCE : SIN PHU HORM
SAMPLE TYPE : GROUNDWATER
SAMPLING DATE : OCTOBER 26, 2023
SAMPLING TIME : 09:50 HOUR
SAMPLING METHOD ° : SUBMERSIBLE PUMP
SAMPLING BY ° : MR APISIT SRIKONGKAEW
ANALYZED BY : MISS WORAKON PADSONGCHAN
RECEIVED DATE : OCTOBER 27, 2023
ANALYTICAL DATE : OCTOBER 27 - NOVEMBER 10, 2023
REPORT NO. : 2023-U096867
WORK NO. : 2023-002248
ANALYSIS NO. : T23AV332-0004

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT	LIMIT OF QUANTITATION (LOQ)
			MW1 T23AV332-0004		
ELECTRICAL CONDUCTIVITY °	µS/cm	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2510 B)	2,232 (30°C)	0.1	-
TEMPERATURE °	°C	THERMOMETER AT SITE (SM: PART 2550 B)	30	-	-
SALINITY °	ppt	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2520 B)	1.3	0.1	-
TOTAL PETROLEUM HYDROCARBONS °	mg/L	SOXHLET EXTRACTION METHOD (SM: PART 5520 D AND PART 5520 F)	ND	3	-
METALS					
CHROMIUM °	mg/L Cr	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005	0.050
NICKEL °	mg/L Ni	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005	0.050
SELENIUM °	mg/L Se	HYDRIDE GENERATION AAS METHOD (SM: PART 3114 C)	ND	0.0005	-
BARIUM °	mg/L Ba	NITRIC ACID-HYDROCHLORIC ACID DIGESTION AND INDUCTIVELY COUPLED PLASMA (ICP) METHOD (SM: PART 3030 F AND PART 3120 B)	0.621	0.003	-
VOLATILE ORGANIC COMPOUNDS					
BENZENE ^a	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002
ETHYLBENZENE ^a	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002
TOLUENE ^a	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT	LIMIT OF QUANTITATION (LOQ)
			MW1 T23AV332-0004		
TOTAL XYLENES ^a	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0006	-	0.0006
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			YELLOW/CLEAR YELLOW		

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

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

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

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

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

ND : NON-DETECTABLE.

(Signature)
LABORATORY SUPERVISOR

NOVEMBER 13, 2023

ANALYSIS REPORT

PROJECT NAME : EIA COMPLIANCE AUDIT AND MONITORING OF PART B: SPH = SINPHUHORM (1 FEB 2020-31 DEC 2023)
CUSTOMER NAME : PTTEP SP LIMITED
ADDRESS : 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD
CHATUCHAK CHATUCHAK BANGKOK 10900
CONTACT INFORMATION : TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com
SAMPLING SOURCE : SIN PHU HORM
SAMPLE TYPE : GROUNDWATER
SAMPLING DATE : OCTOBER 26, 2023
SAMPLING TIME : 12:30 HOUR
SAMPLING METHOD ° : SUBMERSIBLE PUMP
SAMPLING BY ° : MR APISIT SRIKONGKAEW
ANALYZED BY : MISS WORAKON PADSONGCHAN

RECEIVED DATE : OCTOBER 27, 2023
ANALYTICAL DATE : OCTOBER 27 - NOVEMBER 10, 2023
REPORT NO. : 2023-U096868
WORK NO. : 2023-002248
ANALYSIS NO. : T23AV332-0005

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT	LIMIT OF QUANTITATION (LOQ)
			MW2 T23AV332-0005		
ELECTRICAL CONDUCTIVITY °	µS/cm	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2510 B)	6,990 (30°C)	0.1	-
TEMPERATURE °	°C	THERMOMETER AT SITE (SM: PART 2550 B)	30	-	-
SALINITY °	ppt	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2520 B)	4.0	0.1	-
TOTAL PETROLEUM HYDROCARBONS °	mg/L	SOXHLET EXTRACTION METHOD (SM: PART 5520 D AND PART 5520 F)	ND	3	-
METALS					
CHROMIUM °	mg/L Cr	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005	0.050
NICKEL °	mg/L Ni	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005	0.050
SELENIUM °	mg/L Se	HYDRIDE GENERATION AAS METHOD (SM: PART 3114 C)	ND	0.0005	-
BARIUM °	mg/L Ba	NITRIC ACID-HYDROCHLORIC ACID DIGESTION AND INDUCTIVELY COUPLED PLASMA (ICP) METHOD (SM: PART 3030 F AND PART 3120 B)	0.937	0.003	-
VOLATILE ORGANIC COMPOUNDS					
BENZENE °	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002
ETHYLBENZENE °	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002
TOLUENE °	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT	LIMIT OF QUANTITATION (LOQ)
			MW2 T23AV332-0005		
TOTAL XYLENES ^a	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0006	-	0.0006
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			YELLOW/CLEAR YELLOW		

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

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

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

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

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

ND : NON-DETECTABLE.

([REDACTED])

LABORATORY SUPERVISOR

NOVEMBER 13, 2023

ANALYSIS REPORT

PROJECT NAME : EIA COMPLIANCE AUDIT AND MONITORING OF PART B: SPH = SINPHUHORM (1 FEB 2020-31 DEC 2023)
CUSTOMER NAME : PTTEP SP LIMITED
ADDRESS : 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD
CHATUCHAK CHATUCHAK BANGKOK 10900
CONTACT INFORMATION : TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com
SAMPLING SOURCE : SIN PHU HORM
SAMPLE TYPE : GROUNDWATER
SAMPLING DATE : OCTOBER 26, 2023
SAMPLING TIME : 11:20 HOUR
SAMPLING METHOD ° : SUBMERSIBLE PUMP
SAMPLING BY ° : MR APISIT SRIKONGKAEW
ANALYZED BY : MISS WORAKON PADSONGCHAN
RECEIVED DATE : OCTOBER 27, 2023
ANALYTICAL DATE : OCTOBER 27 - NOVEMBER 10, 2023
REPORT NO. : 2023-U096869
WORK NO. : 2023-002248
ANALYSIS NO. : T23AV332-0006

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT	LIMIT OF QUANTITATION (LOQ)
			MW3 T23AV332-0006		
ELECTRICAL CONDUCTIVITY °	µS/cm	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2510 B)	2,244 (31°C)	0.1	-
TEMPERATURE °	°C	THERMOMETER AT SITE (SM: PART 2550 B)	31	-	-
SALINITY °	ppt	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2520 B)	1.3	0.1	-
TOTAL PETROLEUM HYDROCARBONS °	mg/L	SOXHLET EXTRACTION METHOD (SM: PART 5520 D AND PART 5520 F)	ND	3	-
METALS					
CHROMIUM °	mg/L Cr	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005	0.050
NICKEL °	mg/L Ni	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005	0.050
SELENIUM °	mg/L Se	HYDRIDE GENERATION AAS METHOD (SM: PART 3114 C)	ND	0.0005	-
BARIUM °	mg/L Ba	NITRIC ACID-HYDROCHLORIC ACID DIGESTION AND INDUCTIVELY COUPLED PLASMA (ICP) METHOD (SM: PART 3030 F AND PART 3120 B)	0.283	0.003	-
VOLATILE ORGANIC COMPOUNDS					
BENZENE °	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002
ETHYLBENZENE °	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002
TOLUENE °	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT	LIMIT OF QUANTITATION (LOQ)
			MW3 T23AV332-0006		
TOTAL XYLENES ^a	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0006	-	0.0006
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			YELLOW/CLEAR YELLOW		

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

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

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

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

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

ND : NON-DETECTABLE.

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LABORATORY SUPERVISOR

NOVEMBER 13, 2023

ANALYSIS REPORT

PROJECT NAME	: EIA COMPLIANCE AUDIT AND MONITORING OF PART B: SPH = SINPHUHORM (1 FEB 2020-31 DEC 2023)		
CUSTOMER NAME	: PTTEP SP LIMITED		
ADDRESS	: 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD CHATUCHAK CHATUCHAK BANGKOK 10900		
CONTACT INFORMATION	: TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com		
SAMPLING SOURCE	: SIN PHU HORM		
SAMPLE TYPE	: GROUNDWATER	RECEIVED DATE	: OCTOBER 27, 2023
SAMPLING DATE	: OCTOBER 26, 2023	ANALYTICAL DATE	: OCTOBER 27 - NOVEMBER 10, 2023
SAMPLING TIME	: 10:55 HOUR	REPORT NO.	: 2023-U096870
SAMPLING METHOD °	: SUBMERSIBLE PUMP	WORK NO.	: 2023-002248
SAMPLING BY °	: MR APISIT SRIKONGKAEW	ANALYSIS NO.	: T23AV332-0007
ANALYZED BY	: MISS WORAKON PADSONGCHAN		

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT	LIMIT OF QUANTITATION (LOQ)
			MW4 T23AV332-0007		
ELECTRICAL CONDUCTIVITY °	µS/cm	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2510 B)	1,200 (30°C)	0.1	-
TEMPERATURE °	°C	THERMOMETER AT SITE (SM: PART 2550 B)	30	-	-
SALINITY °	ppt	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2520 B)	0.7	0.1	-
TOTAL PETROLEUM HYDROCARBONS °	mg/L	SOXHLET EXTRACTION METHOD (SM: PART 5520 D AND PART 5520 F)	ND	3	-
METALS					
CHROMIUM °	mg/L Cr	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005	0.050
NICKEL °	mg/L Ni	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005	0.050
SELENIUM °	mg/L Se	HYDRIDE GENERATION AAS METHOD (SM: PART 3114 C)	ND	0.0005	-
BARIUM °	mg/L Ba	NITRIC ACID-HYDROCHLORIC ACID DIGESTION AND INDUCTIVELY COUPLED PLASMA (ICP) METHOD (SM: PART 3030 F AND PART 3120 B)	0.093	0.003	-
VOLATILE ORGANIC COMPOUNDS					
BENZENE °	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002
ETHYLBENZENE °	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002
TOLUENE °	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT	LIMIT OF QUANTITATION (LOQ)
			MW4 T23AV332-0007		
TOTAL XYLENES ^a	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0006	-	0.0006
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			YELLOW/CLEAR YELLOW		

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

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

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

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

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

ND : NON-DETECTABLE.

[REDACTED SIGNATURE]

LABORATORY SUPERVISOR

NOVEMBER 13, 2023

ANALYSIS REPORT

PROJECT NAME : EIA COMPLIANCE AUDIT AND MONITORING OF PART B: SPH = SINPHUHORM (1 FEB 2020-31 DEC 2023)
CUSTOMER NAME : PTTEP SP LIMITED
ADDRESS : 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD
CHATUCHAK CHATUCHAK BANGKOK 10900
CONTACT INFORMATION : TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com
SAMPLING SOURCE : SIN PHU HORM
SAMPLE TYPE : GROUNDWATER
SAMPLING DATE : OCTOBER 26, 2023
SAMPLING TIME : 10:20 HOUR
SAMPLING METHOD ° : SUBMERSIBLE PUMP
SAMPLING BY ° : MR APISIT SRIKONGKAEW
ANALYZED BY : MISS WORAKON PADSONGCHAN

RECEIVED DATE : OCTOBER 27, 2023
ANALYTICAL DATE : OCTOBER 27 - NOVEMBER 10, 2023
REPORT NO. : 2023-U096871
WORK NO. : 2023-002248
ANALYSIS NO. : T23AV332-0008

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT	LIMIT OF QUANTITATION (LOQ)
			MW5 T23AV332-0008		
ELECTRICAL CONDUCTIVITY °	µS/cm	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2510 B)	448 (30°C)	0.1	-
TEMPERATURE °	°C	THERMOMETER AT SITE (SM: PART 2550 B)	30	-	-
SALINITY °	ppt	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2520 B)	0.3	0.1	-
TOTAL PETROLEUM HYDROCARBONS °	mg/L	SOXHLET EXTRACTION METHOD (SM: PART 5520 D AND PART 5520 F)	ND	3	-
METALS					
CHROMIUM °	mg/L Cr	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005	0.050
NICKEL °	mg/L Ni	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	< LOQ	0.005	0.050
SELENIUM °	mg/L Se	HYDRIDE GENERATION AAS METHOD (SM: PART 3114 C)	ND	0.0005	-
BARIUM °	mg/L Ba	NITRIC ACID-HYDROCHLORIC ACID DIGESTION AND INDUCTIVELY COUPLED PLASMA (ICP) METHOD (SM: PART 3030 F AND PART 3120 B)	0.268	0.003	-
VOLATILE ORGANIC COMPOUNDS					
BENZENE °	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002
ETHYLBENZENE °	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002
TOLUENE °	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT	LIMIT OF QUANTITATION (LOQ)
			MW5 T23AV332-0008		
TOTAL XYLENES ^a	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0006	-	0.0006
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			YELLOW/CLEAR YELLOW		

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

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

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

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

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

ND : NON-DETECTABLE.

< LOQ : < LIMIT OF QUANTITATION (NICKEL ≥ 0.005 AND < 0.050 mg/L).

[REDACTED SIGNATURE]

(MR. DR. CHONNAT P. KONGKUMPI)
LABORATORY SUPERVISOR

NOVEMBER 13, 2023

ANALYSIS REPORT

PROJECT NAME	: EIA COMPLIANCE AUDIT AND MONITORING OF PART B: SPH = SINPHUHORM (1 FEB 2020-31 DEC 2023)		
CUSTOMER NAME	: PTTEP SP LIMITED		
ADDRESS	: 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD CHATUCHAK CHATUCHAK BANGKOK 10900		
CONTACT INFORMATION	: TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com		
SAMPLING SOURCE	: SIN PHU HORM		
SAMPLE TYPE	: GROUNDWATER	RECEIVED DATE	: OCTOBER 27, 2023
SAMPLING DATE	: OCTOBER 26, 2023	ANALYTICAL DATE	: OCTOBER 27 - NOVEMBER 10, 2023
SAMPLING TIME	: 11:50 HOUR	REPORT NO.	: 2023-U096872
SAMPLING METHOD °	: SUBMERSIBLE PUMP	WORK NO.	: 2023-002248
SAMPLING BY °	: MR APISIT SRIKONGKAEW	ANALYSIS NO.	: T23AV332-0009
ANALYZED BY	: MISS WORAKON PADSONGCHAN		

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT	LIMIT OF QUANTITATION (LOQ)
			MW6 T23AV332-0009		
ELECTRICAL CONDUCTIVITY °	µS/cm	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2510 B)	2,680 (32°C)	0.1	-
TEMPERATURE °	°C	THERMOMETER AT SITE (SM: PART 2550 B)	32	-	-
SALINITY °	ppt	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2520 B)	1.6	0.1	-
TOTAL PETROLEUM HYDROCARBONS °	mg/L	SOXHLET EXTRACTION METHOD (SM: PART 5520 D AND PART 5520 F)	ND	3	-
METALS					
CHROMIUM °	mg/L Cr	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005	0.050
NICKEL °	mg/L Ni	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005	0.050
SELENIUM °	mg/L Se	HYDRIDE GENERATION AAS METHOD (SM: PART 3114 C)	ND	0.0005	-
BARIUM °	mg/L Ba	NITRIC ACID-HYDROCHLORIC ACID DIGESTION AND INDUCTIVELY COUPLED PLASMA (ICP) METHOD (SM: PART 3030 F AND PART 3120 B)	0.031	0.003	-
VOLATILE ORGANIC COMPOUNDS					
BENZENE °	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002
ETHYLBENZENE °	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002
TOLUENE °	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT	LIMIT OF QUANTITATION (LOQ)
			MW6 T23AV332-0009		
TOTAL XYLENES ^a	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0006	-	0.0006
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			YELLOW/CLEAR YELLOW		

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

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

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

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

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

ND : NON-DETECTABLE.

(MR BHUCHONK PANICHLERTUMPI)
LABORATORY SUPERVISOR

NOVEMBER 13, 2023

ANALYSIS REPORT

PROJECT NAME : EIA COMPLIANCE AUDIT AND MONITORING OF PART B: SPH = SINPHUHORM (1 FEB 2020-31 DEC 2023)
CUSTOMER NAME : PTTEP SP LIMITED
ADDRESS : 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD
 CHATUCHAK CHATUCHAK BANGKOK 10900
CONTACT INFORMATION : TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com
SAMPLING SOURCE : -
SAMPLE TYPE : BLANK (GROUNDWATER) **RECEIVED DATE** : OCTOBER 26, 2023
SAMPLING DATE : - **ANALYTICAL DATE** : OCTOBER 26 - NOVEMBER 7, 2023
SAMPLING TIME : - **REPORT NO.** : 2023-U096036
SAMPLING METHOD : - **WORK NO.** : 2023-002248
SAMPLING BY : - **ANALYSIS NO.** : 2023-FB1089
ANALYZED BY : MISS WORAKON PADSONGCHAN

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT	LIMIT OF QUANTITATION (LOQ)
			FIELD BLANK 2023-FB1089		
TOTAL PETROLEUM HYDROCARBONS	mg/L	SOXHLET EXTRACTION METHOD (SM: PART 5520 D AND PART 5520 F)	ND	3	-
METALS					
CHROMIUM	mg/L Cr	IN-HOUSE METHOD: UAE.TP.GW.01(NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005	0.050
NICKEL	mg/L Ni	IN-HOUSE METHOD: UAE.TP.GW.01(NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005	0.050
SELENIUM	mg/L Se	HYDRIDE GENERATION AAS METHOD (SM: PART 3114 C)	ND	0.0005	-
BARIUM	mg/L Ba	NITRIC ACID-HYDROCHLORIC ACID DIGESTION AND INDUCTIVELY COUPLED PLASMA (ICP) METHOD (SM: PART 3030 F AND PART 3120 B)	ND	0.003	-
VOLATILE ORGANIC COMPOUNDS					
BENZENE	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002
ETHYLBENZENE	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002
TOLUENE	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT	LIMIT OF QUANTITATION (LOQ)
			FIELD BLANK 2023-FB1089		
TOTAL XYLENES	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0006	-	0.0006
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			COLOURLESS/CLEAR		

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

LABORATORY SUPERVISOR

NOVEMBER 14, 2023

ANALYSIS REPORT

PROJECT NAME : EIA COMPLIANCE AUDIT AND MONITORING OF PART B: SPH = SINPHUHORM (1 FEB 2020-31 DEC 2023)
CUSTOMER NAME : PTTEP SP LIMITED
ADDRESS : 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD
 CHATUCHAK CHATUCHAK BANGKOK 10900
CONTACT INFORMATION : TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com
SAMPLING SOURCE : -
SAMPLE TYPE : BLANK (GROUNDWATER) **RECEIVED DATE** : OCTOBER 26, 2023
SAMPLING DATE : - **ANALYTICAL DATE** : OCTOBER 26 - NOVEMBER 7, 2023
SAMPLING TIME : - **REPORT NO.** : 2023-U096037
SAMPLING METHOD : - **WORK NO.** : 2023-002248
SAMPLING BY : - **ANALYSIS NO.** : 2023-TB1030
ANALYZED BY : MISS WORAKON PADSONGCHAN

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT	LIMIT OF QUANTITATION (LOQ)
			TRIP BLANK 2023-TB1030		
TOTAL PETROLEUM HYDROCARBONS	mg/L	SOXHLET EXTRACTION METHOD (SM: PART 5520 D AND PART 5520 F)	ND	3	-
METALS					
CHROMIUM	mg/L Cr	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005	0.050
NICKEL	mg/L Ni	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005	0.050
SELENIUM	mg/L Se	HYDRIDE GENERATION AAS METHOD (SM: PART 3114 C)	ND	0.0005	-
BARIUM	mg/L Ba	NITRIC ACID-HYDROCHLORIC ACID DIGESTION AND INDUCTIVELY COUPLED PLASMA (ICP) METHOD (SM: PART 3030 F AND PART 3120 B)	ND	0.003	-
VOLATILE ORGANIC COMPOUNDS					
BENZENE	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002
ETHYLBENZENE	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002
TOLUENE	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT	LIMIT OF QUANTITATION (LOQ)
			TRIP BLANK 2023-TB1030		
TOTAL XYLENES	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0006	-	0.0006
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			COLOURLESS/CLEAR -		

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

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

ND : NON-DETECTABLE.

LABORATORY SUPERVISOR

NOVEMBER 14, 2023

ANALYSIS REPORT

PROJECT NAME : EIA COMPLIANCE AUDIT AND MONITORING OF PART B: SPH = SINPHUHORM (1 FEB 2020-31 DEC 2023)
CUSTOMER NAME : PTTEP SP LIMITED
ADDRESS : 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD
 CHATUCHAK CHATUCHAK BANGKOK 10900
CONTACT INFORMATION : TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com
SAMPLING SOURCE : -
SAMPLE TYPE : BLANK (GROUNDWATER)
SAMPLING DATE : -
SAMPLING TIME : -
SAMPLING METHOD : -
SAMPLING BY : -
ANALYZED BY : MISS WORAKON PADSONGCHAN

RECEIVED DATE : OCTOBER 26, 2023
ANALYTICAL DATE : OCTOBER 26 - NOVEMBER 7, 2023
REPORT NO. : 2023-U096038
WORK NO. : 2023-002248
ANALYSIS NO. : 2023-EB0215

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT	LIMIT OF QUANTITATION (LOQ)
			EQUIPMENT BLANK 2023-EB0215		
TOTAL PETROLEUM HYDROCARBONS	mg/L	SOXHLET EXTRACTION METHOD (SM: PART 5520 D AND PART 5520 F)	ND	3	-
METALS					
CHROMIUM	mg/L Cr	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005	0.050
NICKEL	mg/L Ni	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005	0.050
SELENIUM	mg/L Se	HYDRIDE GENERATION AAS METHOD (SM: PART 3114 C)	ND	0.0005	-
BARIUM	mg/L Ba	NITRIC ACID-HYDROCHLORIC ACID DIGESTION AND INDUCTIVELY COUPLED PLASMA (ICP) METHOD (SM: PART 3030 F AND PART 3120 B)	ND	0.003	-
VOLATILE ORGANIC COMPOUNDS					
BENZENE	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002
ETHYLBENZENE	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002
TOLUENE	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT	LIMIT OF QUANTITATION (LOQ)
			EQUIPMENT BLANK 2023-EB0215		
TOTAL XYLENES	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0006	-	0.0006
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			COLOURLESS/CLEAR -		

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

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

ND : NON-DETECTABLE.

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(MISS BENJAWAN VIKITOTHA)
LABORATORY SUPERVISOR

NOVEMBER 14, 2023

ANALYSIS REPORT

PROJECT NAME : EIA COMPLIANCE AUDIT AND MONITORING OF PART B: SPH = SINPHUHORM (1 FEB 2020-31 DEC 2023)

CUSTOMER NAME : PTTEP SP LIMITED

ADDRESS : 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD
CHATUCHAK CHATUCHAK BANGKOK 10900

CONTACT INFORMATION : TEL : 0 2537 7546 e-mail : nithikarny@pttep.com

SAMPLING SOURCE : SIN PHU HORM

SAMPLE TYPE : GROUNDWATER

SAMPLING DATE : OCTOBER 25, 2023

SAMPLING TIME : 11:00 HOUR

SAMPLING METHOD ° : BAILER AND STERILE TECHNIQUE

SAMPLING BY ° : MR APISIT SRIKONGKAEW

ANALYZED BY : MISS NAPAPORN KHUNNOKKHUM

RECEIVED DATE : OCTOBER 26, 2023

ANALYTICAL DATE : OCTOBER 26 - NOVEMBER 5, 2023

REPORT NO. : 2023-U094777

WORK NO. : 2019-001655

ANALYSIS NO. : T23AV217-0001

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			CAMP SITE MONITORING WELL (GW1) T23AV217-0001	
pH °	-	ELECTROMETRIC METHOD AT SITE (SM: PART 4500-H ⁺ B)	6.6 (30°C)	-
COLOUR °	Pt-Co	VISUAL COMPARISON METHOD (SM: PART 2120 B)	ND	5
TOTAL DISSOLVED SOLIDS °	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	182	25
TOTAL HARDNESS °	mg/L as CaCO ₃	EDTA TITRIMETRIC METHOD (SM: PART 2340 C)	152	4.0
CHLORIDE °	mg/L Cl ⁻	ARGENTOMETRIC METHOD (SM: PART 4500-Cl ⁻ B)	ND	2.0
NON-CARBONATE HARDNESS °	mg/L as CaCO ₃	TITRATION, EDTA TITRIMETRIC (SM: PART 2320 B AND PART 2340 C) AND CALCULATION METHOD	0	0
FAT, OIL AND GREASE °	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	ND	3
METALS				
ARSENIC °	mg/L As	HYDRIDE GENERATION AAS METHOD (SM: PART 3114 C)	0.0038	0.0003
CADMIUM °	mg/L Cd	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.002
COPPER °	mg/L Cu	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	< LOQ	0.002
LEAD °	mg/L Pb	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	< LOQ	0.003
MANGANESE °	mg/L Mn	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	0.797	0.002
MERCURY °	mg/L Hg	IN-HOUSE METHOD: UAE.TP.HEM.002 (COLD VAPOUR ATOMIC ABSORPTION SPECTROMETRIC METHOD); SM: PART 3112 B	ND	0.0001
ZINC °	mg/L Zn	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	< LOQ	0.003



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			CAMP SITE MONITORING WELL (GW1) T23AV217-0001	
MICROBIOLOGY				
<i>E. coli</i> ^b	MPN/100 mL	MULTIPLE-TUBE FERMENTATION TECHNIQUE (SM: PART 9221 F)	< 1.8	1.8
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, 23rd EDITION, 2017.

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

ND : NON-DETECTABLE.

< LOQ : < LIMIT OF QUANTITATION (COPPER ≥ 0.002 AND < 0.025 mg/L, LEAD ≥ 0.003 AND < 0.100 mg/L,
ZINC ≥ 0.003 AND < 0.025 mg/L).

LABORATORY SUPERVISOR

NOVEMBER 7, 2023

ANALYSIS REPORT

PROJECT NAME : EIA COMPLIANCE AUDIT AND MONITORING OF PART B: SPH = SINPHUHORM (1 FEB 2020-31 DEC 2023)
CUSTOMER NAME : PTTEP SP LIMITED
ADDRESS : 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD
 CHATUCHAK CHATUCHAK BANGKOK 10900
CONTACT INFORMATION : TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com
SAMPLING SOURCE : SIN PHU HORM
SAMPLE TYPE : GROUNDWATER
SAMPLING DATE : OCTOBER 25, 2023
SAMPLING TIME : 11:00 HOUR
SAMPLING METHOD ° : BAILER
SAMPLING BY ° : MR APISIT SRIKONGKAEW
ANALYZED BY : MISS WORAKON PADSONGCHAN

RECEIVED DATE : OCTOBER 26, 2023
ANALYTICAL DATE : OCTOBER 26 - NOVEMBER 7, 2023
REPORT NO. : 2023-U096034
WORK NO. : 2023-002248
ANALYSIS NO. : T23AV219-0001

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT	LIMIT OF QUANTITATION (LOQ)
			CAMP SITE MONITORING WELL (GW1) T23AV219-0001		
ELECTRICAL CONDUCTIVITY °	µS/cm	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2510 B)	365 (30°C)	0.1	-
SALINITY °	ppt	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2520 B)	0.2	0.1	-
TEMPERATURE °	°C	THERMOMETER AT SITE (SM: PART 2550 B)	30	-	-
TOTAL PETROLEUM HYDROCARBONS °	mg/L	SOXHLET EXTRACTION METHOD (SM: PART 5520 D AND PART 5520 F)	ND	3	-
METALS					
CHROMIUM °	mg/L Cr	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005	0.050
NICKEL °	mg/L Ni	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005	0.050
SELENIUM °	mg/L Se	HYDRIDE GENERATION AAS METHOD (SM: PART 3114 C)	ND	0.0005	-
BARIUM °	mg/L Ba	NITRIC ACID-HYDROCHLORIC ACID DIGESTION AND INDUCTIVELY COUPLED PLASMA (ICP) METHOD (SM: PART 3030 F AND PART 3120 B)	0.682	0.003	-
VOLATILE ORGANIC COMPOUNDS					
BENZENE °	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002
ETHYLBENZENE °	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002
TOLUENE °	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT	LIMIT OF QUANTITATION (LOQ)
			CAMP SITE MONITORING WELL (GW1) T23AV219-0001		
TOTAL XYLENES ^a	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0006	-	0.0006
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			COLOURLESS/CLEAR YELLOW		

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

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

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

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

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

ND : NON-DETECTABLE.

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(MISS BENJAWAN VIKITOTHAL)
LABORATORY SUPERVISOR

NOVEMBER 14, 2023

ANALYSIS REPORT

PROJECT NAME : EIA COMPLIANCE AUDIT AND MONITORING OF PART B: SPH = SINPHUHORM (1 FEB 2020-31 DEC 2023)

CUSTOMER NAME : PTTEP SP LIMITED

ADDRESS : 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD
CHATUCHAK CHATUCHAK BANGKOK 10900

CONTACT INFORMATION : TEL : 0 2537 7546 e-mail : nithikarny@pttep.com

SAMPLING SOURCE : SIN PHU HORM

SAMPLE TYPE : GROUNDWATER

SAMPLING DATE : OCTOBER 25, 2023

SAMPLING TIME : 09:30 HOUR

SAMPLING METHOD ° : BAILER AND STERILE TECHNIQUE

SAMPLING BY ° : MR APISIT SRIKONGKAEW

ANALYZED BY : MISS NAPAPORN KHUNNOKKHUM

RECEIVED DATE : OCTOBER 26, 2023

ANALYTICAL DATE : OCTOBER 26 - NOVEMBER 5, 2023

REPORT NO. : 2023-U094778

WORK NO. : 2019-001655

ANALYSIS NO. : T23AV217-0002

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			GROUNDWATER WELL AT BAN PA MAI (GW2) T23AV217-0002	
pH °	-	ELECTROMETRIC METHOD AT SITE (SM: PART 4500-H' B)	6.6 (28°C)	-
COLOUR °	Pt-Co	VISUAL COMPARISON METHOD (SM: PART 2120 B)	ND	5
TOTAL DISSOLVED SOLIDS °	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	51	25
TOTAL HARDNESS °	mg/L as CaCO ₃	EDTA TITRIMETRIC METHOD (SM: PART 2340 C)	26.8	4.0
CHLORIDE °	mg/L Cl	ARGENTOMETRIC METHOD (SM: PART 4500-Cl B)	ND	2.0
NON-CARBONATE HARDNESS °	mg/L as CaCO ₃	TITRATION, EDTA TITRIMETRIC (SM: PART 2320 B AND PART 2340 C) AND CALCULATION METHOD	0	0
FAT, OIL AND GREASE °	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	ND	3
METALS				
ARSENIC °	mg/L As	HYDRIDE GENERATION AAS METHOD (SM: PART 3114 C)	0.0009	0.0003
CADMIUM °	mg/L Cd	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.002
COPPER °	mg/L Cu	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.002
LEAD °	mg/L Pb	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.003
MANGANESE °	mg/L Mn	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	0.222	0.002
MERCURY °	mg/L Hg	IN-HOUSE METHOD: UAE.TP.HEM.002 (COLD VAPOUR ATOMIC ABSORPTION SPECTROMETRIC METHOD); SM: PART 3112 B	ND	0.0001
ZINC °	mg/L Zn	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	0.025	0.003



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			GROUNDWATER WELL AT BAN PA MAI (GW2) T23AV217-0002	
MICROBIOLOGY				
<i>E. coli</i> ^b	MPN/100 mL	MULTIPLE-TUBE FERMENTATION TECHNIQUE (SM: PART 9221F)	< 1.8	1.8
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, 23rd EDITION, 2017.

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

ND : NON-DETECTABLE.

(MPN)

NOVEMBER 7, 2023

ANALYSIS REPORT

PROJECT NAME : EIA COMPLIANCE AUDIT AND MONITORING OF PART B: SPH = SINPHUHORM (1 FEB 2020-31 DEC 2023)
CUSTOMER NAME : PTTEP SP LIMITED
ADDRESS : 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD
 CHATUCHAK CHATUCHAK BANGKOK 10900
CONTACT INFORMATION : TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com
SAMPLING SOURCE : SIN PHU HORM
SAMPLE TYPE : GROUNDWATER
SAMPLING DATE : OCTOBER 25, 2023
SAMPLING TIME : 09:30 HOUR
SAMPLING METHOD ° : BAILER
SAMPLING BY ° : MR APISIT SRIKONGKAEW
ANALYZED BY : MISS WORAKON PADSONGCHAN

RECEIVED DATE : OCTOBER 26, 2023
ANALYTICAL DATE : OCTOBER 26 - NOVEMBER 7, 2023
REPORT NO. : 2023-U096035
WORK NO. : 2023-002248
ANALYSIS NO. : T23AV219-0002

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT	LIMIT OF QUANTITATION (LOQ)
			GROUNDWATER WELL AT BAN PA MAI (GW2) T23AV219-0002		
ELECTRICAL CONDUCTIVITY °	µS/cm	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2510 B)	124 (28°C)	0.1	-
SALINITY °	ppt	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2520 B)	0.1	0.1	-
TEMPERATURE °	°C	THERMOMETER AT SITE (SM: PART 2550 B)	28	-	-
TOTAL PETROLEUM HYDROCARBONS °	mg/L	SOXHLET EXTRACTION METHOD (SM: PART 5520 D AND PART 5520 F)	ND	3	-
METALS					
CHROMIUM °	mg/L Cr	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005	0.050
NICKEL °	mg/L Ni	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005	0.050
SELENIUM °	mg/L Se	HYDRIDE GENERATION AAS METHOD (SM: PART 3114 C)	ND	0.0005	-
BARIUM °	mg/L Ba	NITRIC ACID-HYDROCHLORIC ACID DIGESTION AND INDUCTIVELY COUPLED PLASMA (ICP) METHOD (SM: PART 3030 F AND PART 3120 B)	0.043	0.003	-
VOLATILE ORGANIC COMPOUNDS					
BENZENE °	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002
ETHYLBENZENE °	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002
TOLUENE °	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT	LIMIT OF QUANTITATION (LOQ)
			GROUNDWATER WELL AT BAN PA MAI (GW2) T23AV219-0002		
TOTAL XYLENES ^a	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0006	-	0.0006
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			COLOURLESS/CLEAR YELLOW		

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

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

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

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

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

ND : NON-DETECTABLE.

(MISS BENJAWAN VIRIYOTHAI)
LABORATORY SUPERVISOR

NOVEMBER 14, 2023

ANALYSIS REPORT

PROJECT NAME : EIA COMPLIANCE AUDIT AND MONITORING OF PART B: SPH = SINPHUHORM (1 FEB 2020-31 DEC 2023)
CUSTOMER NAME : PTTEP SP LIMITED
ADDRESS : 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD
CHATUCHAK CHATUCHAK BANGKOK 10900
CONTACT INFORMATION : TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com
SAMPLING SOURCE : SIN PHU HORM
SAMPLE TYPE : GROUNDWATER
SAMPLING DATE : OCTOBER 26, 2023
SAMPLING TIME : 13:30 HOUR
SAMPLING METHOD ° : SUBMERSIBLE PUMP AND STERILE TECHNIQUE
SAMPLING BY ° : MR APISIT SRIKONGKAEW
ANALYZED BY : MISS NADNAPA KAMOLBOON

RECEIVED DATE : OCTOBER 27, 2023
ANALYTICAL DATE : OCTOBER 27 - NOVEMBER 5, 2023
REPORT NO. : 2023-U095554
WORK NO. : 2019-001655
ANALYSIS NO. : T23AV331-0001

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			GROUNDWATER WELL AT BAN KHAM YAI (GW5) T23AV331-0001	
pH °	-	ELECTROMETRIC METHOD (AT SITE) SM: PART 4500 -H ⁺ B AND 1060 B	7.9 (30°C)	-
COLOUR °	Pt-Co	VISUAL COMPARISON METHOD (SM: PART 2120 B)	ND	5
TOTAL DISSOLVED SOLIDS ^b	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	374	25
TOTAL HARDNESS ^a	mg/L as CaCO ₃	EDTA TITRIMETRIC METHOD (SM: PART 2340 C)	290	4.0
CHLORIDE ^a	mg/L Cl ⁻	ARGENTOMETRIC METHOD (SM: PART 4500-Cl ⁻ B)	23.0	2.0
NON-CARBONATE HARDNESS °	mg/L as CaCO ₃	TITRATION, EDTA TITRIMETRIC (SM: PART 2320 B AND PART 2340 C) AND CALCULATION METHOD	0	0
FAT, OIL AND GREASE °	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	ND	3
METALS				
ARSENIC °	mg/L As	HYDRIDE GENERATION AAS METHOD (SM: PART 3114 C)	0.0010	0.0003
CADMIUM °	mg/L Cd	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.002
COPPER °	mg/L Cu	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.002
LEAD °	mg/L Pb	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	< LOQ	0.003
MANGANESE °	mg/L Mn	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	0.488	0.002
MERCURY ^b	mg/L Hg	IN-HOUSE METHOD: UAE.TP.HEM.002 (COLD VAPOUR ATOMIC ABSORPTION SPECTROMETRIC METHOD); SM: PART 3112 B	< LOQ	0.0001
ZINC °	mg/L Zn	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	0.029	0.003



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			GROUNDWATER WELL AT BAN KHAM YAI (GW5) T23AV331-0001	
MICROBIOLOGY				
<i>E. coli</i> ^b	MPN/100 mL	MULTIPLE-TUBE FERMENTATION TECHNIQUE (SM: PART 9221F)	< 1.8	1.8
SAMPLE CONDITION				
WATER'S COLOUR/TURBID SEDIMENT			YELLOW/CLEAR BROWN	

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

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

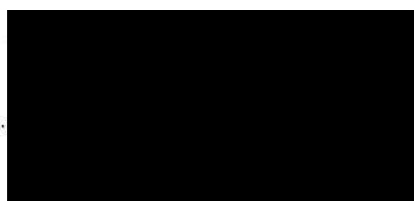
^c : VERIFIED BY OWN LABORATORY QUALITY SYSTEM, BUT STILL NOT ACCREDITED

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

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

ND : NON-DETECTABLE.

< LOQ : < LIMIT OF QUANTITATION (LEAD ≥ 0.003 AND < 0.100 mg/L, MERCURY ≥ 0.0001 AND < 0.0005 mg/L).



NOVEMBER 9, 2023

ANALYSIS REPORT

PROJECT NAME : EIA COMPLIANCE AUDIT AND MONITORING OF PART B: SPH = SINPHUHORM (1 FEB 2020-31 DEC 2023)
CUSTOMER NAME : PTTEP SP LIMITED
ADDRESS : 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD
CHATUCHAK CHATUCHAK BANGKOK 10900
CONTACT INFORMATION : TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com
SAMPLING SOURCE : SIN PHU HORM
SAMPLE TYPE : GROUNDWATER
SAMPLING DATE : OCTOBER 26, 2023
SAMPLING TIME : 13:30 HOUR
SAMPLING METHOD ° : SUBMERSIBLE PUMP
SAMPLING BY ° : MR APISIT SRIKONGKAEW
ANALYZED BY : MISS WORAKON PADSONGCHAN

RECEIVED DATE : OCTOBER 27, 2023
ANALYTICAL DATE : OCTOBER 27 - NOVEMBER 10, 2023
REPORT NO. : 2023-U096863
WORK NO. : 2023-002248
ANALYSIS NO. : T23AV332-0001

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT	LIMIT OF QUANTITATION (LOQ)
			GROUNDWATER WELL AT BAN KHAM YAI (GW5) T23AV332-0001		
ELECTRICAL CONDUCTIVITY °	µS/cm	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2510 B)	754 (30°C)	0.1	-
TEMPERATURE °	°C	THERMOMETER AT SITE (SM: PART 2550 B)	30	-	-
SALINITY °	ppt	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2520 B)	0.4	0.1	-
TOTAL PETROLEUM HYDROCARBONS °	mg/L	SOXHLET EXTRACTION METHOD (SM: PART 5520 D AND PART 5520 F)	ND	3	-
METALS					
CHROMIUM °	mg/L Cr	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005	0.050
NICKEL °	mg/L Ni	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005	0.050
SELENIUM °	mg/L Se	HYDRIDE GENERATION AAS METHOD (SM: PART 3114 C)	ND	0.0005	-
BARIUM °	mg/L Ba	NITRIC ACID-HYDROCHLORIC ACID DIGESTION AND INDUCTIVELY COUPLED PLASMA (ICP) METHOD (SM: PART 3030 F AND PART 3120 B)	1.71	0.003	-
VOLATILE ORGANIC COMPOUNDS					
BENZENE °	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002
ETHYLBENZENE °	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002
TOLUENE °	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT	LIMIT OF QUANTITATION (LOQ)
			GROUNDWATER WELL AT BAN KHAM YAI (GW5) T23AV332-0001		
TOTAL XYLENES ^a	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0006	-	0.0006
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			YELLOW/CLEAR YELLOW		

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

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

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

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

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

ND : NON-DETECTABLE.

[REDACTED]

LABORATORY SUPERVISOR

NOVEMBER 13, 2023

ANALYSIS REPORT

PROJECT NAME : EIA COMPLIANCE AUDIT AND MONITORING OF PART B: SPH = SINPHUHORM (1 FEB 2020-31 DEC 2023)

CUSTOMER NAME : PTTEP SP LIMITED

ADDRESS : 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD
CHATUCHAK CHATUCHAK BANGKOK 10900

CONTACT INFORMATION : TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com

SAMPLING SOURCE : SIN PHU HORM

SAMPLE TYPE : GROUNDWATER

SAMPLING DATE : OCTOBER 26, 2023

SAMPLING TIME : 14:00 HOUR

SAMPLING METHOD ° : SUBMERSIBLE PUMP AND STERILE TECHNIQUE

SAMPLING BY ° : MR APISIT SRIKONGKAEW

ANALYZED BY : MISS NADNAPA KAMOLBOON

RECEIVED DATE : OCTOBER 27, 2023

ANALYTICAL DATE : OCTOBER 27 - NOVEMBER 5, 2023

REPORT NO. : 2023-U095555

WORK NO. : 2019-001655

ANALYSIS NO. : T23AV331-0002

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			GROUNDWATER WELL AT BAN KUD NAM SAI (0W55) T23AV331-0002	
pH °	-	ELECTROMETRIC METHOD (AT SITE) SM: PART 4500 -H ⁺ B AND 1060 B	6.8 (29°C)	-
COLOUR °	Pt-Co	VISUAL COMPARISON METHOD (SM: PART 2120 B)	ND	5
TOTAL DISSOLVED SOLIDS °	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	2,350	25
TOTAL HARDNESS °	mg/L as CaCO ₃	EDTA TITRIMETRIC METHOD (SM: PART 2340 C)	1,134	4.0
CHLORIDE °	mg/L Cl ⁻	ARGENTOMETRIC METHOD (SM: PART 4500-Cl ⁻ B)	665	2.0
NON-CARBONATE HARDNESS °	mg/L as CaCO ₃	TITRATION, EDTA TITRIMETRIC (SM: PART 2320 B AND PART 2340 C) AND CALCULATION METHOD	608	0
FAT, OIL AND GREASE °	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	ND	3
METALS				
ARSENIC °	mg/L As	HYDRIDE GENERATION AAS METHOD (SM: PART 3114 C)	0.0009	0.0003
CADMIUM °	mg/L Cd	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.002
COPPER °	mg/L Cu	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	< LOQ	0.002
LEAD °	mg/L Pb	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.003
MANGANESE °	mg/L Mn	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	0.162	0.002
MERCURY °	mg/L Hg	IN-HOUSE METHOD: UAE.TP.HEM.002 (COLD VAPOUR ATOMIC ABSORPTION SPECTROMETRIC METHOD); SM: PART 3112 B	< LOQ	0.0001
ZINC °	mg/L Zn	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	< LOQ	0.003



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			GROUNDWATER WELL AT BAN KUD NAM SAI (OWSS) T23AV331-0002	
MICROBIOLOGY				
<i>E. coli</i> ^b	MPN/100 mL	MULTIPLE-TUBE FERMENTATION TECHNIQUE (SM: PART 9221 F)	< 1.8	1.8
SAMPLE CONDITION				
WATER'S COLOUR/TURBID SEDIMENT			YELLOW/CLEAR BROWN	

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

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

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

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

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

ND : NON-DETECTABLE.

< LOQ : < LIMIT OF QUANTITATION (COPPER ≥ 0.002 AND < 0.025 mg/L, MERCURY ≥ 0.0001 AND < 0.0005 mg/L,
ZINC ≥ 0.003 AND < 0.025 mg/L).

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LABORATORY SUPERVISOR

NOVEMBER 9, 2023

ANALYSIS REPORT

PROJECT NAME : EIA COMPLIANCE AUDIT AND MONITORING OF PART B: SPH = SINPHUHORM (1 FEB 2020-31 DEC 2023)
CUSTOMER NAME : PTTEP SP LIMITED
ADDRESS : 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD
CHATUCHAK CHATUCHAK BANGKOK 10900
CONTACT INFORMATION : TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com
SAMPLING SOURCE : SIN PHU HORM
SAMPLE TYPE : GROUNDWATER
SAMPLING DATE : OCTOBER 26, 2023
SAMPLING TIME : 14:00 HOUR
SAMPLING METHOD ° : SUBMERSIBLE PUMP
SAMPLING BY ° : MR APISIT SRIKONGKAEW
ANALYZED BY : MISS WORAKON PADSONGCHAN
RECEIVED DATE : OCTOBER 27, 2023
ANALYTICAL DATE : OCTOBER 27 - NOVEMBER 10, 2023
REPORT NO. : 2023-U096865
WORK NO. : 2023-002248
ANALYSIS NO. : T23AV332-0002

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT	LIMIT OF QUANTITATION (LOQ)
			GROUNDWATER WELL AT BAN KUD NAM SAI (OW55) T23AV332-0002		
ELECTRICAL CONDUCTIVITY °	µS/cm	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2510 B)	2,890 (29°C)	0.1	-
TEMPERATURE °	°C	THERMOMETER AT SITE (SM: PART 2550 B)	29	-	-
SALINITY °	ppt	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2520 B)	1.6	0.1	-
TOTAL PETROLEUM HYDROCARBONS °	mg/L	SOXHLET EXTRACTION METHOD (SM: PART 5520 D AND PART 5520 F)	ND	3	-
METALS					
CHROMIUM °	mg/L Cr	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005	0.050
NICKEL °	mg/L Ni	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005	0.050
SELENIUM °	mg/L Se	HYDRIDE GENERATION AAS METHOD (SM: PART 3114 C)	ND	0.0005	-
BARIUM °	mg/L Ba	NITRIC ACID-HYDROCHLORIC ACID DIGESTION AND INDUCTIVELY COUPLED PLASMA (ICP) METHOD (SM: PART 3030 F AND PART 3120 B)	155	0.003	-
VOLATILE ORGANIC COMPOUNDS					
BENZENE °	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002
ETHYLBENZENE °	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002
TOLUENE °	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT	LIMIT OF QUANTITATION (LOQ)
			GROUNDWATER WELL AT BAN KUD NAM SAI (OW55) T23AV332-0002		
TOTAL XYLENES ^a	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0006	-	0.0006
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			YELLOW/CLEAR 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]
LABORATORY SUPERVISOR

NOVEMBER 13, 2023

ANALYSIS REPORT

PROJECT NAME : EIA COMPLIANCE AUDIT AND MONITORING OF PART B: SPH = SINPHUHORM (1 FEB 2020-31 DEC 2023)
CUSTOMER NAME : PTTEP SP LIMITED
ADDRESS : 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD
CHATUCHAK CHATUCHAK BANGKOK 10900
CONTACT INFORMATION : TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com
SAMPLING SOURCE : SIN PHU HORM
SAMPLE TYPE : GROUNDWATER
SAMPLING DATE : OCTOBER 26, 2023
SAMPLING TIME : 14:40 HOUR
SAMPLING METHOD ° : SUBMERSIBLE PUMP AND STERILE TECHNIQUE
SAMPLING BY ° : MR APISIT SRIKONGKAEW
ANALYZED BY : MISS NADNAPA KAMOLBOON

RECEIVED DATE : OCTOBER 27, 2023
ANALYTICAL DATE : OCTOBER 27 - NOVEMBER 5, 2023
REPORT NO. : 2023-U095557
WORK NO. : 2019-001655
ANALYSIS NO. : T23AV331-0003

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			GROUNDWATER WELL AT BAN KAM KAEN KOON NOI (0W9S) T23AV331-0003	
pH °	-	ELECTROMETRIC METHOD (AT SITE) SM: PART 4500 -H+ B AND 1060 B	7.7 (30°C)	-
COLOUR °	Pt-Co	VISUAL COMPARISON METHOD (SM: PART 2120 B)	ND	5
TOTAL DISSOLVED SOLIDS °	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	520	25
TOTAL HARDNESS °	mg/L as CaCO ₃	EDTA TITRIMETRIC METHOD (SM: PART 2340 C)	362	4.0
CHLORIDE °	mg/L Cl	ARGENTOMETRIC METHOD (SM: PART 4500-Cl B)	6.8	2.0
NON-CARBONATE HARDNESS °	mg/L as CaCO ₃	TITRATION, EDTA TITRIMETRIC (SM: PART 2320 B AND PART 2340 C) AND CALCULATION METHOD	0	0
FAT, OIL AND GREASE °	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	ND	3
METALS				
ARSENIC °	mg/L As	HYDRIDE GENERATION AAS METHOD (SM: PART 3114 C)	0.0024	0.0003
CADMIUM °	mg/L Cd	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.002
COPPER °	mg/L Cu	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.002
LEAD °	mg/L Pb	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	< LOQ	0.003
MANGANESE °	mg/L Mn	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	0.158	0.002
MERCURY °	mg/L Hg	IN-HOUSE METHOD: UAE.TP.HEM.002 (COLD VAPOUR ATOMIC ABSORPTION SPECTROMETRIC METHOD); SM: PART 3112 B	< LOQ	0.0001
ZINC °	mg/L Zn	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	0.141	0.003



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			GROUNDWATER WELL AT BAN KAM KAEN KOON NOI (OW9S) T23AV331-0003	
MICROBIOLOGY				
<i>E. coli</i> ^b	MPN/100 mL	MULTIPLE-TUBE FERMENTATION TECHNIQUE (SM: PART 9221F)	< 1.8	1.8
SAMPLE CONDITION				
WATER'S COLOUR/TURBID SEDIMENT			YELLOW/CLEAR BROWN	

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

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

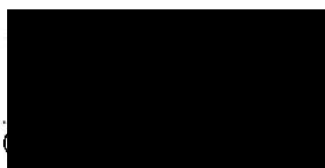
^c : VERIFIED BY OWN LABORATORY QUALITY SYSTEM, BUT STILL NOT ACCREDITED

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

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

ND : NON-DETECTABLE.

< LOQ : < LIMIT OF QUANTITATION (LEAD \geq 0.003 AND < 0.100 mg/L, MERCURY \geq 0.0001 AND < 0.0005 mg/L).



NOVEMBER 9, 2023

ANALYSIS REPORT

PROJECT NAME : EIA COMPLIANCE AUDIT AND MONITORING OF PART B: SPH = SINPHUHORM (1 FEB 2020-31 DEC 2023)
CUSTOMER NAME : PTTEP SP LIMITED
ADDRESS : 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD
 CHATUCHAK CHATUCHAK BANGKOK 10900
CONTACT INFORMATION : TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com
SAMPLING SOURCE : SIN PHU HORM
SAMPLE TYPE : GROUNDWATER
SAMPLING DATE : OCTOBER 26, 2023
SAMPLING TIME : 14:40 HOUR
SAMPLING METHOD ° : SUBMERSIBLE PUMP
SAMPLING BY ° : MR APISIT SRIKONGKAEW
ANALYZED BY : MISS WORAKON PADSONGCHAN

RECEIVED DATE : OCTOBER 27, 2023
ANALYTICAL DATE : OCTOBER 27 - NOVEMBER 10, 2023
REPORT NO. : 2023-U096866
WORK NO. : 2023-002248
ANALYSIS NO. : T23AV332-0003

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT	LIMIT OF QUANTITATION (LOQ)
			GROUNDWATER WELL AT BAN KAM KAEN KOON NOI(OW9S) T23AV332-0003		
ELECTRICAL CONDUCTIVITY °	µS/cm	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2510 B)	1,033 (30°C)	0.1	-
TEMPERATURE °	°C	THERMOMETER AT SITE (SM: PART 2550 B)	30	-	-
SALINITY °	ppt	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2520 B)	0.6	0.1	-
TOTAL PETROLEUM HYDROCARBONS °	mg/L	SOXHLET EXTRACTION METHOD (SM: PART 5520 D AND PART 5520 F)	ND	3	-
METALS					
CHROMIUM °	mg/L Cr	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005	0.050
NICKEL °	mg/L Ni	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005	0.050
SELENIUM °	mg/L Se	HYDRIDE GENERATION AAS METHOD (SM: PART 3114 C)	ND	0.0005	-
BARIUM °	mg/L Ba	NITRIC ACID-HYDROCHLORIC ACID DIGESTION AND INDUCTIVELY COUPLED PLASMA (ICP) METHOD (SM: PART 3030 F AND PART 3120 B)	0.464	0.003	-
VOLATILE ORGANIC COMPOUNDS					
BENZENE °	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002
ETHYLBENZENE °	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002
TOLUENE °	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT	LIMIT OF QUANTITATION (LOQ)
			GROUNDWATER WELL AT BAN KAM KAEN KOON NOI(OW9S) T23AV332-0003		
TOTAL XYLENES ^a	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0006	-	0.0006
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			YELLOW/CLEAR YELLOW		

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

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

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

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

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

ND : NON-DETECTABLE.

[REDACTED]

LABORATORY SUPERVISOR

NOVEMBER 13, 2023

ANALYSIS REPORT

PROJECT NAME : EIA COMPLIANCE AUDIT AND MONITORING OF PART B: SPH = SINPHUHORM (1 FEB 2020-31 DEC 2023)

CUSTOMER NAME : PTTEP SP LIMITED

ADDRESS : 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD
CHATUCHAK CHATUCHAK BANGKOK 10900

CONTACT INFORMATION : TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com

SAMPLING SOURCE : SIN PHU HORM

SAMPLE TYPE : GROUNDWATER

SAMPLING DATE : OCTOBER 26, 2023

SAMPLING TIME : 09:50 HOUR

SAMPLING METHOD ° : SUBMERSIBLE PUMP AND STERILE TECHNIQUE

SAMPLING BY ° : MR APISIT SRIKONGKAEW

ANALYZED BY : MISS NADNAPA KAMOLBOON

RECEIVED DATE : OCTOBER 27, 2023

ANALYTICAL DATE : OCTOBER 27 - NOVEMBER 5, 2023

REPORT NO. : 2023-U095558

WORK NO. : 2019-001655

ANALYSIS NO. : T23AV331-0004

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			MW1 T23AV331-0004	
pH °	-	ELECTROMETRIC METHOD (AT SITE) SM: PART 4500 -H+ B AND 1060 B	7.0 (30°C)	-
COLOUR °	Pt-Co	VISUAL COMPARISON METHOD (SM: PART 2120 B)	ND	5
TOTAL DISSOLVED SOLIDS °	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	1,144	25
TOTAL HARDNESS °	mg/L as CaCO ₃	EDTA TITRIMETRIC METHOD (SM: PART 2340 C)	651	4.0
CHLORIDE °	mg/L Cl	ARGENTOMETRIC METHOD (SM: PART 4500-Cl B)	401	2.0
NON-CARBONATE HARDNESS °	mg/L as CaCO ₃	TITRATION, EDTA TITRIMETRIC (SM: PART 2320 B AND PART 2340 C) AND CALCULATION METHOD	48.0	0
FAT, OIL AND GREASE °	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	ND	3
METALS				
ARSENIC °	mg/L As	HYDRIDE GENERATION AAS METHOD (SM: PART 3114 C)	0.0012	0.0003
CADMIUM °	mg/L Cd	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.002
COPPER °	mg/L Cu	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.002
LEAD °	mg/L Pb	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	< LOQ	0.003
MANGANESE °	mg/L Mn	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	0.296	0.002
MERCURY °	mg/L Hg	IN-HOUSE METHOD: UAE.TP.HEM.002 (COLD VAPOUR ATOMIC ABSORPTION SPECTROMETRIC METHOD); SM: PART 3112 B	0.0006	0.0001
ZINC °	mg/L Zn	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	< LOQ	0.003



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			MW1 T23AV331-0004	
MICROBIOLOGY				
<i>E. coli</i> ^b	MPN/100 mL	MULTIPLE-TUBE FERMENTATION TECHNIQUE (SM: PART 9221 F)	< 1.8	1.8
SAMPLE CONDITION				
WATER'S COLOUR/TURBID			COLOURLESS/CLEAR	
SEDIMENT			-	

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

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

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

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

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

ND : NON-DETECTABLE.

< LOQ : < LIMIT OF QUANTITATION (LEAD \geq 0.003 AND < 0.100 mg/L, ZINC \geq 0.003 AND < 0.025 mg/L).

NOVEMBER 9, 2023

ANALYSIS REPORT

PROJECT NAME	: EIA COMPLIANCE AUDIT AND MONITORING OF PART B: SPH = SINPHUHORM (1 FEB 2020-31 DEC 2023)		
CUSTOMER NAME	: PTTEP SP LIMITED		
ADDRESS	: 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD CHATUCHAK CHATUCHAK BANGKOK 10900		
CONTACT INFORMATION	: TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com		
SAMPLING SOURCE	: SIN PHU HORM		
SAMPLE TYPE	: GROUNDWATER	RECEIVED DATE	: OCTOBER 27, 2023
SAMPLING DATE	: OCTOBER 26, 2023	ANALYTICAL DATE	: OCTOBER 27 - NOVEMBER 10, 2023
SAMPLING TIME	: 09:50 HOUR	REPORT NO.	: 2023-U096867
SAMPLING METHOD °	: SUBMERSIBLE PUMP	WORK NO.	: 2023-002248
SAMPLING BY °	: MR APISIT SRIKONGKAEW	ANALYSIS NO.	: T23AV332-0004
ANALYZED BY	: MISS WORAKON PADSONGCHAN		

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT	LIMIT OF QUANTITATION (LOQ)
			MW1 T23AV332-0004		
ELECTRICAL CONDUCTIVITY °	µS/cm	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2510 B)	2,232 (30°C)	0.1	-
TEMPERATURE °	°C	THERMOMETER AT SITE (SM: PART 2550 B)	30	-	-
SALINITY °	ppt	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2520 B)	1.3	0.1	-
TOTAL PETROLEUM HYDROCARBONS °	mg/L	SOXHLET EXTRACTION METHOD (SM: PART 5520 D AND PART 5520 F)	ND	3	-
METALS					
CHROMIUM °	mg/L Cr	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005	0.050
NICKEL °	mg/L Ni	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005	0.050
SELENIUM °	mg/L Se	HYDRIDE GENERATION AAS METHOD (SM: PART 3114 C)	ND	0.0005	-
BARIUM °	mg/L Ba	NITRIC ACID-HYDROCHLORIC ACID DIGESTION AND INDUCTIVELY COUPLED PLASMA (ICP) METHOD (SM: PART 3030 F AND PART 3120 B)	0.621	0.003	-
VOLATILE ORGANIC COMPOUNDS					
BENZENE ^a	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002
ETHYLBENZENE ^a	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002
TOLUENE ^a	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT	LIMIT OF QUANTITATION (LOQ)
			MW1 T23AV332-0004		
TOTAL XYLENES ^a	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0006	-	0.0006
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			YELLOW/CLEAR YELLOW		

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

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

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

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

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

ND : NON-DETECTABLE.

(MR. BHOCHONK PANGCHERTOMI)
LABORATORY SUPERVISOR

NOVEMBER 13, 2023

ANALYSIS REPORT

PROJECT NAME : EIA COMPLIANCE AUDIT AND MONITORING OF PART B: SPH = SINPHUHORM (1 FEB 2020-31 DEC 2023)
CUSTOMER NAME : PTTEP SP LIMITED
ADDRESS : 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD
 CHATUCHAK CHATUCHAK BANGKOK 10900
CONTACT INFORMATION : TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com
SAMPLING SOURCE : SIN PHU HORM
SAMPLE TYPE : GROUNDWATER
SAMPLING DATE : OCTOBER 26, 2023
SAMPLING TIME : 12:30 HOUR
SAMPLING METHOD ° : SUBMERSIBLE PUMP AND STERILE TECHNIQUE
SAMPLING BY ° : MR APISIT SRIKONGKAEW
ANALYZED BY : MISS ITSARIYAPORN BUATIB

RECEIVED DATE : OCTOBER 27, 2023
ANALYTICAL DATE : OCTOBER 27 - NOVEMBER 5, 2023
REPORT NO. : 2023-U095559
WORK NO. : 2019-001655
ANALYSIS NO. : T23AV331-0005

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			MW2 T23AV331-0005	
pH °	-	ELECTROMETRIC METHOD (AT SITE) SM: PART 4500 -H+ B AND 1060 B	7.1 (30°C)	-
COLOUR °	Pl-Co	VISUAL COMPARISON METHOD (SM: PART 2120 B)	ND	5
TOTAL DISSOLVED SOLIDS °	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	5,408	25
TOTAL HARDNESS °	mg/L as CaCO ₃	EDTA TITRIMETRIC METHOD (SM: PART 2340 C)	1,967	4.0
CHLORIDE °	mg/L Cl ⁻	ARGENTOMETRIC METHOD (SM: PART 4500-Cl B)	2,064	2.0
NON-CARBONATE HARDNESS °	mg/L as CaCO ₃	TITRATION, EDTA TITRIMETRIC (SM: PART 2320 B AND PART 2340 C) AND CALCULATION METHOD	1,364	0
FAT, OIL AND GREASE °	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	ND	3
METALS				
ARSENIC °	mg/L As	HYDRIDE GENERATION AAS METHOD (SM: PART 3114 C)	0.0041	0.0003
CADMIUM °	mg/L Cd	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.002
COPPER °	mg/L Cu	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.002
LEAD °	mg/L Pb	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	< LOQ	0.003
MANGANESE °	mg/L Mn	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	0.655	0.002
MERCURY °	mg/L Hg	IN-HOUSE METHOD: UAE.TP.HEM.002 (COLD VAPOUR ATOMIC ABSORPTION SPECTROMETRIC METHOD); SM: PART 3112 B	ND	0.0001
ZINC °	mg/L Zn	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	< LOQ	0.003



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			MW2 T23AV331-0005	
MICROBIOLOGY				
<i>E. coli</i> ^b	MPN/100 mL	MULTIPLE-TUBE FERMENTATION TECHNIQUE (SM: PART 9221 F)	< 1.8	1.8
SAMPLE CONDITION				
WATER'S COLOUR/TURBID			YELLOW/CLEAR	
SEDIMENT			BROWN	

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

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

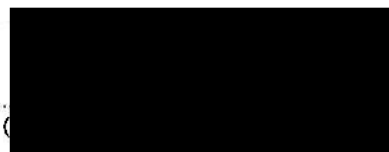
^c : VERIFIED BY OWN LABORATORY QUALITY SYSTEM, BUT STILL NOT ACCREDITED

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

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

ND : NON-DETECTABLE.

< LOQ : < LIMIT OF QUANTITATION (LEAD \geq 0.003 AND < 0.100 mg/L, ZINC \geq 0.003 AND < 0.025 mg/L).



NOVEMBER 9, 2023

ANALYSIS REPORT

PROJECT NAME : EIA COMPLIANCE AUDIT AND MONITORING OF PART B: SPH = SINPHUHORM (1 FEB 2020-31 DEC 2023)
CUSTOMER NAME : PTTEP SP LIMITED
ADDRESS : 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD
CHATUCHAK CHATUCHAK BANGKOK 10900
CONTACT INFORMATION : TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com
SAMPLING SOURCE : SIN PHU HORM
SAMPLE TYPE : GROUNDWATER
SAMPLING DATE : OCTOBER 26, 2023
SAMPLING TIME : 12:30 HOUR
SAMPLING METHOD ° : SUBMERSIBLE PUMP
SAMPLING BY ° : MR APISIT SRIKONGKAEW
ANALYZED BY : MISS WORAKON PADSONGCHAN

RECEIVED DATE : OCTOBER 27, 2023
ANALYTICAL DATE : OCTOBER 27 - NOVEMBER 10, 2023
REPORT NO. : 2023-U096868
WORK NO. : 2023-002248
ANALYSIS NO. : T23AV332-0005

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT	LIMIT OF QUANTITATION (LOQ)
			MW2 T23AV332-0005		
ELECTRICAL CONDUCTIVITY °	µS/cm	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2510 B)	6,990 (30°C)	0.1	-
TEMPERATURE °	°C	THERMOMETER AT SITE (SM: PART 2550 B)	30	-	-
SALINITY °	ppt	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2520 B)	4.0	0.1	-
TOTAL PETROLEUM HYDROCARBONS °	mg/L	SOXHLET EXTRACTION METHOD (SM: PART 5520 D AND PART 5520 F)	ND	3	-
METALS					
CHROMIUM °	mg/L Cr	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005	0.050
NICKEL °	mg/L Ni	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005	0.050
SELENIUM °	mg/L Se	HYDRIDE GENERATION AAS METHOD (SM: PART 3114 C)	ND	0.0005	-
BARIUM °	mg/L Ba	NITRIC ACID-HYDROCHLORIC ACID DIGESTION AND INDUCTIVELY COUPLED PLASMA (ICP) METHOD (SM: PART 3030 F AND PART 3120 B)	0.937	0.003	-
VOLATILE ORGANIC COMPOUNDS					
BENZENE °	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002
ETHYLBENZENE °	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002
TOLUENE °	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT	LIMIT OF QUANTITATION (LOQ)
			MW2 T23AV332-0005		
TOTAL XYLENES ^a	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0006	-	0.0006
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			YELLOW/CLEAR YELLOW		

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

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

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

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

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

ND : NON-DETECTABLE.

.....
(MR. BHUCHONK PANICHLERTUMPI)
LABORATORY SUPERVISOR

NOVEMBER 13, 2023

ANALYSIS REPORT

PROJECT NAME	: EIA COMPLIANCE AUDIT AND MONITORING OF PART B: SPH = SINPHUHORM (1 FEB 2020-31 DEC 2023)		
CUSTOMER NAME	: PTTEP SP LIMITED		
ADDRESS	: 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD CHATUCHAK CHATUCHAK BANGKOK 10900		
CONTACT INFORMATION	: TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com		
SAMPLING SOURCE	: SIN PHU HORM		
SAMPLE TYPE	: GROUNDWATER	RECEIVED DATE	: OCTOBER 27, 2023
SAMPLING DATE	: OCTOBER 26, 2023	ANALYTICAL DATE	: OCTOBER 27 - NOVEMBER 5, 2023
SAMPLING TIME	: 11:20 HOUR	REPORT NO.	: 2023-U095561
SAMPLING METHOD °	: SUBMERSIBLE PUMP AND STERILE TECHNIQUE	WORK NO.	: 2019-001655
SAMPLING BY °	: MR APISIT SRIKONGKAEW	ANALYSIS NO.	: T23AV331-0006
ANALYZED BY	: MISS NADNAPA KAMOLBOON		

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			MW3 T23AV331-0006	
pH °	-	ELECTROMETRIC METHOD (AT SITE) SM: PART 4500 -H ⁺ B AND 1060 B	7.5 (31°C)	-
COLOUR °	Pl-Co	VISUAL COMPARISON METHOD (SM: PART 2120 B)	ND	5
TOTAL DISSOLVED SOLIDS °	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	1,105	25
TOTAL HARDNESS ^a	mg/L as CaCO ₃	EDTA TITRIMETRIC METHOD (SM: PART 2340 C)	416	4.0
CHLORIDE ^a	mg/L Cl ⁻	ARGENTOMETRIC METHOD (SM: PART 4500-Cl ⁻ B)	394	2.0
NON-CARBONATE HARDNESS °	mg/L as CaCO ₃	TITRATION, EDTA TITRIMETRIC (SM: PART 2320 B AND PART 2340 C) AND CALCULATION METHOD	0	0
FAT, OIL AND GREASE °	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	ND	3
METALS				
ARSENIC °	mg/L As	HYDRIDE GENERATION AAS METHOD (SM: PART 3114 C)	0.0015	0.0003
CADMIUM °	mg/L Cd	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.002
COPPER °	mg/L Cu	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	< LOQ	0.002
LEAD °	mg/L Pb	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	< LOQ	0.003
MANGANESE °	mg/L Mn	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	0.122	0.002
MERCURY ^b	mg/L Hg	IN-HOUSE METHOD: UAE.TP.HEM.002 (COLD VAPOUR ATOMIC ABSORPTION SPECTROMETRIC METHOD); SM: PART 3112 B	< LOQ	0.0001
ZINC °	mg/L Zn	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	< LOQ	0.003



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			MW3 T23AV331-0006	
MICROBIOLOGY				
<i>E. coli</i> ^b	MPN/100 mL	MULTIPLE-TUBE FERMENTATION TECHNIQUE (SM: PART 9221 F)	< 1.8	1.8
SAMPLE CONDITION				
WATER'S COLOUR/TURBID			COLOURLESS/CLEAR	
SEDIMENT			-	

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

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

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

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

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

ND : NON-DETECTABLE.

< LOQ : < LIMIT OF QUANTITATION (COPPER ≥ 0.002 AND < 0.025 mg/L, LEAD ≥ 0.003 AND < 0.100 mg/L, MERCURY ≥ 0.0001 AND < 0.0005 mg/L, ZINC ≥ 0.003 AND < 0.025 mg/L).

LABORATORY SUPERVISOR

NOVEMBER 9, 2023

ANALYSIS REPORT

PROJECT NAME : EIA COMPLIANCE AUDIT AND MONITORING OF PART B: SPH = SINPHUHORM (1 FEB 2020-31 DEC 2023)
CUSTOMER NAME : PTTEP SP LIMITED
ADDRESS : 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD
CHATUCHAK CHATUCHAK BANGKOK 10900
CONTACT INFORMATION : TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com
SAMPLING SOURCE : SIN PHU HORM
SAMPLE TYPE : GROUNDWATER
SAMPLING DATE : OCTOBER 26, 2023
SAMPLING TIME : 11:20 HOUR
SAMPLING METHOD ° : SUBMERSIBLE PUMP
SAMPLING BY ° : MR APISIT SRIKONGKAEW
ANALYZED BY : MISS WORAKON PADSONGCHAN
RECEIVED DATE : OCTOBER 27, 2023
ANALYTICAL DATE : OCTOBER 27 - NOVEMBER 10, 2023
REPORT NO. : 2023-U096869
WORK NO. : 2023-002248
ANALYSIS NO. : T23AV332-0006

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT	LIMIT OF QUANTITATION (LOQ)
			MW3 T23AV332-0006		
ELECTRICAL CONDUCTIVITY °	µS/cm	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2510 B)	2,244 (31°C)	0.1	-
TEMPERATURE °	°C	THERMOMETER AT SITE (SM: PART 2550 B)	31	-	-
SALINITY °	ppt	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2520 B)	1.3	0.1	-
TOTAL PETROLEUM HYDROCARBONS °	mg/L	SOXHLET EXTRACTION METHOD (SM: PART 5520 D AND PART 5520 F)	ND	3	-
METALS					
CHROMIUM °	mg/L Cr	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005	0.050
NICKEL °	mg/L Ni	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005	0.050
SELENIUM °	mg/L Se	HYDRIDE GENERATION AAS METHOD (SM: PART 3114 C)	ND	0.0005	-
BARIUM °	mg/L Ba	NITRIC ACID-HYDROCHLORIC ACID DIGESTION AND INDUCTIVELY COUPLED PLASMA (ICP) METHOD (SM: PART 3030 F AND PART 3120 B)	0.283	0.003	-
VOLATILE ORGANIC COMPOUNDS					
BENZENE °	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002
ETHYLBENZENE °	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002
TOLUENE °	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT	LIMIT OF QUANTITATION (LOQ)
			MW3 T23AV332-0006		
TOTAL XYLENES ^a	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0006	-	0.0006
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			YELLOW/CLEAR YELLOW		

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

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

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

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

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

ND : NON-DETECTABLE.

LABORATORY SUPERVISOR

NOVEMBER 13, 2023

ANALYSIS REPORT

PROJECT NAME	: EIA COMPLIANCE AUDIT AND MONITORING OF PART B: SPH = SINPHUHORM (1 FEB 2020-31 DEC 2023)		
CUSTOMER NAME	: PTTEP SP LIMITED		
ADDRESS	: 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD CHATUCHAK CHATUCHAK BANGKOK 10900		
CONTACT INFORMATION	: TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com		
SAMPLING SOURCE	: SIN PHU HORM		
SAMPLE TYPE	: GROUNDWATER	RECEIVED DATE	: OCTOBER 27, 2023
SAMPLING DATE	: OCTOBER 26, 2023	ANALYTICAL DATE	: OCTOBER 27 - NOVEMBER 5, 2023
SAMPLING TIME	: 10:55 HOUR	REPORT NO.	: 2023-U095562
SAMPLING METHOD °	: SUBMERSIBLE PUMP AND STERILE TECHNIQUE	WORK NO.	: 2019-001655
SAMPLING BY °	: MR APISIT SRIKONGKAEW	ANALYSIS NO.	: T23AV331-0007
ANALYZED BY	: MISS NADNAPA KAMOLBOON		

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			MW4 T23AV331-0007	
pH °	-	ELECTROMETRIC METHOD (AT SITE) SM: PART 4500 -H ⁺ B AND 1060 B	6.9 (30°C)	-
COLOUR °	Pt-Co	VISUAL COMPARISON METHOD (SM: PART 2120 B)	ND	5
TOTAL DISSOLVED SOLIDS °	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	595	25
TOTAL HARDNESS °	mg/L as CaCO ₃	EDTA TITRIMETRIC METHOD (SM: PART 2340 C)	309	4.0
CHLORIDE °	mg/L Cl ⁻	ARGENTOMETRIC METHOD (SM: PART 4500-Cl ⁻ B)	182	2.0
NON-CARBONATE HARDNESS °	mg/L as CaCO ₃	TITRATION, EDTA TITRIMETRIC (SM: PART 2320 B AND PART 2340 C) AND CALCULATION METHOD	1.00	0
FAT, OIL AND GREASE °	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	ND	3
METALS				
ARSENIC °	mg/L As	HYDRIDE GENERATION AAS METHOD (SM: PART 3114 C)	ND	0.0003
CADMIUM °	mg/L Cd	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.002
COPPER °	mg/L Cu	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	< LOQ	0.002
LEAD °	mg/L Pb	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	< LOQ	0.003
MANGANESE °	mg/L Mn	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	0.197	0.002
MERCURY °	mg/L Hg	IN-HOUSE METHOD: UAE.TP.HEM.002 (COLD VAPOUR ATOMIC ABSORPTION SPECTROMETRIC METHOD); SM: PART 3112 B	< LOQ	0.0001
ZINC °	mg/L Zn	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.003



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			MW4 T23AV331-0007	
MICROBIOLOGY				
<i>E. coli</i> ^b	MPN/100 mL	MULTIPLE-TUBE FERMENTATION TECHNIQUE (SM: PART 9221 F)	< 1.8	1.8
SAMPLE CONDITION				
WATER'S COLOUR/TURBID			COLOURLESS/CLEAR	
SEDIMENT			YELLOW	

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

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

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

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

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

ND : NON-DETECTABLE.

< LOQ : < LIMIT OF QUANTITATION (COPPER ≥ 0.002 AND < 0.025 mg/L, LEAD ≥ 0.003 AND < 0.100 mg/L, MERCURY ≥ 0.0001 AND < 0.0005 mg/L).



NOVEMBER 9, 2023

ANALYSIS REPORT

PROJECT NAME	: EIA COMPLIANCE AUDIT AND MONITORING OF PART B: SPH = SINPHUHORM (1 FEB 2020-31 DEC 2023)		
CUSTOMER NAME	: PTTEP SP LIMITED		
ADDRESS	: 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD CHATUCHAK CHATUCHAK BANGKOK 10900		
CONTACT INFORMATION	: TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com		
SAMPLING SOURCE	: SIN PHU HORM		
SAMPLE TYPE	: GROUNDWATER	RECEIVED DATE	: OCTOBER 27, 2023
SAMPLING DATE	: OCTOBER 26, 2023	ANALYTICAL DATE	: OCTOBER 27 - NOVEMBER 10, 2023
SAMPLING TIME	: 10:55 HOUR	REPORT NO.	: 2023-U096870
SAMPLING METHOD °	: SUBMERSIBLE PUMP	WORK NO.	: 2023-002248
SAMPLING BY °	: MR APISIT SRIKONGKAEW	ANALYSIS NO.	: T23AV332-0007
ANALYZED BY	: MISS WORAKON PADSONGCHAN		

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT	LIMIT OF QUANTITATION (LOQ)
			MW4 T23AV332-0007		
ELECTRICAL CONDUCTIVITY °	µS/cm	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2510 B)	1,200 (30°C)	0.1	-
TEMPERATURE °	°C	THERMOMETER AT SITE (SM: PART 2550 B)	30	-	-
SALINITY °	ppt	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2520 B)	0.7	0.1	-
TOTAL PETROLEUM HYDROCARBONS °	mg/L	SOXHLET EXTRACTION METHOD (SM: PART 5520 D AND PART 5520 F)	ND	3	-
METALS					
CHROMIUM °	mg/L Cr	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005	0.050
NICKEL °	mg/L Ni	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005	0.050
SELENIUM °	mg/L Se	HYDRIDE GENERATION AAS METHOD (SM: PART 3114 C)	ND	0.0005	-
BARIUM °	mg/L Ba	NITRIC ACID-HYDROCHLORIC ACID DIGESTION AND INDUCTIVELY COUPLED PLASMA (ICP) METHOD (SM: PART 3030 F AND PART 3120 B)	0.093	0.003	-
VOLATILE ORGANIC COMPOUNDS					
BENZENE °	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002
ETHYLBENZENE °	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002
TOLUENE °	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT	LIMIT OF QUANTITATION (LOQ)
			MW4 T23AV332-0007		
TOTAL XYLENES ^a	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0006	-	0.0006
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			YELLOW/CLEAR YELLOW		

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

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

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

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

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

ND : NON-DETECTABLE.



LABORATORY SUPERVISOR

NOVEMBER 13, 2023

ANALYSIS REPORT

PROJECT NAME : EIA COMPLIANCE AUDIT AND MONITORING OF PART B: SPH = SINPHUHORM (1 FEB 2020-31 DEC 2023)

CUSTOMER NAME : PTTEP SP LIMITED

ADDRESS : 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD
CHATUCHAK CHATUCHAK BANGKOK 10900

CONTACT INFORMATION : TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com

SAMPLING SOURCE : SIN PHU HORM

SAMPLE TYPE : GROUNDWATER

SAMPLING DATE : OCTOBER 26, 2023

SAMPLING TIME : 10:20 HOUR

SAMPLING METHOD ° : SUBMERSIBLE PUMP AND STERILE TECHNIQUE

SAMPLING BY ° : MR APISIT SRIKONGKAEW

ANALYZED BY : MISS NADNAPA KAMOLBOON

RECEIVED DATE : OCTOBER 27, 2023

ANALYTICAL DATE : OCTOBER 27 - NOVEMBER 5, 2023

REPORT NO. : 2023-U095564

WORK NO. : 2019-001655

ANALYSIS NO. : T23AV331-0008

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			MW5 T23AV331-0008	
pH °	-	ELECTROMETRIC METHOD (AT SITE) SM: PART 4500 -H ⁺ B AND 1060 B	7.5 (30°C)	-
COLOUR °	Pt-Co	VISUAL COMPARISON METHOD (SM: PART 2120 B)	ND	5
TOTAL DISSOLVED SOLIDS °	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	240	25
TOTAL HARDNESS °	mg/L as CaCO ₃	EDTA TITRIMETRIC METHOD (SM: PART 2340 C)	91.5	4.0
CHLORIDE °	mg/L Cl ⁻	ARGENTOMETRIC METHOD (SM: PART 4500-Cl ⁻ B)	50.6	2.0
NON-CARBONATE HARDNESS °	mg/L as CaCO ₃	TITRATION, EDTA TITRIMETRIC (SM: PART 2320 B AND PART 2340 C) AND CALCULATION METHOD	0	0
FAT, OIL AND GREASE °	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	ND	3
METALS				
ARSENIC °	mg/L As	HYDRIDE GENERATION AAS METHOD (SM: PART 3114 C)	ND	0.0003
CADMIUM °	mg/L Cd	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.002
COPPER °	mg/L Cu	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	< LOQ	0.002
LEAD °	mg/L Pb	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.003
MANGANESE °	mg/L Mn	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	0.032	0.002
MERCURY °	mg/L Hg	IN-HOUSE METHOD: UAE.TP.HEM.002 (COLD VAPOUR ATOMIC ABSORPTION SPECTROMETRIC METHOD); SM: PART 3112 B	< LOQ	0.0001
ZINC °	mg/L Zn	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	< LOQ	0.003



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			MW5 T23AV331-0008	
MICROBIOLOGY				
<i>E. coli</i> ^b	MPN/100 mL	MULTIPLE-TUBE FERMENTATION TECHNIQUE (SM: PART 9221F)	< 1.8	1.8
SAMPLE CONDITION				
WATER'S COLOUR/TURBID			COLOURLESS/CLEAR	
SEDIMENT			YELLOW	

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

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

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

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

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

ND : NON-DETECTABLE.

< LOQ : < LIMIT OF QUANTITATION (COPPER ≥ 0.002 AND < 0.025 mg/L, MERCURY ≥ 0.0001 AND < 0.0005 mg/L,
ZINC ≥ 0.003 AND < 0.025 mg/L).



NOVEMBER 9, 2023

ANALYSIS REPORT

PROJECT NAME : EIA COMPLIANCE AUDIT AND MONITORING OF PART B: SPH = SINPHUHORM (1 FEB 2020-31 DEC 2023)
CUSTOMER NAME : PTTEP SP LIMITED
ADDRESS : 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD
CHATUCHAK CHATUCHAK BANGKOK 10900
CONTACT INFORMATION : TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com
SAMPLING SOURCE : SIN PHU HORM
SAMPLE TYPE : GROUNDWATER
SAMPLING DATE : OCTOBER 26, 2023
SAMPLING TIME : 10:20 HOUR
SAMPLING METHOD ° : SUBMERSIBLE PUMP
SAMPLING BY ° : MR APISIT SRIKONGKAEW
ANALYZED BY : MISS WORAKON PADSONGCHAN

RECEIVED DATE : OCTOBER 27, 2023
ANALYTICAL DATE : OCTOBER 27 - NOVEMBER 10, 2023
REPORT NO. : 2023-U096871
WORK NO. : 2023-002248
ANALYSIS NO. : T23AV332-0008

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT	LIMIT OF QUANTITATION (LOQ)
			MW5 T23AV332-0008		
ELECTRICAL CONDUCTIVITY °	µS/cm	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2510 B)	448 (30°C)	0.1	-
TEMPERATURE °	°C	THERMOMETER AT SITE (SM: PART 2550 B)	30	-	-
SALINITY °	ppt	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2520 B)	0.3	0.1	-
TOTAL PETROLEUM HYDROCARBONS °	mg/L	SOXHLET EXTRACTION METHOD (SM: PART 5520 D AND PART 5520 F)	ND	3	-
METALS					
CHROMIUM °	mg/L Cr	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005	0.050
NICKEL °	mg/L Ni	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	< LOQ	0.005	0.050
SELENIUM °	mg/L Se	HYDRIDE GENERATION AAS METHOD (SM: PART 3114 C)	ND	0.0005	-
BARIUM °	mg/L Ba	NITRIC ACID-HYDROCHLORIC ACID DIGESTION AND INDUCTIVELY COUPLED PLASMA (ICP) METHOD (SM: PART 3030 F AND PART 3120 B)	0.268	0.003	-
VOLATILE ORGANIC COMPOUNDS					
BENZENE °	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002
ETHYLBENZENE °	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002
TOLUENE °	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT	LIMIT OF QUANTITATION (LOQ)
			MW5 T23AV332-0008		
TOTAL XYLENES ^a	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0006	-	0.0006
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			YELLOW/CLEAR YELLOW		

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

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

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

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

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

ND : NON-DETECTABLE.

< LOQ : < LIMIT OF QUANTITATION (NICKEL ≥ 0.005 AND < 0.050 mg/L).

(M) [REDACTED]
LABORATORY SUPERVISOR

NOVEMBER 13, 2023

ANALYSIS REPORT

PROJECT NAME : EIA COMPLIANCE AUDIT AND MONITORING OF PART B: SPH = SINPHUHORM (1 FEB 2020-31 DEC 2023)
CUSTOMER NAME : PTTEP SP LIMITED
ADDRESS : 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD
 CHATUCHAK CHATUCHAK BANGKOK 10900
CONTACT INFORMATION : TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com
SAMPLING SOURCE : SIN PHU HORM
SAMPLE TYPE : GROUNDWATER
SAMPLING DATE : OCTOBER 26, 2023
SAMPLING TIME : 11:50 HOUR
SAMPLING METHOD ° : SUBMERSIBLE PUMP AND STERILE TECHNIQUE
SAMPLING BY ° : MR APISIT SRIKONGKAEW
ANALYZED BY : MISS NADNAPA KAMOLBOON

RECEIVED DATE : OCTOBER 27, 2023
ANALYTICAL DATE : OCTOBER 27 - NOVEMBER 5, 2023
REPORT NO. : 2023-U095565
WORK NO. : 2019-001655
ANALYSIS NO. : T23AV331-0009

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			MW6 T23AV331-0009	
pH °	-	ELECTROMETRIC METHOD (AT SITE) SM: PART 4500 -H+ B AND 1060 B	7.5 (32°C)	-
COLOUR °	Pl-Co	VISUAL COMPARISON METHOD (SM: PART 2120 B)	ND	5
TOTAL DISSOLVED SOLIDS °	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	2,210	25
TOTAL HARDNESS °	mg/L as CaCO ₃	EDTA TITRIMETRIC METHOD (SM: PART 2340 C)	878	4.0
CHLORIDE °	mg/L Cl	ARGENTOMETRIC METHOD (SM: PART 4500-Cl B)	660	2.0
NON-CARBONATE HARDNESS °	mg/L as CaCO ₃	TITRATION, EDTA TITRIMETRIC (SM: PART 2320 B AND PART 2340 C) AND CALCULATION METHOD	611	0
FAT, OIL AND GREASE °	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	ND	3
METALS				
ARSENIC °	mg/L As	HYDRIDE GENERATION AAS METHOD (SM: PART 3114 C)	ND	0.0003
CADMIUM °	mg/L Cd	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.002
COPPER °	mg/L Cu	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	< LOQ	0.002
LEAD °	mg/L Pb	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.003
MANGANESE °	mg/L Mn	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	0.071	0.002
MERCURY °	mg/L Hg	IN-HOUSE METHOD: UAE.TP.HEM.002 (COLD VAPOUR ATOMIC ABSORPTION SPECTROMETRIC METHOD); SM: PART 3112 B	< LOQ	0.0001
ZINC °	mg/L Zn	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	< LOQ	0.003



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			MW6 T23AV331-0009	
MICROBIOLOGY				
<i>E. coli</i> ^b	MPN/100 mL	MULTIPLE-TUBE FERMENTATION TECHNIQUE (SM: PART 9221 F)	< 1.8	1.8
SAMPLE CONDITION				
WATER'S COLOUR/TURBID			COLOURLESS/CLEAR	
SEDIMENT			YELLOW	

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

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

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

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

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

ND : NON-DETECTABLE.

< LOQ : < LIMIT OF QUANTITATION (COPPER ≥ 0.002 AND < 0.025 mg/L, MERCURY ≥ 0.0001 AND < 0.0005 mg/L,
ZINC ≥ 0.003 AND < 0.025 mg/L).



NOVEMBER 9, 2023

ANALYSIS REPORT

PROJECT NAME	: EIA COMPLIANCE AUDIT AND MONITORING OF PART B: SPH = SINPHUHORM (1 FEB 2020-31 DEC 2023)		
CUSTOMER NAME	: PTTEP SP LIMITED		
ADDRESS	: 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD CHATUCHAK CHATUCHAK BANGKOK 10900		
CONTACT INFORMATION	: TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com		
SAMPLING SOURCE	: SIN PHU HORM		
SAMPLE TYPE	: GROUNDWATER	RECEIVED DATE	: OCTOBER 27, 2023
SAMPLING DATE	: OCTOBER 26, 2023	ANALYTICAL DATE	: OCTOBER 27 - NOVEMBER 10, 2023
SAMPLING TIME	: 11:50 HOUR	REPORT NO.	: 2023-U096872
SAMPLING METHOD °	: SUBMERSIBLE PUMP	WORK NO.	: 2023-002248
SAMPLING BY °	: MR APISIT SRIKONGKAEW	ANALYSIS NO.	: T23AV332-0009
ANALYZED BY	: MISS WORAKON PADSONGCHAN		

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT	LIMIT OF QUANTITATION (LOQ)
			MW6 T23AV332-0009		
ELECTRICAL CONDUCTIVITY °	µS/cm	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2510 B)	2,680 (32°C)	0.1	-
TEMPERATURE °	°C	THERMOMETER AT SITE (SM: PART 2550 B)	32	-	-
SALINITY °	ppt	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2520 B)	1.6	0.1	-
TOTAL PETROLEUM HYDROCARBONS °	mg/L	SOXHLET EXTRACTION METHOD (SM: PART 5520 D AND PART 5520 F)	ND	3	-
METALS					
CHROMIUM °	mg/L Cr	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005	0.050
NICKEL °	mg/L Ni	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005	0.050
SELENIUM °	mg/L Se	HYDRIDE GENERATION AAS METHOD (SM: PART 3114 C)	ND	0.0005	-
BARIUM °	mg/L Ba	NITRIC ACID-HYDROCHLORIC ACID DIGESTION AND INDUCTIVELY COUPLED PLASMA (ICP) METHOD (SM: PART 3030 F AND PART 3120 B)	0.031	0.003	-
VOLATILE ORGANIC COMPOUNDS					
BENZENE °	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002
ETHYLBENZENE °	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002
TOLUENE °	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT	LIMIT OF QUANTITATION (LOQ)
			MW6 T23AV332-0009		
TOTAL XYLENES ^a	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0006	-	0.0006
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			YELLOW/CLEAR YELLOW		

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

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

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

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

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

ND : NON-DETECTABLE.



NOVEMBER 13, 2023

ANALYSIS REPORT

PROJECT NAME : EIA COMPLIANCE AUDIT AND MONITORING OF PART B: SPH = SINPHUHORM (1 FEB 2020-31 DEC 2023)
CUSTOMER NAME : PTTEP SP LIMITED
ADDRESS : 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD
 CHATUCHAK CHATUCHAK BANGKOK 10900
CONTACT INFORMATION : TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com
SAMPLING SOURCE : -
SAMPLE TYPE : BLANK (GROUNDWATER) **RECEIVED DATE** : OCTOBER 27, 2023
SAMPLING DATE : - **ANALYTICAL DATE** : OCTOBER 27 - NOVEMBER 5, 2023
SAMPLING TIME : - **REPORT NO.** : 2023-U095567
SAMPLING METHOD : - **WORK NO.** : 2019-001655
SAMPLING BY : - **ANALYSIS NO.** : 2023-EB0216
ANALYZED BY : MISS NADNAPA KAMOLBOON

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			EQUIPMENT BLANK 2023-EB0216	
TOTAL DISSOLVED SOLIDS	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	ND	25
TOTAL HARDNESS	mg/L as CaCO ₃	EDTA TITRIMETRIC METHOD (SM: PART 2340 C)	ND	4.0
CHLORIDE	mg/L Cl ⁻	ARGENTOMETRIC METHOD (SM: PART 4500-Cl ⁻ B)	ND	2.0
FAT, OIL AND GREASE	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	ND	3
METALS				
ARSENIC	mg/L As	HYDRIDE GENERATION AAS METHOD (SM: PART 3114 C)	ND	0.0003
CADMIUM	mg/L Cd	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.002
COPPER	mg/L Cu	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.002
LEAD	mg/L Pb	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.003
MANGANESE	mg/L Mn	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.002
MERCURY	mg/L Hg	IN-HOUSE METHOD: UAE.TP.HEM.002 (COLD VAPOUR ATOMIC ABSORPTION SPECTROMETRIC METHOD); SM: PART 3112 B	ND	0.0001
ZINC	mg/L Zn	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.003



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			EQUIPMENT BLANK 2023-EB0216	
MICROBIOLOGY				
<i>E. coli</i>	MPN/100 mL	MULTIPLE-TUBE FERMENTATION TECHNIQUE (SM: PART 9221 F)	< 1.8	1.8
SAMPLE CONDITION				
WATER'S COLOUR/TURBID			COLOURLESS/CLEAR	
SEDIMENT			-	

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

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

ND : NON-DETECTABLE.



NOVEMBER 9, 2023

ANALYSIS REPORT

PROJECT NAME : EIA COMPLIANCE AUDIT AND MONITORING OF PART B: SPH = SINPHUHORM (1 FEB 2020-31 DEC 2023)

CUSTOMER NAME : PTTEP SP LIMITED

ADDRESS : 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD
CHATUCHAK CHATUCHAK BANGKOK 10900

CONTACT INFORMATION : TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com

SAMPLING SOURCE : -

SAMPLE TYPE : BLANK (GROUNDWATER)

SAMPLING DATE : -

SAMPLING TIME : -

SAMPLING METHOD : -

SAMPLING BY : -

ANALYZED BY : MISS NADNAPA KAMOLBOON

RECEIVED DATE : OCTOBER 27, 2023

ANALYTICAL DATE : OCTOBER 27 - NOVEMBER 5, 2023

REPORT NO. : 2023-U095566

WORK NO. : 2019-001655

ANALYSIS NO. : 2023-FB1098, 2023-TB1039

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT		DETECTION LIMIT
			1 2023-FB1098	2 2023-TB1039	
TOTAL DISSOLVED SOLIDS	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	ND	ND	25
TOTAL HARDNESS	mg/L as CaCO ₃	EDTA TITRIMETRIC METHOD (SM: PART 2340 C)	ND	ND	4.0
CHLORIDE	mg/L Cl	ARGENTOMETRIC METHOD (SM: PART 4500-Cl B)	ND	ND	2.0
FAT, OIL AND GREASE	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	ND	ND	3
METALS					
ARSENIC	mg/L As	HYDRIDE GENERATION AAS METHOD (SM: PART 3114 C)	ND	ND	0.0003
CADMIUM	mg/L Cd	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	ND	0.002
COPPER	mg/L Cu	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	ND	0.002
LEAD	mg/L Pb	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	ND	0.003
MANGANESE	mg/L Mn	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	ND	0.002
MERCURY	mg/L Hg	IN-HOUSE METHOD: UAE.TP.HEM.002 (COLD VAPOUR ATOMIC ABSORPTION SPECTROMETRIC METHOD); SM: PART 3112 B	ND	ND	0.0001
ZINC	mg/L Zn	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	ND	0.003



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT		DETECTION LIMIT
			1 2023-FB1098	2 2023-TB1039	
MICROBIOLOGY					
<i>E. coli</i>	MPN/100 mL	MULTIPLE-TUBE FERMENTATION TECHNIQUE (SM: PART 9221F)	< 1.8	< 1.8	1.8
SAMPLE CONDITION					
WATER'S COLOUR/TURBID SEDIMENT			COLOURLESS/CLEAR	COLOURLESS/CLEAR	

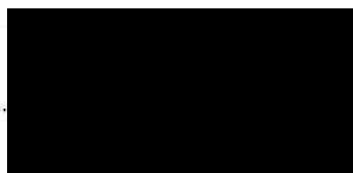
IN-HOUSE : BASED ON STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

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

RESULT 1 : FIELD BLANK

RESULT 2 : TRIP BLANK

ND : NON-DETECTABLE.



NOVEMBER 9, 2023

ANALYSIS REPORT

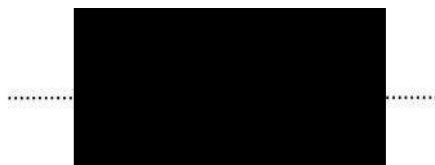
PROJECT NAME : EIA COMPLIANCE AUDIT AND MONITORING OF PART B: SPH = SINPHUHORM (1 FEB 2020-31 DEC 2023)
CUSTOMER NAME : PTTEP SP LIMITED
ADDRESS : 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD
 CHATUCHAK CHATUCHAK BANGKOK 10900
CONTACT INFORMATION : TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com
SAMPLING SOURCE : -
SAMPLE TYPE : BLANK (GROUNDWATER) **RECEIVED DATE** : OCTOBER 26, 2023
SAMPLING DATE : - **ANALYTICAL DATE** : OCTOBER 26 - NOVEMBER 7, 2023
SAMPLING TIME : - **REPORT NO.** : 2023-U096036
SAMPLING METHOD : - **WORK NO.** : 2023-002248
SAMPLING BY : - **ANALYSIS NO.** : 2023-FB1089
ANALYZED BY : MISS WORAKON PADSONGCHAN

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT	LIMIT OF QUANTITATION (LOQ)
			FIELD BLANK 2023-FB1089		
TOTAL PETROLEUM HYDROCARBONS	mg/L	SOXHLET EXTRACTION METHOD (SM: PART 5520 D AND PART 5520 F)	ND	3	-
METALS					
CHROMIUM	mg/L Cr	IN-HOUSE METHOD: UAE.TP.GW.01(NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005	0.050
NICKEL	mg/L Ni	IN-HOUSE METHOD: UAE.TP.GW.01(NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005	0.050
SELENIUM	mg/L Se	HYDRIDE GENERATION AAS METHOD (SM: PART 3114 C)	ND	0.0005	-
BARIUM	mg/L Ba	NITRIC ACID-HYDROCHLORIC ACID DIGESTION AND INDUCTIVELY COUPLED PLASMA (ICP) METHOD (SM: PART 3030 F AND PART 3120 B)	ND	0.003	-
VOLATILE ORGANIC COMPOUNDS					
BENZENE	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002
ETHYLBENZENE	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002
TOLUENE	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT	LIMIT OF QUANTITATION (LOQ)
			FIELD BLANK 2023-FB1089		
TOTAL XYLENES	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0006	-	0.0006
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			COLOURLESS/CLEAR		

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



NOVEMBER 14, 2023

ANALYSIS REPORT

PROJECT NAME : EIA COMPLIANCE AUDIT AND MONITORING OF PART B: SPH = SINPHUHORM (1 FEB 2020-31 DEC 2023)
CUSTOMER NAME : PTTEP SP LIMITED
ADDRESS : 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD
 CHATUCHAK CHATUCHAK BANGKOK 10900
CONTACT INFORMATION : TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com
SAMPLING SOURCE : -
SAMPLE TYPE : BLANK (GROUNDWATER) **RECEIVED DATE** : OCTOBER 26, 2023
SAMPLING DATE : - **ANALYTICAL DATE** : OCTOBER 26 - NOVEMBER 7, 2023
SAMPLING TIME : - **REPORT NO.** : 2023-U096037
SAMPLING METHOD : - **WORK NO.** : 2023-002248
SAMPLING BY : - **ANALYSIS NO.** : 2023-TB1030
ANALYZED BY : MISS WORAKON PADSONGCHAN

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT	LIMIT OF QUANTITATION (LOQ)
			TRIP BLANK 2023-TB1030		
TOTAL PETROLEUM HYDROCARBONS	mg/L	SOXHLET EXTRACTION METHOD (SM: PART 5520 D AND PART 5520 F)	ND	3	-
METALS					
CHROMIUM	mg/L Cr	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005	0.050
NICKEL	mg/L Ni	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005	0.050
SELENIUM	mg/L Se	HYDRIDE GENERATION AAS METHOD (SM: PART 3114 C)	ND	0.0005	-
BARIUM	mg/L Ba	NITRIC ACID-HYDROCHLORIC ACID DIGESTION AND INDUCTIVELY COUPLED PLASMA (ICP) METHOD (SM: PART 3030 F AND PART 3120 B)	ND	0.003	-
VOLATILE ORGANIC COMPOUNDS					
BENZENE	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002
ETHYLBENZENE	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002
TOLUENE	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT	LIMIT OF QUANTITATION (LOQ)
			TRIP BLANK 2023-TB1030		
TOTAL XYLENES	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0006	-	0.0006
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			COLOURLESS/CLEAR -		

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

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

ND : NON-DETECTABLE.

LABORATORY SUPERVISOR

NOVEMBER 14, 2023

ANALYSIS REPORT

PROJECT NAME : EIA COMPLIANCE AUDIT AND MONITORING OF PART B: SPH = SINPHUHORM (1 FEB 2020-31 DEC 2023)
CUSTOMER NAME : PTTEP SP LIMITED
ADDRESS : 555/1 ENERGY COMPLEX BUILDING A, SIXTH NINETEENTH-THIRTY-SIXTH FLOOR VIBHAVADI RANGSIT ROAD
 CHATUCHAK CHATUCHAK BANGKOK 10900
CONTACT INFORMATION : TEL : 0 4323 2964 e-mail : NatthitaS@pttep.com
SAMPLING SOURCE : -
SAMPLE TYPE : BLANK (GROUNDWATER) **RECEIVED DATE** : OCTOBER 26, 2023
SAMPLING DATE : - **ANALYTICAL DATE** : OCTOBER 26 - NOVEMBER 7, 2023
SAMPLING TIME : - **REPORT NO.** : 2023-U096038
SAMPLING METHOD : - **WORK NO.** : 2023-002248
SAMPLING BY : - **ANALYSIS NO.** : 2023-EB0215
ANALYZED BY : MISS WORAKON PADSONGCHAN

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT	LIMIT OF QUANTITATION (LOQ)
			EQUIPMENT BLANK 2023-EB0215		
TOTAL PETROLEUM HYDROCARBONS	mg/L	SOXHLET EXTRACTION METHOD (SM: PART 5520 D AND PART 5520 F)	ND	3	-
METALS					
CHROMIUM	mg/L Cr	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005	0.050
NICKEL	mg/L Ni	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	ND	0.005	0.050
SELENIUM	mg/L Se	HYDRIDE GENERATION AAS METHOD (SM: PART 3114 C)	ND	0.0005	-
BARIUM	mg/L Ba	NITRIC ACID-HYDROCHLORIC ACID DIGESTION AND INDUCTIVELY COUPLED PLASMA (ICP) METHOD (SM: PART 3030 F AND PART 3120 B)	ND	0.003	-
VOLATILE ORGANIC COMPOUNDS					
BENZENE	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002
ETHYLBENZENE	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002
TOLUENE	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0002	-	0.0002



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT	LIMIT OF QUANTITATION (LOQ)
			EQUIPMENT BLANK 2023-EB0215		
TOTAL XYLENES	mg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: PART 6200 B)	< 0.0006	-	0.0006
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			COLOURLESS/CLEAR -		

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

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

ND : NON-DETECTABLE.



(MISS BENJAWAN VIRIYOTHAI)
LABORATORY SUPERVISOR

NOVEMBER 14, 2023