

Initial Environmental Examination

Annex (3b)
Project Number: 48404-004
July 2020

PAK: Central Asia Regional Economic Cooperation
Corridor Development Investment Program (Tranche 2)

Shikarpur–Rajanpur Section of N55

CURRENCY EQUIVALENTS

(as of 2 June 2020)

Currency unit	–	Pakistan Rupee/s (PRe/PRs)
PRe1.00	=	\$0.0061
\$1.00	=	PRs164.25

UNIT CONVERSIONS

1 gallon	–	3.785 liter
1 gallon/day	–	0.00455 m ³ /day
1 m ³ /day	–	0.041 m ³ /hour
1 cusec	–	28.31 liters
1 kilometer	–	1,000 meters
1 foot	–	12 inches
1 acre	–	4,046.8 meter ²

ABBREVIATIONS

AAD	–	average annual daily
AADT	–	average annual daily traffic
AASHTO	–	American Association of State Highway and Transportation
AASHTO ASM	–	American Association of State Highway and Transportation Officials
ABC	–	aggregate base course
ACBC	–	asphaltic concrete base course
ACW	–	additional carriageway
ACWC	–	asphaltic concrete wearing course
ADB	–	Asian Development Bank
AKM	–	avenue kilometer
APHA	–	American Public Health Association
AP	–	affected person
ASR	–	air sensitive receiver
ASTM	–	American Society of Testing Materials
BDL	–	below detection limit
BHU	–	basic health unit
BOD	–	bio-chemical oxygen demand
BP	–	Bank Policy
°C	–	degree Centigrade/Celsius
CAREC	–	Central Asia Regional Economic Corridor
CC	–	construction contractor
CO	–	carbon monoxide
COD	–	chemical oxygen demand
CSR	–	composite schedule rates

dB (A)	–	decibel
DCR	–	district census report
DC	–	design consultant
DD	–	deputy director
DMC	–	developing member countries
DO	–	dissolved oxygen
EA	–	environmental assessment
EE	–	environmental engineer
EIA	–	environmental impact assessment
EMP	–	environmental management plan
EPA	–	Environment Protection Agency
EPD	–	Environment Protection Department
EPO	–	Environmental Protection Ordinance
ESR	–	Environmental Sensitive Receiver
FCC	–	Forest Conservation Committee
FI	–	financial intermediary
GHG	–	greenhouse gas
GOP	–	Government of Pakistan
GRC	–	grievance redress committee
GRM	–	grievance redress mechanism
HSIP	–	Highway Sector Improvement Program
IEE	–	initial environmental examination
ILO	–	International Labor Organization
km	–	kilometer
kph	–	kilometer per hour
LAC	–	land acquisition collector
LAeq	–	equivalent continuous sound level, 'A weighting' = correction by factors that weight sound to correlate with the sensitivity of the human ear to sounds at different frequencies
m	–	meter
MFF	–	multitranche financing facility
MGDs	–	Millennium Development Goals
MVE	–	motor vehicle examiner
NEQS	–	National Environmental Quality Standards
NESPAK	–	National Engineering Services Pakistan
NGO	–	nongovernment organization
NHA	–	National Highways Authority
NO	–	nitrogen oxide
NOC	–	no-objection certificate
NSL	–	natural surface level
NSR	–	noise sensitive receiver
NTC	–	National Trade Corridor
OP	–	operational policy
OSHA	–	Occupational Safety and Health Administration
PAP	–	project affected person
PEPA	–	Pakistan Environmental Protection Act
PEPC	–	Pakistan Environmental Protection Council
PM	–	particulate matter
PNCS	–	Pakistan National Conservation Strategy
POP	–	persistent organic pollutant

PPAF	–	Pakistan Poverty Alleviation Fund
PPC	–	Pakistan Penal Code
PRC	–	People’s Republic of China
RE	–	resident engineer
REA	–	rapid environmental assessment
ROW	–	right-of-way
SC	–	supervision consultant
SMART	–	self-monitoring and reporting tool
SO	–	sulfur oxide
SPS	–	Safeguard Policy Statement
SSEMP	–	site specific environmental management plan
TA	–	technical assistance
TOR	–	terms of reference
TSS	–	total suspended solids
UBC	–	Uniform Building Code
UC	–	Union Council
UNFCCC	–	United Nations Framework Convention on Climate Change
USEPA	–	United States Environmental Protection Agency
WHO	–	World Health Organization

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AMBIENT PARTICULATE MATTERS MONITORING REPORT

Reference Number	KS-P/ENV/01-787-2020	Site Address:	Rajanpur, District Rajanpur
Project Name:	Shikarpur-Rajanpur Road Section Project (N55)	Reporting Date:	13-07-2020
Monitoring Date:	08-07-2020	Monitoring Instrument:	AQM65, Serial # 1310
Source:	Ambient Air		
Location:	Rajanpur, District Rajanpur		
GPS Coordinates:	29° 2' 25.884" N 70° 19' 57.962" E		

Sr. No	Time	PARAMETERS			
		CO	NO	NO ₂	SO ₂
		Units			
	Hours	(mg/m ³)	(µg/m ³)	(µg/m ³)	(µg/m ³)
1	09:00 A.M	0.98	12.5	15.7	16.99
2	10:00 A.M	1.15	13.06	16.06	14.88
3	11:00 A.M	1.13	13.46	16.71	14.23
4	12:00 P.M	1.08	12.77	17.06	15.19
5	01:00 P.M	1.33	14.25	17.54	13.25
6	02:00 P.M	1.21	14.03	17.71	14.63
7	03:00 P.M	1.05	13.79	16.51	13.03
8	04:00 PM	1.1	13.74	16.75	13.88
9	05:00 PM	0.99	13.26	14.04	13.93
10	06:00 PM	1.05	12.57	14.39	13.88
11	07:00 PM	1.07	12.38	15.06	13.96
12	08:00 PM	1.03	13.06	14.82	13.66
13	09:00 PM	1.02	12.07	13.81	14.32
14	10:00 PM	1.01	11.94	13.79	13.92
15	11:00 PM	1.01	12.26	14.04	13.64
16	12:00 AM	1.02	12.04	14.3	13.23
17	01:00 AM	1.01	12.3	14.07	13.63
18	02:00 AM	1.03	13.38	13.82	13.88
19	03:00 AM	1.02	13.26	14.11	13.03
20	04:00 AM	1.01	13.16	13.62	13.36
21	05:00 AM	1.01	13.6	13.82	12.66
22	06:00 A.M	1.04	12.37	13.68	12.82
23	07:00 A.M	1.05	12.79	13.36	13.03
24	08:00 A.M	1.03	11.26	13.72	13.77
Average Concentration		1.05	12.88	14.93	13.86
PEQSAA		05	40	80	120
		(08 hr)	(24 hr)	(24 hr)	(24 hr)

PEQSAA: Punjab Environmental Quality Standards for Ambient Air

Note:

- Selected measurement units were mg/m³ & µg/m³ otherwise stated.
- Quality was assured through self calibration of the instrument.
- The values were representing of monitoring conditions prevailing during the monitoring hours.
- The measurements were carried out on client request.
- The client is responsible lawful usage of reported data in future.
- The report is not valid for court.

Signature of Analyst

FOR ENVIRONMENTAL MONITORING, ANALYSIS & SURVEYS

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AMBIENT NOISE MONITORING REPORT

Reference Number	KS-P/ENV/01-787-2020	Site Address:	Shikarpur
Project Name:	Shikarpur-Rajanpur Road Section Project (N55)	Monitoring Date:	02-07-2020
Monitoring Date:	02-07-2020	Reporting Date:	13-07-2020
Source:	Ambient Noise	Monitoring Instrument:	Noise Meter-IEC651-Type-2
Location:	Shikarpur		
GPS Coordinates:	27° 58' 3.920" N 68° 38' 19.672" E		

Sr. No.	Monitoring Time	Unit	Minimum	Maximum	Leq
1.	09:00 A.M	dB(A)	58.9	61.8	60.35
2.	10:00 A.M		58.7	61.6	60.15
3.	11:00 A.M		58.5	61.4	59.95
4.	12:00 P.M		58.3	61.2	59.75
5.	01:00 P.M		58	60.9	59.45
6.	02:00 P.M		57.8	60.7	59.25
7.	03:00 P.M		57.6	60.5	59.05
8.	04:00 PM		57.4	60.3	58.85
9.	05:00 PM		57.2	60.1	58.65
10.	06:00 PM		57	59.9	58.45
11.	07:00 PM		56.7	59.6	58.15
12.	08:00 PM		56.5	59.4	57.95
13.	09:00 PM		56.3	59.2	57.75
14.	10:00 PM		56.1	59	57.55
15.	11:00 PM		55.9	58.8	57.35
16.	12:00 AM		55.6	58.5	57.05
17.	01:00 AM		55.4	58.3	56.85
18.	02:00 AM		55.2	58.1	56.65
19.	03:00 AM		55	57.9	56.45
20.	04:00 AM		54.8	57.6	56.2
21.	05:00 AM		54.5	57.4	55.95
22.	06:00 A.M		54.3	57.2	55.75
23.	07:00 A.M		54.1	57	55.55
24.	08:00 A.M		53.9	56.8	55.35
SEQS limit : 70 dB Day Time 60 dB Night Time					

SEQS: Sindh Environmental Quality Standards for Ambient Noise

Note:

- Selected measurement units were dB(A) otherwise stated.
- Quality was assured through self calibration of the instrument.
- The values were representing of monitoring conditions prevailing during the monitoring hours.
- The measurements were carried out on client request.
- The client is responsible lawful usage of reported data in future.
- The report is valid for 90 days.

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AMBIENT NOISE MONITORING REPORT

Reference Number	KS-P/ENV/01-787-2020	Site Address:	Khanpur, District Shikarpur
Project Name:	Shikarpur-Rajanpur Road Section Project (N55)	Reporting Date:	13-07-2020
Monitoring Date:	03-07-2020	Monitoring Instrument:	Noise Meter-IEC651-Type-2
Source:	Ambient Noise		
Location:	Khanpur, District Shikarpur		
GPS Coordinates:	28° 0' 5.916" N 68° 43' 27.962" E		

Sr. No.	Monitoring Time	Unit	Minimum	Maximum	Leq
1.	10:00 A.M	dB(A)	60.8	63.7	62.25
2.	11:00 A.M		60.6	63.5	62.05
3.	12:00 P.M		60.4	63.3	61.85
4.	01:00 P.M		60.2	63.1	61.65
5.	02:00 P.M		59.9	62.8	61.35
6.	03:00 P.M		59.7	62.6	61.15
7.	04:00 PM		59.5	62.4	60.95
8.	05:00 PM		59.3	62.2	60.75
9.	06:00 PM		59.1	62	60.55
10.	07:00 PM		58.9	61.8	60.35
11.	08:00 PM		58.6	61.5	60.05
12.	09:00 PM		58.4	61.3	59.85
13.	10:00 PM		58.2	61.1	59.65
14.	11:00 PM		58	60.9	59.45
15.	12:00 AM		57.8	60.7	59.25
16.	01:00 AM		57.5	60.4	58.95
17.	02:00 AM		57.3	60.2	58.75
18.	03:00 AM		57.1	60	58.55
19.	04:00 AM		56.9	59.8	58.35
20.	05:00 AM		56.7	59.5	58.1
21.	06:00 A.M		56.4	59.3	57.85
22.	07:00 A.M		56.2	59.1	57.65
23.	08:00 A.M		56	58.9	57.45
24.	09:00 A.M		55.8	58.7	57.25
SEQS limit : 70 dB Day Time					
60 dB Night Time					

SEQS: Sindh Environmental Quality Standards for Ambient Noise

Note:

- Selected measurement units were dB(A) otherwise stated.
- Quality was assured through self calibration of the instrument.
- The values were representing of monitoring conditions prevailing during the monitoring hours.
- The measurements were carried out on client request.
- The client is responsible lawful usage of reported data in future.
- The report is not valid for court.

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AMBIENT NOISE MONITORING REPORT

Reference Number	KS-P/ENV/01-787-2020	Site Address:	Kund Kot, District Kashmir
Project Name:	Shikarpur-Rajanpur Road Section Project (N55)	Reporting Date:	13-07-2020
Monitoring Date:	04-07-2020	Monitoring Instrument:	Noise Meter-IEC651-Type-2
Source:	Ambient Noise		
Location:	Kund Kot, District Kashmir		
GPS Coordinates:	28° 14' 3.525" N 69° 11' 14.139" E		

Sr. No.	Monitoring Time	Unit	Minimum	Maximum	Leq
1.	11:00 A.M	dB(A)	61.5	64.4	62.95
2.	12:00 P.M		61.3	64.2	62.75
3.	01:00 P.M		61.1	64	62.55
4.	02:00 P.M		60.9	63.8	62.35
5.	03:00 P.M		60.6	63.5	62.05
6.	04:00 PM		60.4	63.3	61.85
7.	05:00 PM		60.2	63.1	61.65
8.	06:00 PM		60	62.9	61.45
9.	07:00 PM		59.8	62.7	61.25
10.	08:00 PM		59.6	62.5	61.05
11.	09:00 PM		59.3	62.2	60.75
12.	10:00 PM		59.1	62	60.55
13.	11:00 PM		58.9	61.8	60.35
14.	12:00 AM		58.7	61.6	60.15
15.	01:00 AM		58.5	61.4	59.95
16.	02:00 AM		58.2	61.1	59.65
17.	03:00 AM		58	60.9	59.45
18.	04:00 AM		57.8	60.7	59.25
19.	05:00 AM		57.6	60.5	59.05
20.	06:00 A.M		57.4	60.2	58.8
21.	07:00 A.M		57.1	60	58.55
22.	08:00 A.M		56.9	59.8	58.35
23.	09:00 A.M		56.7	59.6	58.15
24.	10:00 A.M		56.5	59.4	57.95

SEQS limit : 70 dB Day Time
60 dB Night Time

SEQS: Sindh Environmental Quality Standards for Ambient Noise

Note:

- Selected measurement units were dB(A) otherwise stated.
- Quality was assured through self calibration of the instrument.
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- The report is not valid for court.

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AMBIENT NOISE MONITORING REPORT

Reference Number	KS-P/ENV/01-787-2020	Site Address:	Kashmore, District Kashmore
Project Name:	Shikarpur-Rajanpur Road Section Project (N55)	Reporting Date:	13-07-2020
Monitoring Date:	05-07-2020	Monitoring Instrument:	Noise Meter-IEC651- Type-2
Source:	Ambient Noise		
Location:	Kashmore, District Kashmore		
GPS Coordinates:	28° 26' 10.003" N 69° 34' 46.810" E		

Sr. No.	Monitoring Time	Unit	Minimum	Maximum	Leq
1.	11:30 A.M	dB(A)	63.5	66.4	64.95
2.	12:30 P.M		63.3	66.2	64.75
3.	01:30 P.M		63.1	66	64.55
4.	02:30 P.M		62.9	65.8	64.35
5.	03:30 P.M		62.6	65.5	64.05
6.	04:30 PM		62.4	65.3	63.85
7.	05:33 PM		62.2	65.1	63.65
8.	06:30 PM		62	64.9	63.45
9.	07:30 PM		61.8	64.7	63.25
10.	08:30 PM		61.6	64.5	63.05
11.	09:30 PM		61.3	64.2	62.75
12.	10:30 PM		61.1	64	62.55
13.	11:30 PM		60.9	63.8	62.35
14.	12:30 AM		60.7	63.6	62.15
15.	01:30 AM		60.5	63.4	61.95
16.	02:30 AM		60.2	63.1	61.65
17.	03:30 AM		60	62.9	61.45
18.	04:30 AM		59.8	62.7	61.25
19.	05:30 AM		59.6	62.5	61.05
20.	06:30 A.M		59.4	62.2	60.8
21.	07:30 A.M		59.1	62	60.55
22.	08:30 A.M		58.9	61.8	60.35
23.	09:30 A.M		58.7	61.6	60.15
24.	10:30 A.M		58.5	61.4	59.95
SEQS limit : 70 dB Day Time					
60 dB Night Time					

SEQS: Sindh Environmental Quality Standards for Ambient Noise

Note:

- Selected measurement units were dB(A) otherwise stated.
- Quality was assured through self calibration of the instrument.
- The values were representing of monitoring conditions prevailing during the monitoring hours.
- The measurements were carried out on client request.
- The client is responsible lawful usage of reported data in future.
- The report is not valid for courts.

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AMBIENT NOISE MONITORING REPORT

Reference Number	KS-P/ENV/01-787-2020	Site Address:	Rojhan, District Rahim Yar Khan
Project Name:	Shikarpur-Rajanpur Road Section Project (N55)	Reporting Date:	13-07-2020
Monitoring Date:	06-07-2020	Monitoring Instrument:	Noise Meter-IEC651-Type-2
Source:	Ambient Noise		
Location:	Rojhan, District Rahim Yar Khan		
GPS Coordinates:	28° 42' 54.555" N 69° 54' 2.354" E		

Sr. No.	Monitoring Time	Unit	Minimum	Maximum	Leq
1.	11:30 A.M	dB(A)	60.4	63.3	61.85
2.	12:30 P.M		60.2	63.1	61.65
3.	01:30 P.M		60	62.9	61.45
4.	02:30 P.M		59.8	62.7	61.25
5.	03:30 P.M		59.5	62.4	60.95
6.	04:30 PM		59.3	62.2	60.75
7.	05:33 PM		59.1	62	60.55
8.	06:30 PM		58.9	61.8	60.35
9.	07:30 PM		58.7	61.6	60.15
10.	08:30 PM		58.5	61.4	59.95
11.	09:30 PM		58.2	61.1	59.65
12.	10:30 PM		58	60.9	59.45
13.	11:30 PM		57.8	60.7	59.25
14.	12:30 AM		57.6	60.5	59.05
15.	01:30 AM		57.4	60.3	58.85
16.	02:30 AM		57.1	60	58.55
17.	03:30 AM		56.9	59.8	58.35
18.	04:30 AM		56.7	59.6	58.15
19.	05:30 AM		56.5	59.4	57.95
20.	06:30 A.M		56.3	59.1	57.7
21.	07:30 A.M		56	58.9	57.45
22.	08:30 A.M		55.8	58.7	57.25
23.	09:30 A.M		55.6	58.5	57.05
24.	10:30 A.M		55.4	58.3	56.85
PEQS limit : 70 dB Day Time 60 dB Night Time					

PEQS: Punjab Environmental Quality Standards for Ambient Noise

Note:

- Selected measurement units were dB(A) otherwise stated.
- Quality was assured through self calibration of the instrument.
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AMBIENT NOISE MONITORING REPORT

Reference Number	KS-P/ENV/01-787-2020	Site Address:	Rajanpur, District Rajanpur
Project Name:	Shikarpur-Rajanpur Road Section Project (N55)	Reporting Date:	13-07-2020
Monitoring Date:	08-07-2020	Monitoring Instrument:	Noise Meter-IEC651-Type-2
Source:	Ambient Noise		
Location:	Rajanpur, District Rajanpur		
GPS Coordinates:	29° 2' 25.884" N 70° 19' 57.962" E		

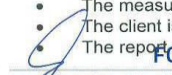
Sr. No.	Monitoring Time	Unit	Minimum	Maximum	Leq
1.	09:00 A.M	dB(A)	63.4	66.3	64.85
2.	10:00 A.M		63.2	66.1	64.65
3.	11:00 A.M		63	65.9	64.45
4.	12:00 P.M		62.8	65.7	64.25
5.	01:00 P.M		62.5	65.4	63.95
6.	02:00 P.M		62.3	65.2	63.75
7.	03:00 P.M		62.1	65	63.55
8.	04:00 PM		61.9	64.8	63.35
9.	05:00 PM		61.7	64.6	63.15
10.	06:00 PM		61.5	64.4	62.95
11.	07:00 PM		61.2	64.1	62.65
12.	08:00 PM		61	63.9	62.45
13.	09:00 PM		60.8	63.7	62.25
14.	10:00 PM		60.6	63.5	62.05
15.	11:00 PM		60.4	63.3	61.85
16.	12:00 AM		60.1	63	61.55
17.	01:00 AM		59.9	62.8	61.35
18.	02:00 AM		59.7	62.6	61.15
19.	03:00 AM		59.5	62.4	60.95
20.	04:00 AM		59.3	62.1	60.7
21.	05:00 AM		59	61.9	60.45
22.	06:00 A.M		58.8	61.7	60.25
23.	07:00 A.M		58.6	61.5	60.05
24.	08:00 A.M		58.4	61.3	59.85
PEQS limit : 70 dB Day Time 60 dB Night Time					

PEQS: Punjab Environmental Quality Standards for Ambient Noise

Note:

- Selected measurement units were dB(A) otherwise stated.
- Quality was assured through self calibration of the instrument.
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- The report is not valid for court.

FOR ENVIRONMENTAL MONITORING, ANALYSIS & SURVEYS

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Environmental Protection Agency (EPA-KPK) Certified

WATER ANALYSIS REPORT

Reference Number	KS-P/ENV/01-787-2020	Site Address:	Shikarpur
Project Name:	Shikarpur-Rajanpur Road Section Project (N55)	Reporting Date:	13-07-2020
Sampling Date:	02-07-2020	Monitoring Method:	APHA/USEPA Standard Methods
Source:	Ground Water		
Location:	Shikarpur		
GPS Coordinates:	27° 57' 49.841" N 68° 39' 33.252" E		

Sr. No.	Parameters	Analysis Method	Units	SEQS	Results
1	pH	APHA-4500H+ B	--	6.5-8.5	6.3
2	Taste & Odor	In-house	--	Non Objectionable	Salted
3	Color	APHA-2120 B/C	TCU	<15	8
4	Turbidity	APHA-2130 B	NTU	<5	5
5	Total Coliform	APHA:9222 B	Number/100 mL	0 Number/100 mL	0
6	E-Coli	APHA:9222 D	Number/100 mL	0 Number/100 mL	0
7	Total Dissolved Solids (TDS)	APHA-2540 C	mg/L	<1000	861
8	Total Hardness	APHA-2340 C	mg/L	<500	119
9	Nitrate	APHA-4500NO3 B	mg/L	≤50	4.7
10	Nitrite	APHA-4500NO2 B	mg/L	≤3	0.06
11	Ammonia	APHA-4500-NH3-B	mg/L	---	0.58
12	Arsenic	APHA-3500As B	mg/L	<0.05	N.D.
13	Antimony	APHA-3500Sb B	mg/L	<0.005	N.D.
14	Barium	APHA-3500Ba B	mg/L	0.7	N.D.
15	Chloride	APHA-4500Cl- B	mg/L	250	102
16	Fluoride	APHA-4500F- C	mg/L	<1.5	0.49

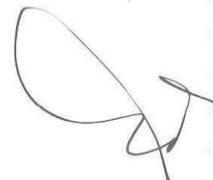
SEQS: Sindh Environmental Quality Standards for Drinking Water N.D: Not Detected

Note:

- Selected measurement units were mg/L otherwise stated.
- Quality was assured through self calibration of the instrument.
- The values were representing of monitoring conditions prevailing during the monitoring hours.
- The measurements were carried out on client request.
- The client is responsible lawful usage of reported data in future.
- The report is not valid for court.



Signature of Analyst:



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WATER ANALYSIS REPORT

Reference Number	KS-P/ENV/01-787-2020	Site Address:	Khanpur, District Shikarpur
Project Name:	Shikarpur-Rajanpur Road Section Project (N55)	Reporting Date:	13-07-2020
Sampling Date:	03-07-2020	Monitoring Method:	APHA/USEPA Standard Methods
Source:	Ground Water		
Location:	Khanpur		
GPS Coordinates:	28° 0' 8.283" N 68° 43' 25.503" E		

Sr. No.	Parameters	Analysis Method	Units	SEQS	Results
1	pH	APHA-4500H+ B	--	6.5-8.5	5.9
2	Taste & Odor	In-house	--	Non Objectionable	Salted
3	Color	APHA-2120 B/C	TCU	<15	7
4	Turbidity	APHA-2130 B	NTU	<5	6
5	Total Coliform	APHA:9222 B	Number/100 mL	0 Number/100 mL	0
6	E-Coli	APHA:9222 D	Number/100 mL	0 Number/100 mL	0
7	Total Dissolved Solids (TDS)	APHA-2540 C	mg/L	<1000	942
8	Total Hardness	APHA-2340 C	mg/L	<500	106
9	Nitrate	APHA-4500NO3 B	mg/L	≤50	4.1
10	Nitrite	APHA-4500NO2 B	mg/L	≤3	0.05
11	Ammonia	APHA-4500-NH3-B	mg/L	---	0.72
12	Arsenic	APHA-3500As B	mg/L	<0.05	N.D.
13	Antimony	APHA-3500Sb B	mg/L	<0.005	N.D.
14	Barium	APHA-3500Ba B	mg/L	0.7	N.D.
15	Chloride	APHA-4500Cl- B	mg/L	250	117
16	Fluoride	APHA-4500F- C	mg/L	<1.5	0.61

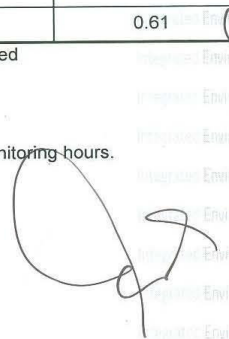
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