Draft Environmental Impact Assessment

Project Number: 43253-026

June 2018

India: Karnataka Integrated and Sustainable Water Resources Management Investment Program – Project 2

Vijayanagara Channels

Annex 4

Prepared by the Karnataka Neeravari Nigam Limited for the State Government of Karnataka and the Asian Development Bank.

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Annexure 4

ENVIRONMENTAL SAMPLING AND ANALYSIS REPORTS



(Recognised under section 12 of the Environment (Protection) Act, 1986) New Delhi, Validity 09.02.2017 to 08.02.2022 ಎನ್ರಿರಾನ್ ಮೆಂಟಲ್ ಹೆಲ್ಡ್ ಅಂಡ್ ಸೇಫ್ಟ್ರಿ ರಿಸರ್ಚ್ ಅಂಡ್ ಡೆವಲಪ್ ಮೆಂಟ್ ಸೆಂಟರ್ (ಪರಿಸರ (ಸಂರಕ್ಷಣಾ) ಕಾಯ್ದೆ 1986 ರ ಕಲಂ 12 ರಲ್ಲಿ ಮಾನ್ಯತೆ ಪಡೆದ ಪ್ರಯೋಗಾಲಯ) ನವ ದೆಹಲಿ, ಮಾನ್ಯತಾ ಅವಧಿ : 09.02.2017 ರಿಂದ 08.02.2022

एनवायरमेटल हेल्थ एण्ड सेफ्टी रिसर्च एण्ड डेवलेपमेट सेटर

(पर्यावरण (संरक्षण) अधिनियम, 1986 अनुभाग 12 की धारा मान्यता प्राप्त प्रयोगशाला) न्यु दिल्ली, मान्यता तारीख. 09.02.2017 - 08.02.2022

ISO 9001: 2008, ISO14001: 2015 & BS OHSAS 18001: 2007

Test Report

ANALYSIS REPORT OF AMBIENT AIR QUALITY

1. Name of the Station

GPS Location of Monitoring Station 2.

3. Name of the Project

Sample Collected by

5. Date of Collection

Particulars of Sample Collected

Date of Sample Receipt Sample Number 9. Report to be Sent

Page No

Basavanna Canal in Hospet City (Near Old Amaravathi Village)

North: 150 16'13.8", East: 0760 22' 33.7" Modernization of the VNC Project in Koppal, Bellary & Raichur Districts

M/s. Environmental Health and Safety Research & Development Centre, Bangalore - 560 010.

09.04.2018

Ambient Air collected through Fine Particulate Sampler - APM 550

Respirable Dust Sampler - 460NL, CO & O3 Analyzers.

Instrument ID: RDS: 1109-DTG-2012, Calibration Due:29/06/2018, Gaseous Sampler:4932-DTK-2012, Calibration Due:30/06/2018, PM 2.5: FPS: 211-DTA-2016, Calibration Due: 22/01/2019.

11.04.2018

EHSRDC/VNC/A/18/04/367

17.04.2018 1 of 1

Sl. No	Parameters	Unit	Results	NAAQ Standards (2009)	Methods
	Period of sampling	Hrs	24 8:00am to 8:00am	24	1
1.	Particulate Matter (PM 10)	μg/ m³	74	100	IS: 5182 (P 23)-2006
2.	Particulate Matter (PM 2.5)	μg/ m ³	18	60	USEPA 40 CFR (P 53)
3.	Sulphur dioxide (SO ₂)	$\mu g/m^3$	7.64	80	IS: 5182 (P2)-2001
4.	Nitrogen dioxide (NO ₂)	μg/ m ³	13.06	80	IS: 5182 (P6)-2006
5.	Lead (Pb)	µg/m³	0.079	1.0 (24 hr Average)	Lab-SOP No.
6,	Nickel (Ni)	ng/m³	BDL	20.0 (Annual Average)	EHSRDC/SOP/ 001 based on -CPCB Guidelines for
7.	Arsenic (As)	ng/m³	BDL	6.0 (Annual Average)	the Measurement of Ambient Air Pollutants Volume-I ,2011
8.	Carbon Monoxide (CO)	mg/m³	1.51	4.0 (1 hr Average)	IS: 5182 (P 10)-1999
9.	Ozone (O ₃)	μg/m³	3.44	180 (1 hr Average)	Instrument method
10.	Ammonia (NH ₃)	μg/m³	5.77	400.0 (24 hr Average)	CPCB Guidelines Volume-2 NAAQMS/37/2012-2013
11.	Benzene (C ₆ H ₆)	μg/m³	BDL	5.0 (Annual Average)	
12.	Benzo (a) pyrene (BaP)	ng/m³	BDL	1.0 (Annual Average)	IS:5182 (P 11)-2006
13.	NMHC (Non Methane Hydro Carbon)	μg/m³	BDL	(Autual Average)	IS:5182 (P 12)-2004 IS: 5182 (P 21) : 2001

INFERENCE

As per NAAQ Standards,

Report Status: - The measured values for the above parameters for those standards have been specified were observed to be within the said standards.

End of Report

Government Analyst

Concern towards protecting Environment



(Recognised under section 12 of the Environment (Protection) Act, 1986) New Delhi, Validity 09.02.2017 to 08.02.2022 ಎನ್ವಿರಾನ್ ಮೆಂಟಲ್ ಹೆಲ್ತ್ ಅಂಡ್ ಸೇಫ್ಟ್ನಿ ರಿಸರ್ಚ್ ಅಂಡ್ ಡೆವಲಪ್ ಮೆಂಟ್ ಸೆಂಟರ್ (ಪರಿಸರ (ಸಂರಕ್ಷಣ) ಕಾಯ್ಕೆ 1986 ರ ಕಲಂ 12 ರಲ್ಲಿ ಮಾನ್ನತೆ ಪಡೆದ ಪ್ರಯೋಗಾಲಯ) ನವ ದೆಹಲಿ, ಮಾನ್ನತಾ ಅವಧಿ : 09.02.2017 ರಿಂದ 08.02.2022

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ISO 9001: 2008, ISO14001: 2015 & BS OHSAS 18001: 2007

Test Report

ANALYSIS REPORT OF AMBIENT AIR QUALITY

Name of the Station
 GPS Location of Monitoring Station

: Hulagi Anicut (Near Hole Muddalapura) : North: 15º 17'01.5", East: 076º 20' 01.7"

3. Name of the Project

Modernization of the VNC Project in Koppal, Bellary & Raichur Districts

4. Sample Collected by

: M/s. Environmental Health and Safety Research &

5. Date of Collection

Development Centre, Bangalore - 560 010. : 09.04.2018

6. Particulars of Sample Collected

Ambient Air collected through Fine Particulate Sampler - APM 550

Respirable Dust Sampler - 460NL, CO & O3 Analyzers.

5.0 (Annual Average)

1.0 (Annual Average)

Instrument ID: RDS: 1092-DTC-2012, Calibration Due:28/06/2018, Gaseous Sampler:905-DTL-2010, Calibration Due:29/06/2018, PM 2.5: FPS: 118-DTK-2012, Calibration Due: 30/06/2018.

Date of Sample Receipt

: 11.04.2018

8. Sample Number

: EHSRDC/VNC/A/18/04/368

9. Report to be Sent

: 17.04.2018 : 1 of 1

10. Page No

Sl.No	Parameters	(2009)		Methods	
	Period of sampling			24	
1.	Particulate Matter (PM 10)	μg/ m³	60	100	IS: 5182 (P 23)-2006
2.	Particulate Matter (PM 25)	μg/ m ³	12	60	USEPA 40 CFR (P 53)
3.	Sulphur dioxide (SO ₂)	μg/ m ³	6.68	80	IS: 5182 (P2)-2001
4.	Nitrogen dioxide (NO ₂)	$\mu g/m^3$	10.94	80	
5.	Lead (Pb)	μg/m³	0.052	1.0 (24 hr Average)	IS: 5182 (P6)-2006
6.	Nickel (Ni)	ng/m³	BDL	20.0 (Annual Average)	Lab-SOP No. EHSRDC/SOP/ 001 based on -CPCB Guidelines for
7.	Arsenic (As)	ng/m³	BDL	6.0 (Annual Average)	the Measurement of Ambient Air Pollutants Volume-I ,2011
8.	Carbon Monoxide (CO)	mg/m³	1.08	4.0 (1 hr Average)	IS: 5182 (P 10)-1999
9.	Ozone (O ₃)	μg/m³	2.91	180 (1 hr Average)	Instrument method
10.	Ammonia (NH ₃)	μg/m³	4.78	400.0 (24 hr Average)	CPCB Guidelines Volume-2

INFERENCE

Benzene (C₆H₆)

Hydro Carbon)

Note: BDL: Below Detectable Limit.

Benzo (a) pyrene (BaP)

NMHC (Non Methane

11.

12.

13.

As per NAAQ Standards,

 $\mu g/m^3$

ng/m3

 $\mu g/m^3$

Report Status: - The measured values for the above parameters for those standards have been specified were observed to be within the said standards.

End of Report

BDL

BDL

BDL

Government Analyst

NAAQMS/37/2012-2013

IS: 5182 (P 11)-2006

IS:5182 (P 12)-2004

IS: 5182 (P 21): 2001

Concern towards protecting Environment

Office Address : No.13/2, 1st Main Road, Near Fire Station, Industrial Town, Rajajinagar, Bangalore - 560 010.



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ISO 9001: 2008, ISO14001: 2015 & BS OHSAS 18001: 2007

Test Report

ANALYSIS REPORT OF AMBIENT AIR QUALITY

1. Name of the Station

2. GPS Location of Monitoring Station

3. Name of the Project

4. Sample Collected by

5. Date of Collection

6. Particulars of Sample Collected

: Turtha Canal in Hampi Town

: North: 150 19'34.2", East: 0760 27' 35.9"

Modernization of the VNC Project in Koppal, Bellary & Raichur Districts

: M/s. Environmental Health and Safety Research &

Development Centre, Bangalore - 560 010. 09.04.2018

: Ambient Air collected through

Fine Particulate Sampler - APM 550

Respirable Dust Sampler - 460NL, CO & O3 Analyzers.

Instrument ID: RDS: 1725-DTI-2012, Calibration Due:30/06/2018, Gaseous Sampler:909-DTL-2010, Calibration Due:29/06/2018, PM 2.5: FPS: 73-DTE-2012, Calibration Due: 29/06/2018.

11.04.2019

: EHSRDC/VNC/A/18/04/369

: 17.04.2018 : 1 of 1

7. Date of Sample Receipt8. Sample Number

9. Report to be Sent

10. Page No

		Unit	Results	NAAQ Standards (2009)	Methods
	Period of sampling	Hrs	24 9:15am to 9:15am	24	
1.	Particulate Matter (PM 10)	μg/ m ³	62	100	IS: 5182 (P 23)-2006
2.	Particulate Matter (PM 2.5)	μg/ m ³	15	60	USEPA 40 CFR (P 53)
3.	Sulphur dioxide (SO ₂)	μg/ m ³	7.32	80	IS: 5182 (P2)-2001
4.	Nitrogen dioxide (NO ₂)	μg/ m ³	11.27	80	IS: 5182 (P6)-2006
5.	Lead (Pb)	μg/m³	BDL	1.0 (24 hr Average)	Lab-SOP No.
6.	Nickel (Ni)	ng/m³	BDL	20.0 (Annual Average)	EHSRDC/SOP/ 001 based on -CPCB Guidelines for
7.	Arsenic (As)	ng/m³	BDL	6.0 (Annual Average)	the Measurement of Ambient Air Pollutants Volume-I ,2011
8.	Carbon Monoxide (CO)	mg/m³	1.18	4.0 (1 hr Average)	IS: 5182 (P 10)-1999
9.	Ozone (O ₃)	μg/m³	2.83	180 (1 hr Average)	Instrument method
10.	Ammonia (NH ₃)	μg/m³	4.83	400.0 (24 hr Average)	CPCB Guidelines Volume-2 NAAQMS/37/2012-2013
11.	Benzene (C ₆ H ₆)	μg/m³	BDL	5.0 (Annual Average)	IS: 5182 (P 11)-2006
12.	Benzo (a) pyrene (BaP)	ng/m³	BDL	1.0 (Annual Average)	IS:5182 (P 12)-2004
13.	NMHC (Non Methane Hydro Carbon)	μg/m³	BDL		IS: 5182 (P 21) : 2001

INFERENCE

As per NAAQ Standards,

Report Status: - The measured values for the above parameters for those standards have been specified were observed to be within the said standards.

End of Report

Praveina

Government Analyst

Concern towards protecting Environment

Office Address : No.13/2, 1st Main Road, Near Fire Station, Industrial Town, Rajajinagar, Bangalore - 560 010.



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ISO 9001: 2008, ISO14001: 2015 & BS OHSAS 18001: 2007

Test Report

ANALYSIS REPORT OF AMBIENT AIR QUALITY

1. Name of the Station

2. GPS Location of Monitoring Station

3. Name of the Project

4. Sample Collected by

5. Date of Collection

6. Particulars of Sample Collected

Kallaghatta Canal (Near Kallaghatta Village)

North: 15º 18'58.9", East: 076º 24' 25.7"

Modernization of the VNC Project in Koppal, Bellary & Raichur Districts

 M/s. Environmental Health and Safety Research & Development Centre, Bangalore - 560 010.

: 09.04.2018

 Ambient Air collected through Fine Particulate Sampler – APM 550

Respirable Dust Sampler - 460NL, CO & O3 Analyzers.

Instrument ID: RDS: 1386-DTJ-2016, Calibration Due:08/10/2018, Gaseous Sampler:4929-DTK-2012, Calibration Due:30/06/2018, PM 2.5: FPS: 119-DTK-2012, Calibration Due: 30/06/2018.

7. Date of Sample Receipt

8. Sample Number

Report to be Sent

10. Page No

: 11.04.2018

: EHSRDC/VNC/A/18/04/370

: 17.04.2018

: 1 of 1

Sl.No	Parameters	Unit	Results	NAAQ Standards (2009)	Methods
	Period of sampling	Hrs	24 9:45am to 9:45am	24	
1.	Particulate Matter (PM 10)	μg/ m³	71	100	IS: 5182 (P 23)-2006
2.	Particulate Matter (PM 2.5)	μg/ m³	17	60	USEPA 40 CFR (P 53)
3.	Sulphur dioxide (SO ₂)	μg/ m ³	8.01	80	
4.	Nitrogen dioxide (NO2)	μg/ m ³	13.17	80	IS: 5182 (P2)-2001
5.	Lead (Pb)	μg/m³	0.023	1.0 (24 hr Average)	IS: 5182 (P6)-2006
6.	Nickel (Ni)	ng/m³	BDL	20.0 (Annual Average)	Lab-SOP No. EHSRDC/SOP/ 001 based on -CPCB Guidelines for
7.	Arsenic (As)	ng/m³	BDL	6.0 (Annual Average)	the Measurement of Ambient Ai Pollutants Volume-I ,2011
8.	Carbon Monoxide (CO)	mg/m³	1.40	4.0 (1 hr Average)	
9,	Ozone (O ₃)	μg/m³	3.05	180 (1 hr Average)	IS: 5182 (P 10)-1999 Instrument method
10.	Ammonia (NH ₃)	μg/m³	5.27	400.0 (24 hr Average)	CPCB Guidelines Volume-2 NAAQMS/37/2012-2013
11.	Benzene (C ₆ H ₆)	μg/m³	BDL	5.0 (Annual Average)	IS: 5182 (P 11)-2006
12.	Benzo (a) pyrene (BaP)	ng/m³	BDL	1.0 (Annual Average)	
13.	NMHC (Non-Methane Hydro Carbon)	μg/m³	BDL	(Autual Average)	IS:5182 (P 12)-2004 IS: 5182 (P 21): 2001

INFERENCE

As per NAAQ Standards,

Report Status: - The measured values for the above parameters for those standards have been specified were observed to be within the said standards.

End of Report

Praveena Government Analyst

Concern towards protecting Environment

Office Address: No.13/2, 1st Main Road, Near Fire Station, Industrial Town, Rajajinagar, Bangalore - 560 010.



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ISO 9001: 2008, ISO14001: 2015 & BS OHSAS 18001: 2007

Test Report

ANALYSIS REPORT OF AMBIENT AIR QUALITY

1. Name of the Station

GPS Location of Monitoring Station 2.

3. Name of the Project

4. Sample Collected by

5. Date of Collection

6.

Particulars of Sample Collected

Date of Sample Receipt Sample Number 9. Report to be Sent

10. Page No Anegundi Canal (Near Hanumanahalli Village)

North: 15º 20'54.0", East: 076º 27' 58.4" Modernization of the VNC Project in Koppal, Bellary & Raichur Districts

M/s. Environmental Health and Safety Research & Development Centre, Bangalore - 560 010.

09.04.2018

Ambient Air collected through Fine Particulate Sampler - APM 550

Respirable Dust Sampler - 460NL, CO & O3 Analyzers.

Instrument ID: RDS: 1385-DTJ-2016, Calibration Due:08/10/2018, Gaseous Sampler:1816-DTJ-2016, Calibration Due:04/11/2018, PM 2.5: FPS: 115-DTK-2012, Calibration Due: 30/06/2018.

EHSRDC/VNC/A/18/04/371

17.04.2018 1 of 1

NAAQ Standards SI.No Parameters Unit Results Methods (2009)24 Period of sampling Hrs 24 10:30am to 10:30am 1. Particulate Matter (PM 10) $\mu g/m^3$ 69 100 IS: 5182 (P 23)-2006 2. Particulate Matter (PM 2.5) $\mu g/m^3$ 14 60 USEPA 40 CFR (P 53) 3. Sulphur dioxide (SO₂) $\mu g/m^3$ 7.58 80 IS: 5182 (P2)-2001 4. Nitrogen dioxide (NO2) $\mu g/m^3$ 12.05 80 IS: 5182 (P6)-2006 5. Lead (Pb) $\mu g/m^3$ 0.080 1.0 (24 hr Average) Lab-SOP No. 6. Nickel (Ni) EHSRDC/SOP/001 ng/m3 BDL 20.0 (Annual Average) based on -CPCB Guidelines for 7. Arsenic (As) the Measurement of Ambient Air ng/m3 BDL 6.0 (Annual Average) Pollutants Volume-I,2011 8. Carbon Monoxide (CO) mg/m3 1.27 4.0 (1 hr Average) IS: 5182 (P 10)-1999 9. Ozone (O₃) $\mu g/m^3$ 3.30 180 (1 hr Average) Instrument method 10. Ammonia (NH₃) CPCB Guidelines Volume-2 $\mu g/m^3$ 5.43 400.0 (24 hr Average) NAAQMS/37/2012-2013 11. Benzene (C₆H₆) $\mu g/m^3$ BDL 5.0 (Annual Average) IS: 5182 (P 11)-2006 12. Benzo (a) pyrene (BaP) ng/m³ BDL 1.0 (Annual Average) IS:5182 (P 12)-2004 NMHC (Non-Methane 13. $\mu g/m^3$ BDL Hydro Carbon) IS: 5182 (P 21): 2001 Note: BDL: Below Detectable Limit.

INFERENCE

As per NAAQ Standards,

Report Status: - The measured values for the above parameters for those standards have been specified were observed to be within the said standards.

End of Report

aveena Government Analyst

Concern towards protecting Environment

Office Address: No.13/2, 1st Main Road, Near Fire Station, Industrial Town, Rajajinagar, Bangalore - 560 010. حد مددد درد دول مدور درل سوم مل مد مدم ما دول مدر در مراه



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ISO 9001: 2008, ISO14001: 2015 & BS OHSAS 18001: 2007

Test Report

AMBIENT NOISE LEVEL MONITORING REPORT

Name of the Project : Moder

 Modernization of the VNC Project in Koppal, Bellary & Raichur Districts

2. Sample Collected by

M/s. Environmental Health and Safety Research & Development Centre, Bangalore - 560 010.

3. Date of Collection

: 09.04.2018

4. Particulars of Sample Collected

Ambient Noise Level collected through Sound Level Meter(Model C-390)

5. Date of Sample Receipt

Instrument ID:170507029, Calibration Due:02/10/2018: 11.04.2018

6. Sample Number

: EHSRDC/VNC/N/18/04/372

7. Report to be Sent

: 17.04.2018

8. Method Adopted

: CPCB Guidelines (Instrument Method)

9. Page No

: 1 of 1

Code No				C. 1		
	Sample Location	Time Frequency	Max.	Min.	Leq in dB(A)	Std.
	Basavanna Canal in Hospet City (Near old Amaravathi Village)	6:01am to 10:00pm	74.5	32.4	53.97	55.0 dB(A) Day
372	GPS Reading: North: 15º 16' 13.3.", East: 76º 22'32.4"	10:01pm to 6:00am	72.1	30	42.32	45.0 dB(A) Night

Note:

- Day Time is reckoned between 6 A.M and 10 P.M
- Night Time is reckoned between 10 P.M and 6 A.M
- L_{eq}: It is energy mean of the noise level over a specified period.
- *dB (A) L_{eq} denotes the time weighted average of the level of sound in decibels on scale A which is relatable to human hearing.
- A "decibel" is a unit in which noise is measured.
- "A", in dB (A) L_{eq}, denotes the frequency weighting in the measurement of noise and corresponds to Frequency response characteristics of the human ear.

INFERENCE

As per CPCB Standards,

Report Status: - The measured value for the above location is within the standards.

End of Report

Praveera Government Analyst



(Recognised under section 12 of the Environment (Protection) Act, 1986) New Delhi, Validity 09.02.2017 to 08.02.2022 ಎನ್ವಿರಾನ್ ಮೆಂಟಲ್ ಹೆಲ್ತ್ ಅಂಡ್ ಸೇಫ್ಟ್ರಿ ರಿಸರ್ಚ್ ಅಂಡ್ ಡೆವಲಪ್ ಮೆಂಟ್ ಸೆಂಟರ್ (ಪರಿಸರ (ಸಂರಕ್ಷಣಾ) ಕಾಯ್ದಿ 1986 ರ ಕಲಂ 12 ರಲ್ಲಿ ಮಾನ್ಯತೆ ಪಡೆದ ಪ್ರಯೋಗಾಲಯ) ನವ ದೆಹಲಿ, ಮಾನ್ಯತಾ ಅವಧಿ: 09.02.2017 ರಿಂದ 08.02.2022

एनवायरमेंटल हेल्थ एण्ड सेफ्टी रिसर्च एण्ड डेवलेपमेंट सेंटर

(पर्यावरण (संरक्षण) अधिनियम, 1986 अनुभाग 12 की धारा मान्यता प्राप्त प्रयोगशाला) न्यु दिल्ली, मान्यता तारीख. 09.02.2017 - 08.02.2022

ISO 9001: 2008, ISO14001: 2015 & BS OHSAS 18001: 2007

Test Report

AMBIENT NOISE LEVEL MONITORING REPORT

1. Name of the Project :

: Modernization of the VNC Project in Koppal, Bellary & Raichur Districts

2. Sample Collected by

: M/s. Environmental Health and Safety Research & Development Centre, Bangalore - 560 010.

3. Date of Collection

: 09.04.2018

4. Particulars of Sample Collected

: Ambient Noise Level collected through Sound Level Meter(Model C-390)

5. Date of Sample Receipt

Instrument ID:140909656, Calibration Due:18/03/2019: 11.04.2018

6. Sample Number

: EHSRDC/VNC/N/18/04/373

Report to be Sent

: 17.04.2018

8. Method Adopted

: CPCB Guidelines (Instrument Method)

9. Page No

: 1 of 1

Code No				6.1		
	Sample Location	Time Frequency	Max.	Min.	Leq in dB(A)	Std.
373	Hulagi Anicut (Near Hole Muddalapura) GPS Reading:	6:01am to 10:00pm	84.2	42.7	54.17	55.0 dB(A) Day
	North: 15º 17''00.3", East: 76º 20'01.2"	10:01pm to 6:00am	66.5	36.6	41.77	45.0 dB(A) Night

Note:

- Day Time is reckoned between 6 A.M and 10 P.M
- Night Time is reckoned between 10 P.M and 6 A.M
- Leq: It is energy mean of the noise level over a specified period.
- *dB (A) L_{eq} denotes the time weighted average of the level of sound in decibels on scale A which is relatable to human hearing.
- A "decibel" is a unit in which noise is measured.
- "A", in dB (A) Leq, denotes the frequency weighting in the measurement of noise and corresponds to Frequency response characteristics of the human ear.

INFERENCE

As per CPCB Standards,

Report Status: - The measured value for the above location is within the standards.

End of Report

haveena

Government Analyst

Concern towards protecting Environment

Office Address : No.13/2, 1st Main Road, Near Fire Station, Industrial Town, Rajajinagar, Bangalore - 560 010.



(Recognised under section 12 of the Environment (Protection) Act, 1986) New Delhi, Validity 09.02.2017 to 08.02.2022 ಎನ್ವಿರಾನ್ ಮೆಂಟಲ್ ಹೆಲ್ತ್ ಅಂಡ್ ಸೇಫ್ಟ್ರಿ ರಿಸರ್ಚ್ ಅಂಡ್ ಡೆವಲಪ್ ಮೆಂಟ್ ಸೆಂಟರ್ (ಪರಿಸರ (ಸಂರಕ್ಷಣ್) ಕಾಯ್ದೆ 1986 ರ ಕಲಂ 12 ರಲ್ಲಿ ಮಾನ್ಯತೆ ಪಡೆದ ಪ್ರಯೋಗಾಲಯ) ನವ ದೆಹಲಿ, ಮಾನ್ಯತಾ ಅವಧಿ : 09.02.2017 ರಿಂದ 08.02.2022

एनवायरमेटल हेल्थ एण्ड सेफ्टी रिसर्च एण्ड डेवलेपमेट सेटर (पर्यावरण (संरक्षण) अधिनियम, 1986 अनुभाग 12 की धारा मान्यता प्राप्त प्रयोगशाला) न्यु दिल्ली, मान्यता तारीख. 09.02.2017 - 08.02.2022

ISO 9001: 2008, ISO14001: 2015 & BS OHSAS 18001: 2007

Test Report

AMBIENT NOISE LEVEL MONITORING REPORT

Name of the Project Modernization of the VNC Project in Koppal, Bellary & Raichur Districts

2. Sample Collected by M/s. Environmental Health and Safety Research &

Development Centre, Bangalore - 560 010.

3. Date of Collection 09.04.2018

Particulars of Sample Ambient Noise Level collected through Collected Sound Level Meter(Model C-390)

Instrument ID:160508086, Calibration Due:06/08/2018

5. Date of Sample Receipt : 11.04.2018

: EHSRDC/VNC/N/18/04/374 Sample Number

7. Report to be Sent : 17.04.2018

8. Method Adopted CPCB Guidelines (Instrument Method)

Page No

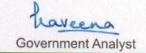
Code No				6.1		
	Sample Location	Time Frequency	Max.	Min.	Leq in dB(A)	Std.
	Turtha Canal in Hampi Town GPS Reading:	6:01am to 10:00pm	80.5	45.1	52.41	55.0 dB(A) Day
374	North: 150 19' 33.9.", East: 760 27'35.6"	10:01pm to 6:00am	70.2	39.4	43.01	45.0 dB(A) Night

Note:

- Day Time is reckoned between 6 A.M and 10 P.M
- Night Time is reckoned between 10 P.M and 6 A.M
- Leq: It is energy mean of the noise level over a specified period.
- *dB (A) Leq denotes the time weighted average of the level of sound in decibels on scale A which is relatable to human hearing.
- A "decibel" is a unit in which noise is measured.
- "A", in dB (A) Leq, denotes the frequency weighting in the measurement of noise and corresponds to Frequency response characteristics of the human ear.

INFERENCE As per CPCB Standards, Report Status: - The measured value for the above location is within the standards.

End of Report





(Recognised under section 12 of the Environment (Protection) Act, 1986) New Delhi, Validity 09.02.2017 to 08.02.2022 ಎನ್ವಿರಾನ್ ಮೆಂಟಲ್ ಹೆಲ್ತ್ ಅಂಡ್ ಸೇಫ್ಟ್ನಿ ರಿಸರ್ಚ್ ಅಂಡ್ ಡೆವಲಪ್ ಮೆಂಟ್ ಸೆಂಟರ್ (ಪರಿಸರ (ಸಂರಕ್ಷಣಾ) ಕಾಯ್ಕೆ 1986 ರ ಕಲಂ 12 ರಲ್ಲಿ ಮಾನ್ಯತೆ ಪಡೆದ ಪ್ರಯೋಗಾಲಯ) ನವ ದೆಹಲಿ, ಮಾನ್ಯತಾ ಅವಧಿ : 09.02.2017 ರಿಂದ 08.02.2022

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ISO 9001: 2008, ISO14001: 2015 & BS OHSAS 18001: 2007

Test Report

AMBIENT NOISE LEVEL MONITORING REPORT

1. Name of the Project Modernization of the VNC Project in Koppal, Bellary & Raichur Districts

2. Sample Collected by M/s. Environmental Health and Safety Research & Development Centre, Bangalore - 560 010.

3. Date of Collection 09.04.2018

Particulars of Sample Ambient Noise Level collected through Collected Sound Level Meter (Model C-390)

Instrument ID:170507029, Calibration Due:02/10/2018

Date of Sample Receipt : 11.04.2018

6. Sample Number : EHSRDC/VNC/N/18/04/375 7.

Report to be Sent : 17.04.2018

Method Adopted : CPCB Guidelines (Instrument Method)

Page No 1 of 1

Code No						
	Sample Location	Time Frequency	Max.	Min.	Leq in dB(A)	Std.
	Kallaghatta Canal (Near Kallaghatta Village)	6:01am to 10:00pm	73.2	34.8	51.53	55.0 dB(A) Day
375	GPS Reading: North: 15º 18' 58.3.", East: 76º 24'25.4"	10:01pm to 6:00am	68.7	32.8	41.69	45.0 dB(A) Night

Note:

- Day Time is reckoned between 6 A.M and 10 P.M
- Night Time is reckoned between 10 P.M and 6 A.M
- Leq: It is energy mean of the noise level over a specified period.
- *dB (A) Leq denotes the time weighted average of the level of sound in decibels on scale A which is relatable to human hearing.
- A "decibel" is a unit in which noise is measured.
- "A", in dB (A) Leq, denotes the frequency weighting in the measurement of noise and corresponds to Frequency response characteristics of the human ear.

INFERENCE As per CPCB Standards, Report Status: - The measured value for the above location is within the standards.

End of Report

Government Analyst

Concern towards protecting Environment



(Recognised under section 12 of the Environment (Protection) Act, 1986) New Delhi, Validity 09.02.2017 to 08.02.2022 ಎನ್ವಿರಾನ್ ಮೆಂಟಲ್ ಹೆಲ್ತ್ ಅಂಡ್ ಸೇಫ್ಟ್ರಿ ರಿಸರ್ಚ್ ಅಂಡ್ ಡೆವಲಪ್ ಮೆಂಟ್ ಸೆಂಟರ್ (ಪರಿಸರ (ಸಂರಕ್ಷಣ) ಕಾಯ್ದೆ 1986 ರ ಕಲಂ 12 ರಲ್ಲಿ ಮಾನ್ಯತೆ ಪಡೆದ ಪ್ರಯೋಗಾಲಯ) ನವ ದೆಹಲಿ, ಮಾನ್ಯತಾ ಅವಧಿ : 09.02.2017 ರಿಂದ 08.02.2022

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ISO 9001: 2008, ISO14001: 2015 & BS OHSAS 18001: 2007

Test Report

AMBIENT NOISE LEVEL MONITORING REPORT

Name of the Project : Modernization of the VNC Project in Koppal, Bellary & Raichur Districts

Sample Collected by : M/s. Environmental Health and Safety Research & Development Centre, Bangalore - 560 010.

3. Date of Collection : 09.04.2018

4. Particulars of Sample : Ambient Noise Level collected through Collected Sound Level Meter (Model C-390)

5. Date of Sample Receipt Instrument ID:170507029, Calibration Due:02/10/2018

6. Sample Number : EHSRDC/VNC/N/18/04/376 7. Report to be Sent : 17.04.2018

8. Method Adopted : CPCB Guidelines (Instrument Method)

9. Page No : 10

Code No						
	Sample Location	Time Frequency	Max.	Min.	Leq in dB(A)	Std.
	Anegundi Canal (Near Hanumanahalli Village)	6:01am to 10:00pm	77.1	48.9	53.08	55.0 dB(A) Day
376	GPS Reading: North: 15º 20' 54.1", East: 76º 27'58.2"	10:01pm to 6:00am	74.1	46.7	42.74	45.0 dB(A) Night

Note:

- Day Time is reckoned between 6 A.M and 10 P.M
- Night Time is reckoned between 10 P.M and 6 A.M
- Leq: It is energy mean of the noise level over a specified period.
- *dB (A) L_{eq} denotes the time weighted average of the level of sound in decibels on scale A which is relatable to human hearing.
- A "decibel" is a unit in which noise is measured.
- "A", in dB (A) L_{eq}, denotes the frequency weighting in the measurement of noise and corresponds to Frequency response characteristics of the human ear.

INFERENCE As per CPCB Standards,
Report Status: - The measured value for the above location is within the standards.

End of Report

Government Analyst

Concern towards protecting Environment



(Recognised under section 12 of the Environment (Protection) Act, 1986) New Delhi, Validity 09.02.2017 to 08.02.2022 ಎನ್ವಿರಾನ್ ಮೆಂಟಲ್ ಹೆಲ್ತ್ ಅಂಡ್ ಸೇಫ್ಟ್ನಿ ರಿಸರ್ಚ್ ಅಂಡ್ ಡೆವಲಪ್ ಮೆಂಟ್ ಸೆಂಟರ್ (ಪರಿಸರ (ಸಂರಕ್ಷಣಾ) ಕಾಯ್ಕೆ 1986 ರ ಕಲಂ 12 ರಲ್ಲಿ ಮಾನ್ಯತೆ ಪಡೆದ ಪ್ರಯೋಗಾಲಯ) ನವ ದೆಹಲಿ, ಮಾನ್ಯತಾ ಅವಧಿ : 09.02.2017 ರಿಂದ 08.02.2022

एनवायरमेंटल हेल्थ एण्ड सेफ्टी रिसर्च एण्ड डेवलेपमेंट सेंटर

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ISO 9001: 2008, ISO14001: 2015 & BS OHSAS 18001: 2007

Test Report

ANALYSIS RI	EPORT OF	WATER	OUALITY
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1. Name of the Location Anegundi Canal (Near Hanumanahalli Village) 2.

GPS Location of Monitoring Station North: 150 20'54.3", East: 0760 23' 58.0" 3. Name of the Project Modernization of the VNC Project in Koppal, Bellary & Raichur Districts

4. Sample Collected by M/s. Environmental Health and Safety Research & Development Centre, Bangalore - 560010.

5. Date of Collection 09.04.2018

6. Particulars of Sample Collected Surface Water, Grab Sampling 7.

Date of Sample Receipt 11.04.2018

8. Sample Number EHSRDC/ VNC/W/18/04/377

9. Analysis started on 11.04.2018 10. Analysis Completed on 16.04.2018 11. Sent to be Report 17.04.2018

12. Page No 1 of 1

13. Protocol APHA,23rd Edition

SI. No	Parameters	Unit		Water	r Quality	Criteria	1		
01.110	1 drameters	Onit	A	В	C	D	E	Result	Test Methods
1.	pH				6.5-8.5	;		7.62	APHA 4500H+ B
2.	Conductivity	μS/cm	-	-		1000	2250	313	APHA 2510 B
3.	Total Dissolved Solids	mg/L	500	-	1500		2100	215	APHA 2540 C
4.	Total Hardness	mg/L	-	-				80	APHA 2340 C
5.	Dissolved Oxygen	mg/L	6	5	4	4	-	5.2	APHA 4500-O C
6.	BOD (3 Days @ 27°C)	mg/L	2	3	3	-	-	3.4	APHA 5210 B
7.	Chemical Oxygen Demand	mg/L		-		-	-	16.0	APHA 5220 B
8.	Nitrate as NO ₃	mg/L	20	-	50		-	2.43	APHA 4500-NO ₃ E
9.	Chloride as Cl	mg/L	250	-	600	-	600	28.92	APHA 4500-CI B
10.	Sulphate as SO ₄	mg/L	400	-	400	-	1000	17.39	APHA 4500-SO ₄ 2-E
11.	Fluoride as F OD- Biochemical Oxygen D	mg/L	1.5	1.5	1.5	-	-	0.30	APHA 4500F D

	Conforms to Class "D"- Criteria with respect to above tested parameters. A- Drinking Water Source without conventional Treatment but after disinfection
INFERENCE	B- Outdoor Bathing (Organized).
	 C- Drinking Water source with conventional treatment followed by disinfection
	D- Propagation of wild life, fisheries.
	E- Irrigation, industrial cooling, controlled waste Disposal.
	End of Report





(Recognised under section 12 of the Environment (Protection) Act, 1986) New Delhi, Validity 09.02.2017 to 08.02.2022 ಎನ್ವಿರಾನ್ ಮೆಂಟಲ್ ಹಲ್ತ್ ಅಂಡ್ ಸೇಫ್ಟ್ರಿ ರಿಸರ್ಚ್ ಅಂಡ್ ಡೆವಲಪ್ ಮೆಂಟ್ ಸೆಂಟರ್ (ಪರಿಸರ (ಸಂರಕ್ಷಣ್) ಕಾಯ್ದೆ 1986 ರ ಕಲಂ 12 ರಲ್ಲಿ ಮಾನ್ಯತೆ ಪಡೆದ ಪ್ರಯೋಗಾಲಯ) ನವ ದೆಹಲಿ, ಮಾನ್ಯತಾ ಅವಧಿ : 09.02.2017 ರಿಂದ 08.02.2022

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ISO 9001: 2008, ISO14001: 2015 & BS OHSAS 18001: 2007

Test Report

ANALYSIS	REPORT	OF WATER	OHALITY

1. Name of the Location Turtha Canal in Hampi Town Canal Water 2. GPS Location of Monitoring Station

North: 150 19'39.1", East: 0760 27' 36.8" 3. Name of the Project Modernization of the VNC Project in Koppal, Bellary & Raichur Districts

4. Sample Collected by M/s. Environmental Health and Safety Research & Development Centre, Bangalore - 560010.

Date of Collection 5. 09.04.2018

6. Particulars of Sample Collected Surface Water, Grab Sampling 7.

Date of Sample Receipt 11.04.2018

8. Sample Number EHSRDC/ VNC/W/18/04/378 9. Analysis started on

11.04.2018 10. Analysis Completed on 16.04.2018 11. Sent to be Report 17.04.2018

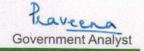
12. Page No 1 of 1

13. Protocol : APHA,23rd Edition

Parameters H onductivity otal Dissolved Solids otal Hardness	Unit - μS/cm mg/L	- 500	B -	C 6.5-8.5		Е	Result	Test Methods APHA 4500H+ B	
onductivity otal Dissolved Solids	μS/cm mg/L		-				7.75	APHA 4500H+ B	
otal Dissolved Solids	mg/L		-					APHA 4500H+	
	-	500		0.00	1000	2250	510	APHA 2510 B	
otal Hardness		000	-	1500	-	2100	305	APHA 2540 C	
	mg/L	-	-	-	-		156	APHA 2340 C	
issolved Oxygen	mg/L	6	5	4	4	-		APHA 4500-O C	
OD(3 Days @ 27°C)	mg/L	2	3	3				APHA 5210 B	
hemical Oxygen emand	mg/L			-	•		24.0	APHA 5220 B	
itrate as NO ₃	mg/L	20	-	50			3.24	APHA 4500-NO ₃ I	
hloride as CI		250	7-2					APHA 4500-NO ₃ E	
Ilphate as SO ₄		400							
uoride as F	mg/L	1.5	1.5	1.5		-		APHA 4500-SO ₄ 2-E APHA 4500F D	
Fi	DD(3 Days @ 27°C) nemical Oxygen emand trate as NO ₃ aloride as CI Iphate as SO ₄ noride as F	DD(3 Days @ 27°C) mg/L memical Oxygen mg/L mand mg/L trate as NO ₃ mg/L mg/L dloride as CI mg/L llphate as SO ₄ mg/L	DD(3 Days @ 27°C) mg/L 2 mg/L 2 mg/L - mg/L - mg/L 20 mg/L 250 mg/L 250 mg/L 400 mg/L 1.5 mg/L 1.5	DD(3 Days @ 27°C) mg/L 2 3 nemical Oxygen mg/L	DD(3 Days @ 27°C) mg/L 2 3 3 nemical Oxygen mg/L	DD(3 Days @ 27°C) mg/L 2 3 3 - memical Oxygen mg/L trate as NO ₃ mg/L 20 - 50 - mg/L 250 - 600 - loride as Cl mg/L 250 - 600 - loride as SO ₄ mg/L 400 - 400 - mg/L 1.5 1.5 1.5 -	DD(3 Days @ 27°C) mg/L 2 3 3	DD(3 Days @ 27°C) mg/L 2 3 3 5.6 memical Oxygen mg/L 24.0 trate as NO ₃ mg/L 20 - 50 3.24 mg/L 250 - 600 - 600 44.35 Iphate as SO ₄ mg/L 400 - 400 - 1000 20.06 moride as F mg/L 1.5 1.5 1.5 0.08	

Conforms to Class "D"- Criteria with respect to above tested parameters. A- Drinking Water Source without conventional Treatment but after disinfection B- Outdoor Bathing (Organized). INFERENCE C- Drinking Water source with conventional treatment followed by disinfection D- Propagation of wild life, fisheries. E- Irrigation, industrial cooling, controlled waste Disposal.

End of Report





(Recognised under section 12 of the Environment (Protection) Act, 1986) New Delhi, Validity 09.02.2017 to 08.02.2022 ಎನ್ವಿರಾನ್ ಮೆಂಟರ್ ಹೆಲ್ತ್ ಅಂಡ್ ಸೇಫ್ಟ್ರಿ ರಿಸರ್ಚ್ ಅಂಡ್ ಡವಲಪ್ ಮೆಂಟ್ ಸೆಂಟರ್ (ಪರಿಸರ (ಸಂರಕ್ಷಣ) ಕಾಯ್ದೆ 1986 ರ ಕಲಂ 12 ರಲ್ಲಿ ಮಾನ್ಯತೆ ಪಡೆದ ಪ್ರಯೋಗಾಲಯ) ನವ ದೆಹಲಿ, ಮಾನ್ಯತಾ ಅವಧಿ : 09.02.2017 ರಿಂದ 08.02.2022

एनवायरमेटल हेल्थ एण्ड सेफ्टी रिसर्च एण्ड डेवलेपमेट सेटर

(पर्यावरण (संरक्षण) अधिनियम, 1986 अनुभाग 12 की धारा मान्यता प्राप्त प्रयोगशाला) न्यु दिल्ली, मान्यता तारीख. 09.02.2017 - 08.02.2022

ISO 9001: 2008, ISO14001: 2015 & BS OHSAS 18001: 2007

Test Report

ANALYSIS REPORT OF WATER QUALITY

1. Name of the Location Kallaghatta Canal Water

2. GPS Location of Monitoring Station

North: 15º 19'09.2", East: 076º 23' 28.1"

3. Name of the Project

Modernization of the VNC Project in

4. Sample Collected by

Koppal, Bellary & Raichur Districts M/s. Environmental Health and Safety Research

5.

& Development Centre, Bangalore - 560010. 09.04.2018

6. Particulars of Sample Collected : Surface Water, Grab Sampling

7. Date of Sample Receipt

Date of Collection

: 11.04.2018

8. Sample Number

: EHSRDC/ VNC/W/18/04/379

9. Analysis started on

: 11.04.2018

10. Analysis Completed on

: 16.04.2018

11. Sent to be Report

17.04.2018

12. Page No 13. Protocol

: 1 of 1

APHA,23rd Edition

SI.No	Parameters	Unit	Water Quality Criteria							
	- manierers	Ont	A	В	C	D	E	Result	Test Methods	
1.	pH				6.5-8.5	5		7.64	APHA 4500H+ B	
2.	Conductivity	μS/cm		-	12.	1000	2250	1085	APHA 2510 B	
3.	Total Dissolved Solids	mg/L	500	-	1500	1	2100	622	APHA 2540 C	
4.	Total Hardness	mg/L	-	-	-		-	256	APHA 2340 C	
5.	Dissolved Oxygen	mg/L	6	5	4	4	-	5.3	APHA 4500-O C	
6.	BOD(3 Days @ 27°C)	mg/L	2	3	3	-		16		
7.	Chemical Oxygen Demand	mg/L	-	-		-	-	88	APHA 5210 B APHA 5220 B	
8.	Nitrate as NO ₃	mg/L	20		50		-	8.38	APHA 4500-NO ₃ E	
9.	Chloride as CI	mg/L	250		600	-	600	109.92		
10.	Sulphate as SO ₄	mg/L	400	-	400		1000	39.04	APHA 4500-CI B APHA 4500-SO ₄ ² -E	
11.	Fluoride as F OD- Biochemical Oxygen D	mg/L	1.5	1.5	1.5	-	-	0.53	APHA 4500-50 ₄ 2-E	

Conforms to Class "E"- Criteria with respect to above tested parameters.

A- Drinking Water Source without conventional Treatment but after disinfection

INFERENCE

B- Outdoor Bathing (Organized).

C- Drinking Water source with conventional treatment followed by disinfection

D- Propagation of wild life, fisheries.

E- Irrigation, industrial cooling, controlled waste Disposal..

End of Report

Government Analyst



(Recognised under section 12 of the Environment (Protection) Act, 1986) New Delhi, Validity 09.02.2017 to 08.02.2022 ಎನ್ವಿರಾನ್ ಮೆಂಟಲ್ ಹೆಲ್ತ್ ಅಂಡ್ ಸೇಫ್ಟಿ ರಿಸರ್ಚ್ ಅಂಡ್ ಡೆವಲಪ್ ಮೆಂಟ್ ಸೆಂಟರ್ (ಪರಿಸರ (ಸಂರಕ್ಷಣ) ಕಾಯ್ದಿ 1986 ರ ಕಲಂ 12 ರಲ್ಲಿ ಮಾನ್ಯತೆ ಪಡೆದ ಪ್ರಯೋಗಾಲಯ) ನವ ದೆಹಲಿ, ಮಾನ್ಯತಾ ಅವಧಿ : 09.02.2017 ರಿಂದ 08.02.2022

एनवायरमेंटल हेल्थ एण्ड सेफ्टी रिसर्च एण्ड डेवलेपमेंट सेंटर

(पर्यावरण (संरक्षण) अधिनियम, 1986 अनुभाग 12 की धारा मान्यता प्राप्त प्रयोगशाला) न्यु दिल्ली, मान्यता तारीख. 09.02.2017 - 08.02.2022

ISO 9001: 2008, ISO14001: 2015 & BS OHSAS 18001: 2007

Test Report

ANALYSIS REPORT	OF WATER OUA	LITY
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1. Name of the Location Basavanna Canal in Hospet City (Near Old Amaravathi Village) Canal Village 2. GPS Location of Monitoring Station

North: 15º 16'09.6", East: 076º 22' 23.5" 3. Name of the Project Modernization of the VNC Project in Koppal, Bellary & Raichur Districts

4. Sample Collected by : M/s. Environmental Health and Safety Research & Development Centre, Bangalore - 560010.

5. Date of Collection 09.04.2018 Particulars of Sample Collected 6.

Surface Water, Grab Sampling 7. Date of Sample Receipt 11.04.2018

8. Sample Number EHSRDC/ VNC/W/18/04/380 9. Analysis started on

11.04.2018 10. Analysis Completed on 16.04.2018 11. Sent to be Report 17.04.2018

12. Page No 1 of 1 13. Protocol APHA,23rd Edition

Water Quality Criteria Sl.No Parameters Unit Result Test Methods A C E 1. pH 6.5-8.5 7.50 APHA 4500H+ B 2. Conductivity µS/cm -1000 2250 564 APHA 2510 B 3. Total Dissolved Solids mg/L 500 1500 . 2100 -347 APHA 2540 C 4. Total Hardness mg/L 132 APHA 2340 C 5. Dissolved Oxygen mg/L 6 5 4 4 5.6 APHA 4500-O C 6. BOD(3 Days @ 27°C) 2 mg/L 3 3 9.2 -APHA 5210 B Chemical Oxygen 7. mg/L Demand 64 APHA 5220 B 8. Nitrate as NO3 mg/L 20 -50 -4.29 APHA 4500-NO3 E 9 Chloride as Cl mg/L 250 600 600 57.85 APHA 4500-CI B 10. Sulphate as SO₄ mg/L 400 -400 1000 26.29 APHA 4500-SO₄2-E 11. Fluoride as F mg/L 1.5 1.5 1.5

Conforms to Class "D"- Criteria with respect to above tested parameters.

A- Drinking Water Source without conventional Treatment but after disinfection

-

0.15

B- Outdoor Bathing (Organized).

Note: BOD-Biochemical Oxygen Demand

INFERENCE

C- Drinking Water source with conventional treatment followed by disinfection

D- Propagation of wild life, fisheries.

E- Irrigation, industrial cooling, controlled waste Disposal..

End of Report



APHA 4500F D



(Recognised under section 12 of the Environment (Protection) Act, 1986) New Delhi, Validity 09.02.2017 to 08.02.2022 ಎನ್ವಿರಾನ್ ಮೆಂಟಲ್ ಹೆಲ್ತ್ ಅಂಡ್ ಸೇಫ್ಟಿ ರಿಸರ್ಚ್ ಅಂಡ್ ಡೆವಲಪ್ ಮೆಂಟ್ ಸೆಂಟರ್ (ಪರಿಸರ (ಸಂರಕ್ಷಣ) ಕಾಯ್ದೆ 1986 ರ ಕಲಂ 12 ರಲ್ಲಿ ಮಾನ್ಯತೆ ಪಡೆದ ಪ್ರಯೋಗಾಲಯ) ನವ ದೆಹಲಿ, ಮಾನ್ಯತಾ ಅವಧಿ : 09.02.2017 ರಿಂದ 08.02.2022

एनवायरमेटल हेल्थ एण्ड सेफ्टी रिसर्च एण्ड डेवलेपमेट सेटर

(पर्यावरण (संरक्षण) अधिनियम, 1986 अनुभाग 12 की धारा मान्यता प्राप्त प्रयोगशाला) न्यु दिल्ली, मान्यता तारीख. 09.02.2017 - 08.02.2022

ISO 9001: 2008, ISO14001: 2015 & BS OHSAS 18001: 2007

Test Report

ANALYSIS REPORT OF WATER QUALITY

Name of the Location 1. 2.

GPS Location of Monitoring Station

3. Name of the Project

4. Sample Collected by

5. Date of Collection

6. Particulars of Sample Collected

7. Date of Sample Receipt

8. Sample Number

9. Analysis started on

10. Analysis Completed on

11. Sent to be Report

12. Page No 13. Protocol

INFERENCE

Hulugi Anicut Canal Water

North: 15º 17'41.9", East: 076º 20' 25.8"

Modernization of the VNC Project in Koppal, Bellary & Raichur Districts

M/s. Environmental Health and Safety Research

& Development Centre, Bangalore - 560010.

09.04.2018

: Surface Water, Grab Sampling

: 11.04.2018

: EHSRDC/ VNC/W/18/04/381

11.04.2018

16.04.2018 : 17.04.2018

1 of 1

APHA,23rd Edition

SI. No	Parameters	Unit		Wate	r Quality	Criteria	a		
	- manteters	Cint	A	В	C	D	E	Result	Test Methods
1.	рН				6.5-8.5	5		7.72	APHA 4500H+ B
2.	Conductivity	μS/cm	-	-		1000	2250	406	APHA 2510 B
3.	Total Dissolved Solids	mg/L	500	-	1500		2100	277	APHA 2540 C
4.	Total Hardness	mg/L	-				_	108	
5.	Dissolved Oxygen	mg/L	6	5	4	4			APHA 2340 C
6.	BOD (3 Days @ 27°C)	mg/L	2	3	3	4	-	5.0	APHA 4500-O C
7.	Chemical Oxygen Demand	mg/L	-	-	-			6.8	APHA 5210 B APHA 5220 B
8.	Nitrate as NO ₃	mg/L	20		50	-		4.19	ADVIA AROS NO. P
9.	Chloride as Cl	mg/L	250		600		600		APHA 4500-NO ₃ E
10.	Sulphate as SO ₄	mg/L	400		400			40.49	APHA 4500-CI B
11.	Fluoride as F	mg/L	1.5	1.5			1000	19.17	APHA 4500-SO ₄ ² -E
Vote: BC	DD- Biochemical Oxygen Der	Ing/L	1.5	1,5	1.5	-	7	0.53	APHA 4500F D

Conforms to Class "D"- Criteria with respect to above tested parameters.

A- Drinking Water Source without conventional Treatment but after disinfection

B- Outdoor Bathing (Organized).

C- Drinking Water source with conventional treatment followed by disinfection

D- Propagation of wild life, fisheries.

E- Irrigation, industrial cooling, controlled waste Disposal..

End of Report

Government Analyst



(Recognised under section 12 of the Environment (Protection) Act, 1986) New Delhi, Validity 09.02.2017 to 08.02.2022 ಎನ್ವಿರಾನ್ ಮೆಂಟಲ್ ಹೆಲ್ತ್ ಅಂಡ್ ಸೇಫ್ಟ್ರಿ ರಿಸರ್ಚ್ ಅಂಡ್ ಡೆವಲಪ್ ಮೆಂಟ್ ಸೆಂಟರ್ (ಪರಿಸರ (ಸಂರಕ್ಷಣ) ಕಾಯ್ದೆ 1986 ರ ಕಲಂ 12 ರಲ್ಲಿ ಮಾನ್ಯತೆ ಪಡೆದ ಪ್ರಯೋಗಾಲಯ) ನವ ದೆಹಲಿ, ಮಾನ್ಯತಾ ಅವಧಿ : 09.02.2017 ರಿಂದ 08.02.2022

एनवायरमेंटल हेल्थ एण्ड सेफ्टी रिसर्च एण्ड डेवलेपमेंट सेंटर

(पर्यावरण (संरक्षण) अधिनियम, 1986 अनुभाग 12 की धारा मान्यता प्राप्त प्रयोगशाला) न्यु दिल्ली, मान्यता तारीख. 09.02.2017 - 08.02.2022

ISO 9001: 2008, ISO14001: 2015 & BS OHSAS 18001: 2007

Test Report

ANALYSIS REPORT OF WATER QUALITY

1. Name of the Location

2. GPS Location of Monitoring Station

Name of the Project

4. Sample Collected by

5. Date of Collection

6. Particulars of Sample Collected

Date of Sample Receipt

8. Sample Number

Analysis started on
 Analysis Completed on

11. Sent to be Report

12. Page No

13. Protocol

: Anegundi Canal (Near Hanumanahalli Village)

North: 15º 20'53.4", East: 076º 27' 57.8"

 Modernization of the VNC Project in Koppal, Bellary & Raichur Districts

M/s. Environmental Health and Safety Research
 & Development Centre, Bangalore – 560010.

: 09.04.2018

: Ground Water, Grab Sampling

: 11.04.2018

: EHSRDC/ VNC/W/18/04/382

: 11.04.2018 : 16.04.2018

: 17.04.2018

: 1 of 1

: APHA,23rd Edition

SI. No	Parameters	Parameters Test Methods	Unit	Result	Std. IS 10500:2012 (Second Revision	
					AL	PL
1.	pH	APHA 4500H+ B		7.75	6.5-8.5	
2.	Alkalinity	APHA2320 B	mg/L	180	200	600
3.	Conductivity	APHA 2510 B	μS/cm	506	200	000
4.	Total Dissolved Solids	APHA 2540 C	mg/L	352	500	2000
5.	Total Hardness	APHA 2340 C	mg/L	172	200	600
6.	Turbidity	APHA 2130 B	NTU	3.22	200	
7.	Chloride as Cl	APHA 4500-Cl B	mg/L	36.64	750	5
8.	Sulphate as SO ₄	APHA 4500-SO ₄ 2- E	mg/L		250	1000
9.	Fluoride as F	APHA 4500F D		19.87	200	400
L - Acc	reptable Limit, PL - Permissib		mg/L	0.13	1	1.5

As per IS 10500:2012(Second Revision),

INFERENCE
Report Status: - The measured values for the above parameters for those standards have been specified, were observed to be within the said standards.

End of Report

Government Analyst



(Recognised under section 12 of the Environment (Protection) Act, 1986) New Delhi, Validity 09.02.2017 to 08.02.2022 ಎನ್ವಿರಾನ್ ಮೆಂಟಲ್ ಹೆಲ್ತ್ ಅಂಡ್ ಸೇಫ್ಟ್ನಿ ರಿಸರ್ಚ್ ಅಂಡ್ ಡೆವಲಪ್ ಮೆಂಟ್ ಸೆಂಟರ್ (ಪರಿಸರ (ಸಂರಕ್ಷಣ) ಕಾಯ್ದೆ 1986 ರ ಕಲಂ 12 ರಲ್ಲಿ ಮಾನ್ಯತೆ ಪಡೆದ ಪ್ರಯೋಗಾಲಯ) ನವ ದೆಹಲಿ, ಮಾನ್ಯತಾ ಅವಧಿ : 09.02.2017 ರಿಂದ 08.02.2022

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(पर्यावरण (संरक्षण) अधिनियम, 1986 अनुभाग 12 की धारा मान्यता प्राप्त प्रयोगशाला) न्यु दिल्ली, मान्यता तारीख. 09.02.2017 - 08.02.2022

ISO 9001: 2008, ISO14001: 2015 & BS OHSAS 18001: 2007

Test Report

ANALYSIS REPORT OF WATER QUALITY

Name of the Location

2. GPS Location of Monitoring Station

Name of the Project

4. Sample Collected by

5. Date of Collection

6. Particulars of Sample Collected

7. Date of Sample Receipt

8. Sample Number

Analysis started on
 Analysis Completed on

11. Sent to be Report

Page No

13. Protocol

Turtha Canal in Hampi Town

: North: 150 20'03.03", East: 0760 27' 54.7"

 Modernization of the VNC Project in Koppal, Bellary & Raichur Districts

: M/s. Environmental Health and Safety Research

& Development Centre, Bangalore - 560010.

: 09.04.2018

: Ground Water, Grab Sampling

: 11.04.2018

: EHSRDC/ VNC/W/18/04/383

: 11.04.2018

: 16.04.2018 : 17.04.2018

: 1 of 1

: APHA,23rd Edition

SI. No	Parameters	Test Methods	Unit	Result	Std. IS 10500:2012 (Second Revision	
					AL	PL
1.	pH	APHA 4500H+ B	- T T T T T T T T	6.96	6.5	-8.5
2.	Alkalinity	APHA2320 B	mg/L	260	200	600
3.	Conductivity	APHA 2510 B	μS/cm	832	200 00	
4.	Total Dissolved Solids	APHA 2540 C	mg/L	571	500	2000
5.	Total Hardness	APHA 2340 C	mg/L	236	200	L. L. C.
6.	Turbidity	APHA 2130 B	NTU	0.06	200	600
7.	Chloride as Cl	APHA 4500-CI B	mg/L	75.21	250	5
8.	Sulphate as SO ₄	APHA 4500-SO ₄ 2- E	mg/L	37.96	250	1000
9.	Fluoride as F	APHA 4500F D	-		200	400
I - Acc	eptable Limit, PL - Permissib		mg/L	0.64	1	1.5

As per IS 10500:2012(Second Revision),
INFERENCE Report Status: - The measured values for

Report Status: - The measured values for the above parameters for those standards have been specified were observed to be within the said standards.

End of Report

Raveena Government Analyst



(Recognised under section 12 of the Environment (Protection) Act, 1986) New Delhi, Validity 09.02.2017 to 08.02.2022 ಎನ್ವಿರಾನ್ ಮೆಂಟಲ್ ಹೆಲ್ತ್ ಅಂಡ್ ಸೇಫ್ಟ್ರಿ ರಿಸರ್ಚ್ ಅಂಡ್ ಡೆವಲಪ್ ಮೆಂಟ್ ಸೆಂಟರ್ (ಪರಿಸರ (ಸಂರಕ್ಷಣ) ಕಾಯ್ದೆ 1986 ರ ಕಲಂ 12 ರಲ್ಲಿ ಮಾನ್ನತೆ ಪಡೆದ ಪ್ರಯೋಗಾಲಯ) ನವ ದೆಹಲಿ, ಮಾನ್ನತಾ ಅವಧಿ : 09.02.2017 ರಿಂದ 08.02.2022

एनवायरमेंटल हेल्थ एण्ड सेफ्टी रिसर्च एण्ड डेवलेपमेंट सेंटर

(पर्यावरण (संरक्षण) अधिनियम, 1986 अनुभाग 12 की धारा मान्यता प्राप्त प्रयोगशाला) न्यु दिल्ली, मान्यता तारीख. 09.02.2017 - 08.02.2022

ISO 9001: 2008, ISO14001: 2015 & BS OHSAS 18001: 2007

Test Report

ANALYSIS REPORT OF WATER QUALITY

1. Name of the Location

GPS Location of Monitoring Station

3. Name of the Project

4. Sample Collected by

5. Date of Collection

6. Particulars of Sample Collected

7. Date of Sample Receipt

8. Sample Number

Analysis started on

Analysis Completed on

Sent to be Report

12. Page No

13. Protocol

: Kallaghatta Canal (Near Kallaghatta Village)

: North: 15º 18'58.9", East: 076º 24' 28.9"

 Modernization of the VNC Project in Koppal, Bellary & Raichur Districts

: M/s. Environmental Health and Safety Research

& Development Centre, Bangalore - 560010.

: 09.04.2018

: Ground Water, Grab Sampling

: 11.04.2018

: EHSRDC/ VNC/W/18/04/384

: 11.04.2018

: 16.04.2018

: 17.04.2018

: 1 of 1

: APHA,23rd Edition

SI. No	Parameters	Test Methods	Unit	Result		0500:2012 Revision)
					AL	PL
1.	pH	APHA 4500H+ B	- 1	7.10	6.5-8.5	
2.	Alkalinity	APHA2320 B	mg/L	308	200	1
3.	Conductivity	APHA 2510 B	μS/cm	965	200	600
4.	Total Dissolved Solids	APHA 2540 C	mg/L	710	500	-
5.	Total Hardness	APHA 2340 C		-	500	2000
6.	Turbidity	APHA 2130 B	mg/L	356	200	600
7.	Chloride as Cl		NTU	2.96	1	5
		APHA 4500-CI B	mg/L	92.56	250	1000
8.	Sulphate as SO ₄	APHA 4500-SO ₄ 2- E	mg/L	49.43	200	400
9.	Fluoride as F	APHA 4500F D				
L - Acc	reptable Limit, PL - Permissi	1 77 1	mg/L	0.84	1	1.5

As per IS 10500:2012(Second Revision),

INFERENCE Report Status: - The measured values for the above parameters for those standards have been specified were observed to be within the said standards.

End of Report

Praveera Government Analyst



(Recognised under section 12 of the Environment (Protection) Act, 1986) New Delhi, Validity 09.02.2017 to 08.02.2022 ಎನ್ವಿರಾನ್ ಮೆಂಟಲ್ ಹೆಲ್ತ್ ಅಂಡ್ ಸೇಫ್ಟಿ ರಿಸರ್ಚ್ ಅಂಡ್ ಡೆವಲಪ್ ಮೆಂಟ್ ಸೆಂಟರ್ (ಪರಿಸರ (ಸಂರಕ್ಷಣಾ) ಕಾಯ್ದೆ 1986 ರ ಕಲಂ 12 ರಲ್ಲಿ ಮಾನೃತೆ ಪಡೆದ ಪ್ರಯೋಗಾಲಯ) ನವ ದೆಹಲಿ, ಮಾನೃತಾ ಅವಧಿ : 09.02.2017 ರಿಂದ 08.02.2022

एनवायरमेंटल हेल्थ एण्ड सेफ्टी रिसर्च एण्ड डेवलेपमेंट सेंटर

(पर्यावरण (संरक्षण) अधिनियम, 1986 अनुभाग 12 की धारा मान्यता प्राप्त प्रयोगशाला) न्यु दिल्ली, मान्यता तारीख. 09.02.2017 - 08.02.2022

ISO 9001: 2008, ISO14001: 2015 & BS OHSAS 18001: 2007

Test Report

ANALYSIS REPORT OF WATER OUALIT	V
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1. Name of the Location

2. GPS Location of Monitoring Station

3. Name of the Project

4. Sample Collected by

5. Date of Collection

6. Particulars of Sample Collected

Date of Sample Receipt

8. Sample Number

9. Analysis started on

10. Analysis Completed on

Sent to be Report

12. Page No

13. Protocol

: Basavanna Canal in Hospet City (Near Old Amaravathi Village)

: North: 15º16'13.8", East: 076º 22' 33.6"

 Modernization of the VNC Project in Koppal, Bellary & Raichur Districts

: M/s. Environmental Health and Safety Research

& Development Centre, Bangalore - 560010.

: 09.04.2018

: Ground Water, Grab Sampling

: 11.04.2018

: EHSRDC/ VNC/W/18/04/385

: 11.04.2018 : 16.04.2018

: 17.04.2018

: 1 of 1

: APHA,23rd Edition

	Parameters	Parameters Test Methods	Test Methods	Unit	Result		0500:2012 Revision)
					AL	PL	
1.	pH	APHA 4500H+ B	100 mm	7.62	6.5-8,5		
2.	Alkalinity	APHA2320 B	mg/L	388	200	600	
3.	Conductivity	APHA 2510 B	μS/cm	1489	200 0		
4.	Total Dissolved Solids	APHA 2540 C	mg/L	905	FOO	-	
5.	Total Hardness	APHA 2340 C			500	2000	
6.	Turbidity	The second secon	mg/L	432	200	600	
7.		APHA 2130 B	NTU	0.48	1	5	
100	Chloride as Cl	APHA 4500-CI B	mg/L	167.77	250	1000	
8.	Sulphate as SO ₄	APHA 4500-SO ₄ 2- E	mg/L	53.48			
9.	Fluoride as F	APHA 4500F D			200	400	
I Acc	eptable Limit, PL - Permiss	ATTIA 4500F D	mg/L	0.49	1	1.5	

INFERENCE

As per IS 10500:2012(Second Revision),

Report Status: - The measured values for the above parameters for those standards have been specified were observed to be within the said standards.

End of Report





(Recognised under section 12 of the Environment (Protection) Act, 1986) New Delhi, Validity 09.02.2017 to 08.02.2022 ಎನ್ವಿರಾನ್ ಮೆಂಟಲ್ ಹೆಲ್ತ್ ಅಂಡ್ ಸೇಫ್ಟ್ರಿ ರಿಸರ್ಚ್ ಅಂಡ್ ಡೆವಲಪ್ ಮೆಂಟ್ ಸೆಂಟರ್ (ಪರಿಸರ (ಸಂರಕ್ಷಣ) ಕಾಯ್ದೆ 1986 ರ ಕಲಂ 12 ರಲ್ಲಿ ಮಾನ್ಯತೆ ಪಡೆದ ಪ್ರಯೋಗಾಲಯ) ನವ ದೆಹಲಿ, ಮಾನ್ಯತಾ ಅವಧಿ : 09.02.2017 ರಿಂದ 08.02.2022

एनवायरमेंटल हेल्थ एण्ड सेफ्टी रिसर्च एण्ड डेवलेपमेंट सेंटर

(पर्यावरण (संरक्षण) अधिनियम, 1986 अनुभाग 12 की धारा मान्यता प्राप्त प्रयोगशाला) न्यु दिल्ली, मान्यता तारीख. 09.02.2017 - 08.02.2022

ISO 9001: 2008, ISO14001: 2015 & BS OHSAS 18001: 2007

Test Report

ANALYSIS REPORT OF WATER QUALITY

Name of the Location

GPS Location of Monitoring Station

3. Name of the Project

4. Sample Collected by

5. Date of Collection

Particulars of Sample Collected

7. Date of Sample Receipt

8. Sample Number

9. Analysis started on

Analysis Completed on

Sent to be Report
 Page No

13. Protocol

Hulagi Canal (Near Hole Muddalapura Village)

North: 15º 17'05.4", East: 76º 20' 02.3"

Modernization of the VNC Project in Koppal, Bellary & Raichur Districts

 M/s. Environmental Health and Safety Research & Development Centre, Bangalore - 560010.

: 09.04.2018

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: 11.04.2018 : 16.04.2018

: 17.04.2018

: 1 of 1

: APHA,23rd Edition

SI.No	Parameters	Test Methods	Unit	Result	Std. IS 10500:2012 (Second Revision	
					AL	PL
1.	pH	APHA 4500H+ B		7.75	65	-8.5
2.	Alkalinity	APHA2320 B	mg/L	264	200	600
3.	Conductivity	APHA 2510 B	μS/cm	863	200	000
4.	Total Dissolved Solids	APHA 2540 C	mg/L	595	500	2000
5.	Total Hardness	APHA 2340 C	mg/L		500	2000
6.	Turbidity	APHA 2130 B	NTU	300	200	600
7.	Chloride as CI	APHA 4500-CI B		0.22	1	5
8.	Sulphate as SO ₄		mg/L	80.99	250	1000
700		APHA 4500-SO ₄ ² - E	mg/L	45.87	200	400
9.	Fluoride as F eptable Limit, PL - Permiss	APHA 4500F D	mg/L	0.55	1	1.5

INFERENCE

As per IS 10500:2012(Second Revision),

Report Status: - The measured values for the above parameters for those standards have been specified were observed to be within the said standards.

End of Report

Praveena

Government Analyst

Concern towards protecting Environment