National Mission for Clean Ganga (NMCG)
Ministry of Jal Shakti,
River Development & Ganga Rejuvenation
Government of India

Development and Rehabilitation of Sewage Treatment Plants and Associated Infrastructure Under Hybrid Annuity Based PPP Mode at Prayagraj, Uttar Pradesh

(LOA File Number: 50123/447/121, dated 10/11/2018)

Monthly Progress Report
of
Project Engineer
December 2022

Executing Agency	Funding Agency	Project Engineer	Concessionaire
GPCU, Uttar Pradesh Jal Nigam, Prayagraj, Uttar Pradesh 211008	National Mission for Clean Ganga, Ministry of Water Resources, New Delhi 110002	AECOM India Pvt. Ltd., 19/F, Bldg. 5-C, DLF Cyber City, DLF Phase-III, Gurgaon, Haryana-122002	Prayagraj Water Pvt. Ltd., (SPV of ADANI Enterprise Ltd. and Organica Technologiak ZRT) Adani House, 56 Shri Mall, Society, Navrangpura, Ahmedabad.

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1. Introduction

The GoI (Government of India), recognizing that the long-term rejuvenation of the river Ganga will have significant social and economic benefits on the lives of 500 Million people living along its basin, has identified cleaning of the river Ganga as one of its priorities. For this purpose, in May-2015, The Government of India approved the flagship Namami Gange Program for cleaning rejuvenation and protection of river Ganga and its tributaries. In january-2016, The Government of India approved a Hybrid annuity model to implement the STP project under the Namami Gange program on a PPP basis.

Subsequently, the MoWR (Ministry of Water Resources) issued the river Ganga (Rejuvenation, Protection and Management) Authorities Order, 2016 (Ganga 2016 Order) to constitute various authorities to assist the Government of India in achieving its aim of effective abatement of pollution in the river Ganga. The Ganga 2016 order designated NMCG as the nodal agency for implementation of the Ganga 2016 order.

Rapidly increasing population, rising standards of living and exponential growth of industrialization and urbanisation have exposed water resources, in general, and rivers to various forms of degradation. The mighty Ganga is no exception. The deterioration in the water quality impacts the people immediately. Ganga, in some stretches, particularly during lean seasons has become unfit even for bathing. The threat of global climate change, the effect of glacial melt on Ganga flow and the impacts of infrastructural projects in the upper reaches of the river, raise issues that need a comprehensive response.

In the Ganga basin approximately 12,000 million litres per day (MLD) sewage is generated, for which presently there is a treatment capacity of only around 4,000 MLD. Approximately 3000 MLD of sewage is discharged into the mainstream of the river Ganga from the Class I & II towns located along the banks, against which treatment capacity of about 1000 MLD has been created till date.

The Uttar Pradesh Jal Nigam (Jal Nigam) is a statutory body constituted under the Uttar Pradesh Water Supply and Sewerage Act, 1975, and has the power to develop, maintain and regulate water supply and sewerage works in Uttar Pradesh. With a view to implement the Namami Gange programme and the Ganga 2016 Order, the Jal Nigam, in association with the NMCG, has decided to undertake the Project;

- Development and Rehabilitation of Sewage Treatment Plants (STPs) and Associated Infrastructure at Prayagraj under Hybrid Annuity based PPP mode in State of Uttar Pradesh.

While the Jal Nigam will be the principal executing agency and bidding authority for the Project, NMCG will be responsible for making payments to the Concessionaire and Project Engineer.

2. Hybrid Annuity Model (HAM)

Government of India has approved the Namami Gange program as an integrated approach for effective abatement of pollution in river Ganga and Yamuna. As part of this and to ensure that no untreated domestic sewage flow into the river Ganga and Yamuna, various interventions are planned such as Interception & Diversion works and development & operation of Sewage Treatment Plants (STPs).

Considering various development models in practice for the construction, operation and maintenance of Sewage Treatment Plants, Government of India has approved the Hybrid Annuity based Public Private Partnership (PPP) mode as one of the options for the development & operation of STPs. Under this model, private investor/developer will design, build, finance, construct, rehabilitate, renovate, operate and maintain the asset (STPs, IPS, and MPS) to the Project Executing Agency/Jal Nigam at the end of the Concession Period (15 years). 40% of the Capital cost will be paid to the developer during construction of the STP. Balance 60% along with Operation & Maintenance (O&M) cost will be paid over the Concession Period on achievement of key performance indicators as per the contract. Entire cost of development and operation of the STPs will be 100% funded by the Government of India as central sector scheme.

National Mission for Clean Ganga (NMCG) and Uttar Pradesh Jal Nigam (UPJN) appointed M/s. AECOM India Pvt. Ltd., as Project Engineer for this project through tendering process. Letter of Award is issued dated 4th February 2019 and agreement signed between the parties on 5th April 2019.

3. Objectives

Objectives to achieve effective Development of Sewage Treatment Plants (STPs) at Jhunsi, Naini and Phaphamau, rehabilitation of existing STPs & associated Infrastructure and operation and maintenance of all assets for 15 years in Prayagraj, Uttar Pradesh, under Hybrid Annuity based PPP mode are proposed under this project.

The objectives that NMCG and the UP Jal Nigam wish to achieve through the Project is mentioned in **Figure 1;**

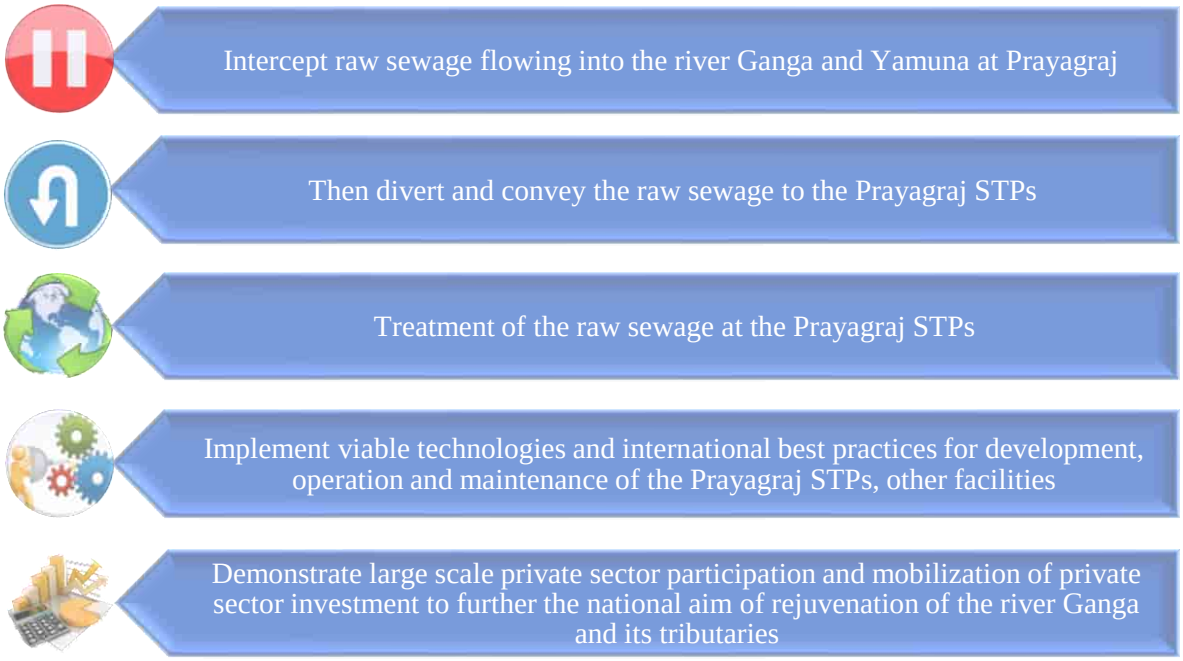


Figure 1 : Objectives of NMCG and UP JAL NIGAM

Government of India has approved the Namami Gange program as an integrated approach for effective abatement of pollution in river Ganga and Yamuna. As part of this and to ensure that no untreated domestic sewage flow into the river Ganga and Yamuna, various interventions are planned such as Interception & Diversion works and development & operation of Sewage Treatment Plants (STPs). Considering various development models in practice for the construction, operation and maintenance of Sewage Treatment Plants, Government of India has approved the Hybrid Annuity based Public Private Partnership (PPP) mode as one of the options for the development & operation of STPs. Under this model, private investor/developer will design, build, finance, construct, rehabilitate, renovate, operate and maintain the asset (STPs and Associate Infrastructure) to the Project Executing Agency/Jal Nigam/ at the end of the Concession Period (say 15 years). 40% of the Capital cost will be paid to the developer during construction of the STP. Balance 60% along with Operation & Maintenance (O&M) cost will be paid over the Concession Period on achievement of key performance indicators as per the contract. Entire cost of development and operation of the STPs will be 100% funded by the Government of India as central sector scheme.

National Mission for Clean Ganga (NMCG) appointed M/s. AECOM India Pvt. Ltd., Gurgaon as Project Engineer for this project through tendering process. Letter of Award is issued dated 4th February 2019 and agreement signed between the parties on 5th April 2019.

4. Project at Glance

The Project components details of each Facility, their grouping in each Package is presented below.

Sr. No.	Particulars	Description
1.0	**Name of Project**	**Development and Rehabilitation of Sewage Treatment Plants and Associated Infrastructure under HAM based PPP mode at Prayagraj, Uttar Pradesh**
	Client	National Mission for Clean Ganga (NMCG) and Uttar Pradesh Jal Nigam (UPJN)
2.0	Executing Agency	Uttar Pradesh Jal Nigam, Ganga Pollution Control Unit, Prayagraj, Uttar Pradesh
3.0	Project Engineer	AECOM India Pvt. Ltd.
4.0	Concessionaire	Prayagraj Water Pvt. Ltd. (SPV of ADANI Enterprise Ltd. JV Organica Technologiak ZRT)
5.0	Contract Value (Capex + Opex)	INR 908.3 Crore
6.0	Effective Date	16th September 2019
7.0	Construction Completion Date	Package-I; 24 months from effective date Package-II; 12 months from effective date Package-III; 6 months from effective date
6.0	Operation & Maintenance	Package-I; 15 years from commercial operation date Package-II; 16 years from commercial operation date Package-III; 16.5 years from commercial operation date

5. Site Location

Entire work has been divided/ distributed in the following 3 packages.

- Package-I: Construction of 03 Nos. new STP's with Associated Infrastructure (Naini-II (42 MLD), Jhunsi (16 MLD) & Phaphamau (14 MLD)). Setup rooftop Solar Power Plant of capacity 930kW (110kW at Phaphamau, 800kW at Naini-II and 20kW at Jhunsi).

- Package II: Rehabilitate and Restore 02 Nos. STP's with Associated Infrastructure (Rajapur (60 MLD) & Naini-I (60+20 MLD).

- Package III: Rehabilitate and Restore 04 Nos. STP's with Associated Infrastructure Numayadahi (50 MLD), Ponghat (10 MLD), Kodra (25 MLD) & Salori (29 MLD).

6. Project Components

The Project components details of each Facility, their grouping in each Package is presented below

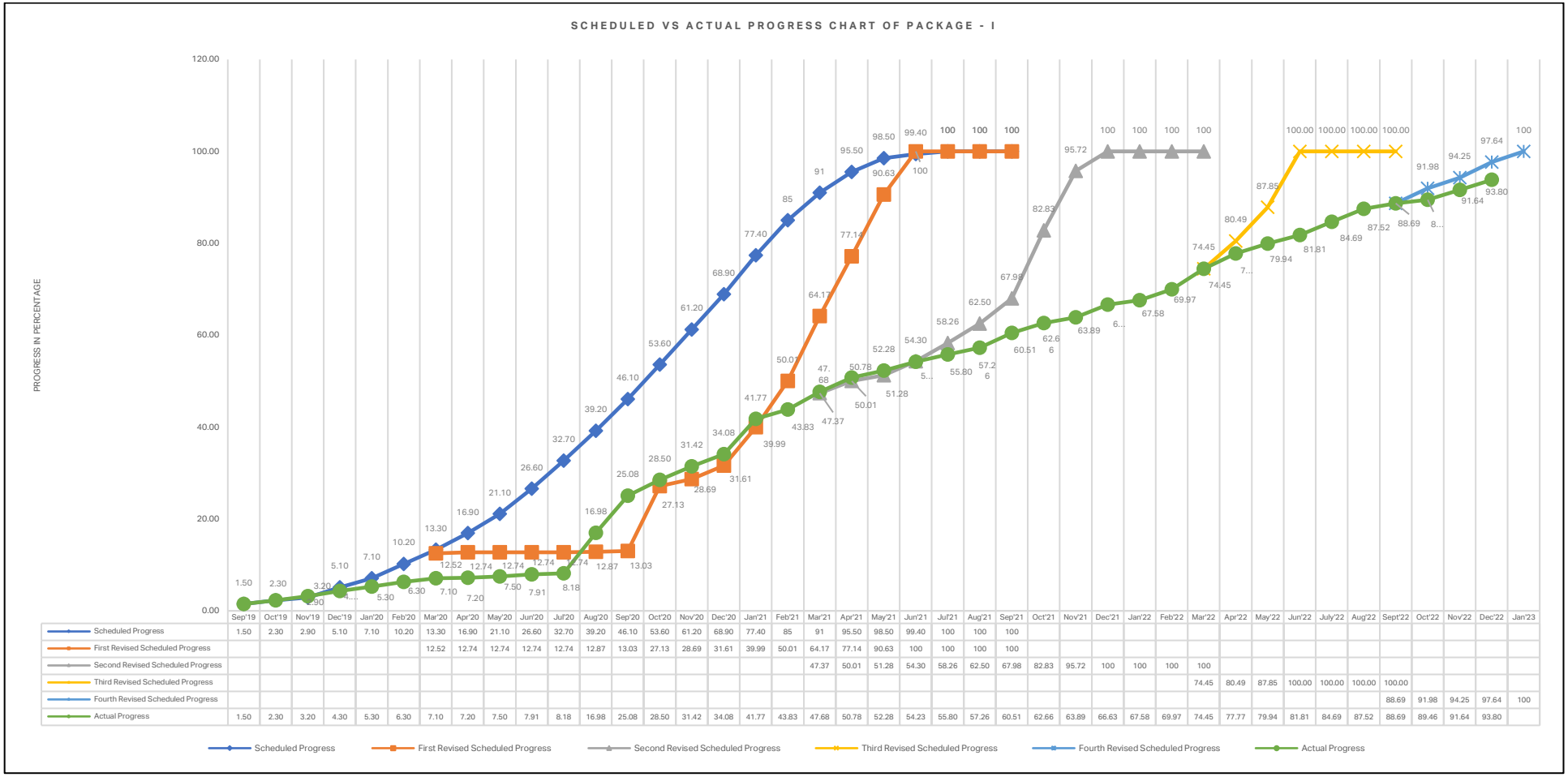
Package Number - I				
Nature of work	**Facilities**			
New construction	Design, develop, finance, construct, operate and maintain, and transfer the Package-I Facilities including three STP facilities with a proposed capacity of 42 MLD at Naini (District G), 14 MLD at Phaphamau (District F), and 16 MLD at Jhunsi along with their Associated Infrastructure, as per the provisions of the Concession Agreement, and in adherence to the applicable Key Performance Indicators			
Sr. No.	**Facility Name**	**Part Of**	**Details**	**Capacity (Average)**
1	Phaphamau Facilities (District -F)	Phaphamau STP Facilities	Phaphamau STP Plant	14 MLD
			Solar Power Plant	110 Kw
		Phaphamau Associated Infrastructure	Basna Nalla SPS	5.53 MLD
			Nalla Tapping and Trunk Sewer	2 Nos. Tapping
			Shantipuram Main Pumping Station	14 MLD
2	Naini Facilities (District - G)	Naini – II STP Facilities	Naini –II STP	42 MLD
			Solar Power Plant	800 Kw
		Naini -II Associated Infrastructure	Mawaiya Drain SPS	35.85 MLD
			Mawaiya Drain Tapping and Trunk Sewer	3 Nos. Tapping
			Mahewaghat Drain SPS	2.15 MLD
			Mahewaghat Drain a nd Trunk Sewer	3 Nos. Of Tapping
			Main Pumping Station	43.5 MLD
3	Jhunsi Facilities	Jhunsi STP Facilities	Jhunsi STP	16 MLD
			Solar Power Plant	20 Kw
		Jhunsi Associated Infrastructure	Shastri Bridge SPS	16 MLD
			Nalla Tapping a nd Trunk Sewer	13 Nos. Tapping
			Main Pumping Station	16 MLD

Package Number - II				
Nature of work	**Facilities**			
Rehabilitation	Design (wherever necessary), rehabilitate, restore, finance, operate and transfer two existing STP Facilities, one of capacity 80 MLD at Naini (District A) and other of capacity 60 MLD at Rajapur (District D) along with their Associated Infrastructure as per the provisions of the Concession Agreement, and in adherence to the applicable Key Performance Indicators.			
Sr. No.	**Facility Name**	**Part Of**	**Details**	**Capacity (Average)**
1	Naini -I Facilities (District A)	Naini–I STP Facilities	Naini –I STP (60 MLD) STP Technology: ASP	60 MLD
			Naini –I STP (20 MLD) STP Technology: ASP	20 MLD
			Naini- I Biogas Plant	600 KW
		Naini–I Associated Infrastructure	Chachar Nalla SPS	35 MLD with 2 Nos. Tapping
			Gaughat MPS	80 MLD
2	Rajapur Facilities (District D)	Rajapur STP Facilities	Rajapur STP STP Technology: UASB	60 MLD
		Rajapur Associated Infrastructure	Mumfordgunj SPS	55 MLD with 1 Nos. Tapping
			Rajapur SPS	25 MLD with 1 Nos. Tapping

Package Number - III				
Nature of work	**Facilities**			
Rehabilitation	Design (wherever necessary), rehabilitate, restore, finance, operate and transfer four existing STP Facilities, one of capacity 50 MLD at Numayadahi (District B), one of capacity 29 MLD at Salori (District C), one of capacity 25 MLD at Kodra (District E) and another of capacity 10 MLD at Ponghat (District E), along with their Associated Infrastructure, as per the provisions of the Concession Agreement, and in adherence to the applicable Key Performance Indicators.			
Sr. No.	**Facility Name**	**Part Of**	**Details**	**Capacity (Average)**
1	Salori Facilities (District - C)	Salori STP Facilities	Salori STP (29 MLD) STP Technology: FAB	29 MLD
		Salori Associated Infrastructure	Salori MPS	29 MLD with 1 Nos. Tapping
2	Numayadahi Facilities (District B)	Numayadahi STP Facilities	Numayadahi STP STP Technology: Bio tower + ASP	50 MLD
		Numayadahi Associated Infrastructure	Ghaggar Nalla SPS	50 MLD with 1 Nos. Tapping
			Sasur Kadheri SPS	15 MLD with 1 Nos. Tapping
			Lukarganj SPS	16.5 MLD with 1 Nos. Tapping
3	Kodra Facilities (District E)	Kodra STP Facilities	Kodra STP STP Technology:Bio tower + ASP	25 MLD
		Kodra Associated Infrastructure	Kodra MPS	25 MLD with 1 Nos. Tapping
4	Ponghat Facilities (District E)	Ponghat STP Facilities	Ponghat STP STP Technology: Bio tower + ASP	10 MLD
		Ponghat Associated Infrastructure	Ponghat MPS	10 MLD with 1 Nos. Tapping

7. Status of project

7.1 Package-I Overall progress status



	Sep'19	Oct'19	Nov'19	Dec'19	Jan'20	Feb'20	Mar'20	Apr'20	May'20	Jun'20	Jul'20	Aug'20	Sep'20	Oct'20	Nov'20	Dec'20	Jan'21	Feb'21	Mar'21	Apr'21	May'21	Jun'21	Jul'21	Aug'21	Sep'21	Oct'21	Nov'21	Dec'21	Jan'22	Feb'22	Mar'22	Apr'22	May'22	Jun'22	July'22	Aug'22	Sept'22	Oct'22	Nov'22	Dec'22	Jan'23
Scheduled Progress	1.50	2.30	2.90	5.10	7.10	10.20	13.30	16.90	21.10	26.60	32.70	39.20	46.10	53.60	61.20	68.90	77.40	85	91	95.50	98.50	99.40	100	100	100																
First Revised Scheduled Progress							12.52	12.74	12.74	12.74	12.74	12.87	13.03	27.13	28.69	31.61	39.99	50.01	64.17	77.14	90.63	100	100	100	100																		
Second Revised Scheduled Progress																			47.37	50.01	51.28	54.30	58.26	62.50	67.98	82.83	95.72	100	100	100	100												
Third Revised Scheduled Progress																															74.45	80.49	87.85	100.00	100.00	100.00	100.00				
Fourth Revised Scheduled Progress																																				88.69	91.98	94.25	97.64	100	
Actual Progress	1.50	2.30	3.20	4.30	5.30	6.30	7.10	7.20	7.50	7.91	8.18	16.98	25.08	28.50	31.42	34.08	41.77	43.83	47.68	50.78	52.28	54.23	55.80	57.26	60.51	62.66	63.89	66.63	67.58	69.97	74.45	77.77	79.94	81.81	84.69	87.52	88.69	89.46	91.64	93.80	

- **Project Engineer has provided observation on Concessionaire December'22-month MPR vide letter number AIPL/NMCG/PRAYAG/1551 on dated 14.01.2023 Therefore, status may be change after observation incorporated by Concessionaire.**

7.1.7 Physical construction Activities in December'22 month

PHYSICAL CONSTRUCTION ACTIVITIES, PROJECT ENGINEER INSPECTION REPORT AND RECOMMENDATION FOR PACKAGE-I IS MENTIONED IN

ANNEXURE - I

7.2 Package-II status

OFFICE OF THE GENERAL MANAGER,
कार्यालय महाप्रबन्धक,
GANGA POLLUTION CONTROL UNIT,
गंगा प्रदूषण नियंत्रण इकाई,
U.P. JAL NIGAM, PRAYAGRAJ
उ० प्र० जल निगम, प्रयागराज
Email- *gmganga.allahabad@gmail.com*

Letter no. 2484 /PWPL (Adani) / 496 Dated: 20/ 09 / 2021

To,

General Manger-Project
M/s. Prayagraj Water Private Limited,
"Adani House", 56, Shrimali Society,
Near Mithakhali Six Road,
Navrangpura, Ahmedabad 380006
Gujarat, India.

Name of Work: Development and Rehabilitation of Sewage Treatment Plants and Associated Infrastructure under Hybrid Annuity Based PPP Mode at Prayagraj, Uttar Pradesh.

Sub:- Concession Agreement no. 31/GM/2018-19:Issuance of Commercial Operations Date of Package-II.

Ref :- 1. Our office Letter No 2474/PWPL(Adani)/486 dated 18.09.2021
2. Our office Letter No. 2483/PWPL(Adani)/495 dated 20.09.2021

Sir,

With reference to the above mentioned subject, it is to be noted that we have issued the 4th Milestone completion certificate vide Letter No. 2474/PWPL(Adani)/486 dated 18.09.2021 & Rehabilitation Completion Certificate vide Letter No. 2483/PWPL(Adani)/495 dated 20.09.2021 after the detailed assessment of the documents provided by the concessionaire.

In view of the same, we are hereby issuing the COD certificate to the concessionaire. Details of the same is mentioned below-

Sl. No.	Description	Commercial Operations Date (COD)
1	Rehabilitation works under Pkg-II	01.06.2021

(M.C. Srivastava)
General Manager

End No & date: As above.
Copy to following for information and necessary action

1- Executive Director(Projects), NMCG, New Delhi.
2- Chief Engineer (Ganga), U.P. Jal Nigam Lucknow.
3- Chief Engineer (Prayagraj Zone), U.P. Jal Nigam, Prayagraj.
4- Mr. Rajat Gupta, Sr. Specialist, NMCG, New Delhi.
5- Project Manager (I/E&M), Ganga Pollution Control Unit, U.P. Jal Nigam, Prayagraj.
6- AECOM India Pvt. Ltd. (Project Engineer), Gurgaon.

20/9/21
General Manager

Commercial Operations Date was announced on 01.06.2021 vide letter no. 2484/PWPL (Adani)/496

KPI REPORT'S OF PACKAGE - II

AND

PROJECT ENGINEER INSPECTION REPORT AND RECOMMENDATION IS MENTIONED IN

ANNEXURE - II

7.3 Package-III status

OFFICE OF THE GENERAL MANAGER,
कार्यालय महाप्रबन्धक,
GANGA POLLUTION CONTROL UNIT,
गंगा प्रदूषण नियंत्रण इकाई,
U.P. JAL NIGAM, PRAYAGRAJ
उ0 प्र0 जल निगम प्रयागराज,
दूरभाष : 0532-2684329, 2684691, फैक्स 0532-2684699

Letter No. 2336/PWPL(Adani)/423 Dated: 02/11/2020

To,

M/s. Prayagraj Water Private Limited,
"Adani House", 56, Shrimali Society,
Near Mithakhali Six Road,
Navrangpura, Ahmedabad-380006
Gujrat, India.

Name of Work: Development and Rehabilitation of Sewage Treatment Plants and Associated Infrastructure under Hybrid Annuity Based PPP Mode at Prayagraj, Uttar Pradesh.

Subject: **Concession Agreement no. 31/GM/2018-19:** Issuance of Commercial Operations Date of Package-III.

Sir,

With reference to the above mentioned subject, it is to be noted that we have issued the 2nd Milestone completion certificate vide Letter No. 2328/PWPL(Adani)/415 dated 31.10.2020 & Rehabilitation Completion Certificate vide Letter No. 2330/PWPL(Adani)/417 dated 31.10.2020 and LD Waiver Letter No. 2331/PWPL(Adani)/418 dated 31.10.2020 after the detailed assessment of the documents provided by the concessionaire.

In view of the same, we are hereby issuing the COD certificate to the concessionaire. Details of the same is mentioned below-

Sl. No.	Description	COD Commencement Date
1	Rehabilitation works under Pkg-III	01.11.2020

Yours faithfully

General Manager

Endt No. & and date as above:

Copy to following:

1- E.D.(Projects), NMCG, New Delhi.
2- MD, UPIN Lucknow.
3- Chief Engineer (Ganga), U.P. Jal Nigam Lucknow.
4- Chief Engineer (Prayagraj Zone), U.P. Jal Nigam Prayagraj.
5- Shri. Madav Kumar, Sr. Economics and Financial Expert, NMCG, New Delhi.
6- Project Manager (I/E&M), GPCU, U.P. Jal Nigam Prayagraj.
7- AECOM India Pvt. Ltd. (Project Engineer), Gurgaon.

Commercial Operations Date was announced on 02.11.2020 vide letter no. 2336/PWPL (Adani)/423

KPI REPORT'S OF PACKAGE - III

AND

PROJECT ENGINEER INSPECTION REPORT AND RECOMMENDATION IS MENTIONED IN

ANNEXURE - III

8. Meetings, Discussions and Site Visits:

Regular progress review meetings are being held at UPJN office & sites. Following meetings were held during the month of December' 2022.

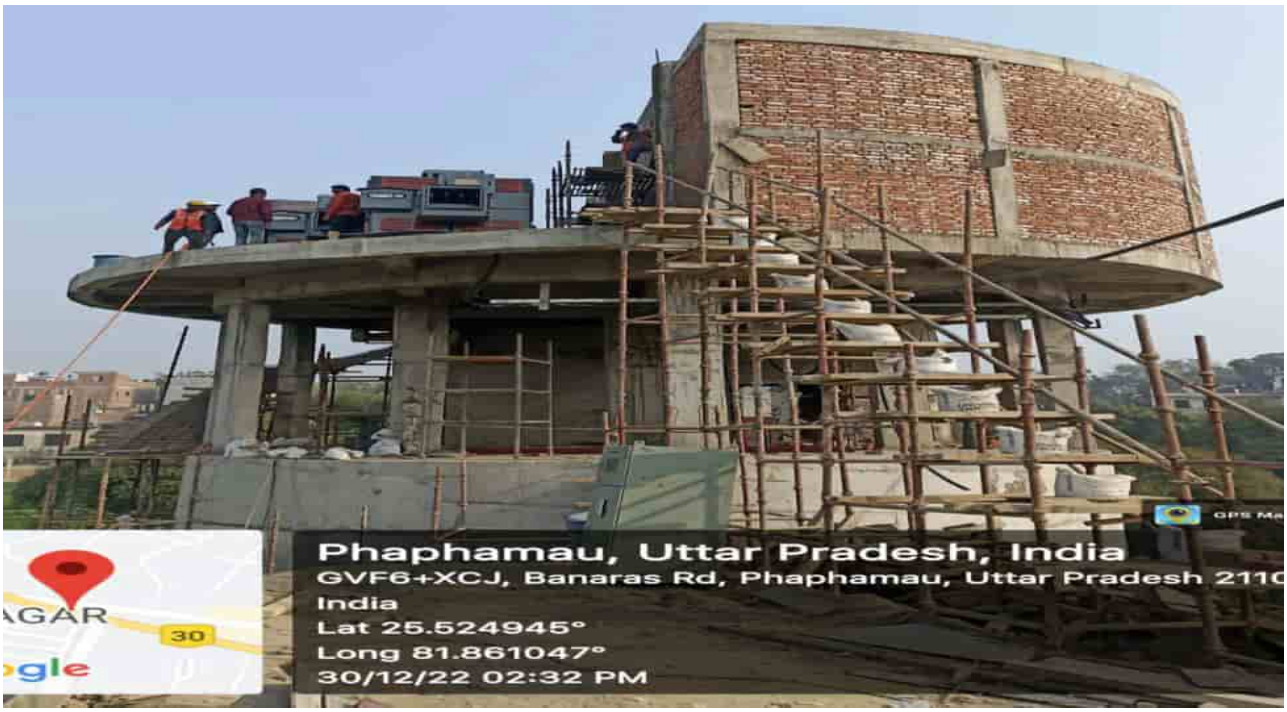
Sr. No.	Site Visit & Meeting with UPJN / NMCG / PWPL	Date	Attendees	Description
1.	Site inspection of Naini-II STP	3-Dec-22	Mr. Gaurav Pandey	Inspection, supervision and monitoring of ongoing E&M activities
2.	Site inspection of Naini-II STP	3-Dec-22	Mr. Amit Ranjan	Inspection, supervision and monitoring of ongoing Civil activities
3.	Site inspection of Ponghat STP	3-Dec-22	Mr. Sudhir Tomar	Inspection, supervision and monitoring of ongoing Operation & Maintenance
4.	Site inspection of Kodra STP	6-Dec-22	Mr. Sudhir Tomar	Inspection, supervision and monitoring of ongoing Operation & Maintenance
5.	Site inspection of Naini-II STP	7-Dec-22	Mr. Amit Ranjan	Inspection, supervision and monitoring of ongoing Civil activities
6.	Site inspection of Ponghat STP	7-Dec-22	Mr. Sudhir Tomar	Inspection, supervision and monitoring of ongoing Operation & Maintenance
7.	Site inspection of Phaphmau STP	8-Dec-22	Mr. Gaurav Pandey	Inspection, supervision and monitoring of ongoing E&M activities
8.	Site inspection of Phaphmau STP	8-Dec-22	Mr. Amit Ranjan	Inspection, supervision and monitoring of ongoing Civil activities
9.	Site inspection of Naini-II STP	12-Dec-22	Mr. Gaurav Pandey	Inspection, supervision and monitoring of ongoing E&M activities
10.	Site inspection of Naini-II STP	10-Dec-22	Mr. Amit Ranjan	Inspection, supervision and monitoring of ongoing Civil activities
11.	Site inspection of Kodra STP	12-Dec-22	Mr. Sudhir Tomar	Inspection, supervision and monitoring of ongoing Operation & Maintenance
12.	Site inspection of Kodra STP	14-Dec-22	Mr. Sudhir Tomar	Inspection, supervision and monitoring of

Sr. No.	Site Visit & Meeting with UPJN / NMCG / PWPL	Date	Attendees	Description
				ongoing Operation & Maintenance
13.	Site inspection of Jhunsi STP	14-Dec-22	Mr. Gaurav Pandey	Inspection, supervision and monitoring of ongoing E&M activities
14.	Site inspection of Jhunsi STP	14-Dec-22	Mr. Amit Ranjan	Inspection, supervision and monitoring of ongoing Civil activities
15.	Site inspection of Ponghat STP	15-Dec-22	Mr. Sudhir Tomar	Inspection, supervision and monitoring of ongoing Operation & Maintenance
16.	Site inspection of Naini-II STP	15-Dec-22	Mr. Gaurav Pandey	Inspection, supervision and monitoring of ongoing E&M activities
17.	Site inspection of Naini-II STP	15-Dec-22	Mr. Amit Ranjan	Inspection, supervision and monitoring of ongoing Civil activities
18.	Site inspection of Phaphmau STP	20-Dec-22	Mr. Gaurav Pandey	Inspection, supervision and monitoring of ongoing E&M activities
19.	Site inspection of Phaphmau STP	20-Dec-22	Mr. Amit Ranjan	Inspection, supervision and monitoring of ongoing Civil activities
20.	Site inspection of Naini-II STP	22-Dec-22	Mr. Gaurav Pandey	Inspection, supervision and monitoring of ongoing E&M activities
21.	Site inspection of Naini-II STP	22-Dec-22	Mr. Amit Ranjan	Inspection, supervision and monitoring of ongoing Civil activities

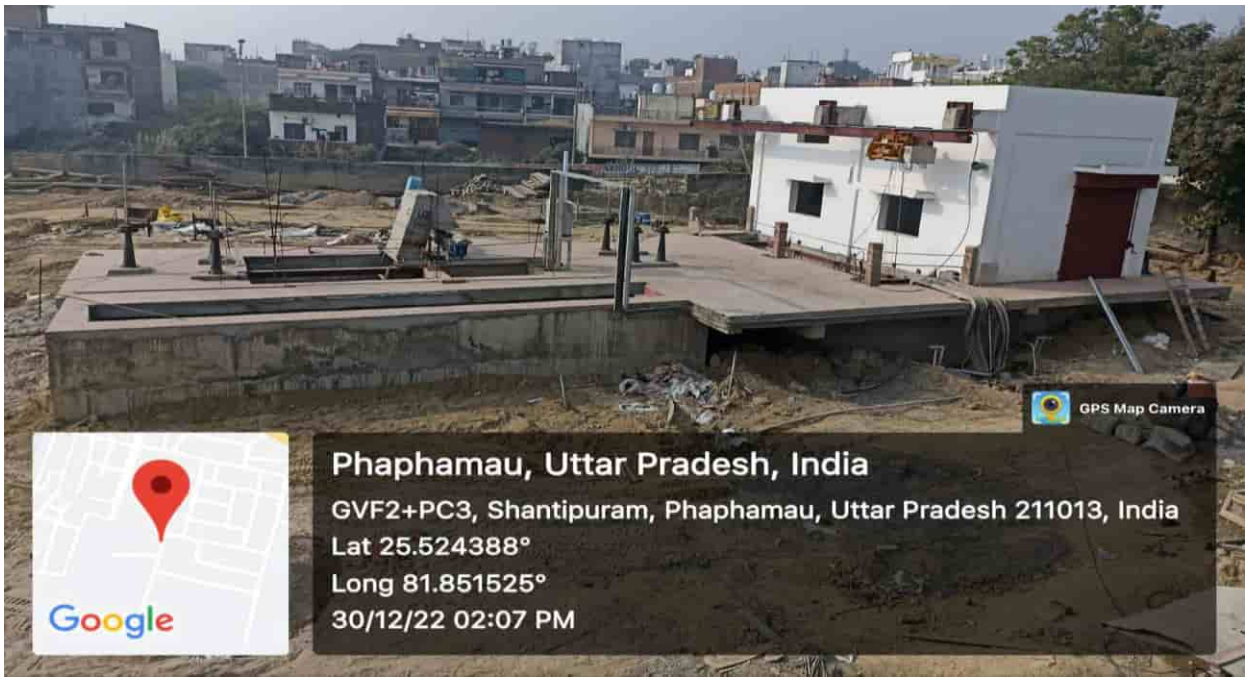
10. Photos of Meetings / Site Visits and Activities

PACKAGE - I

PHAPHAMAU FACILITY



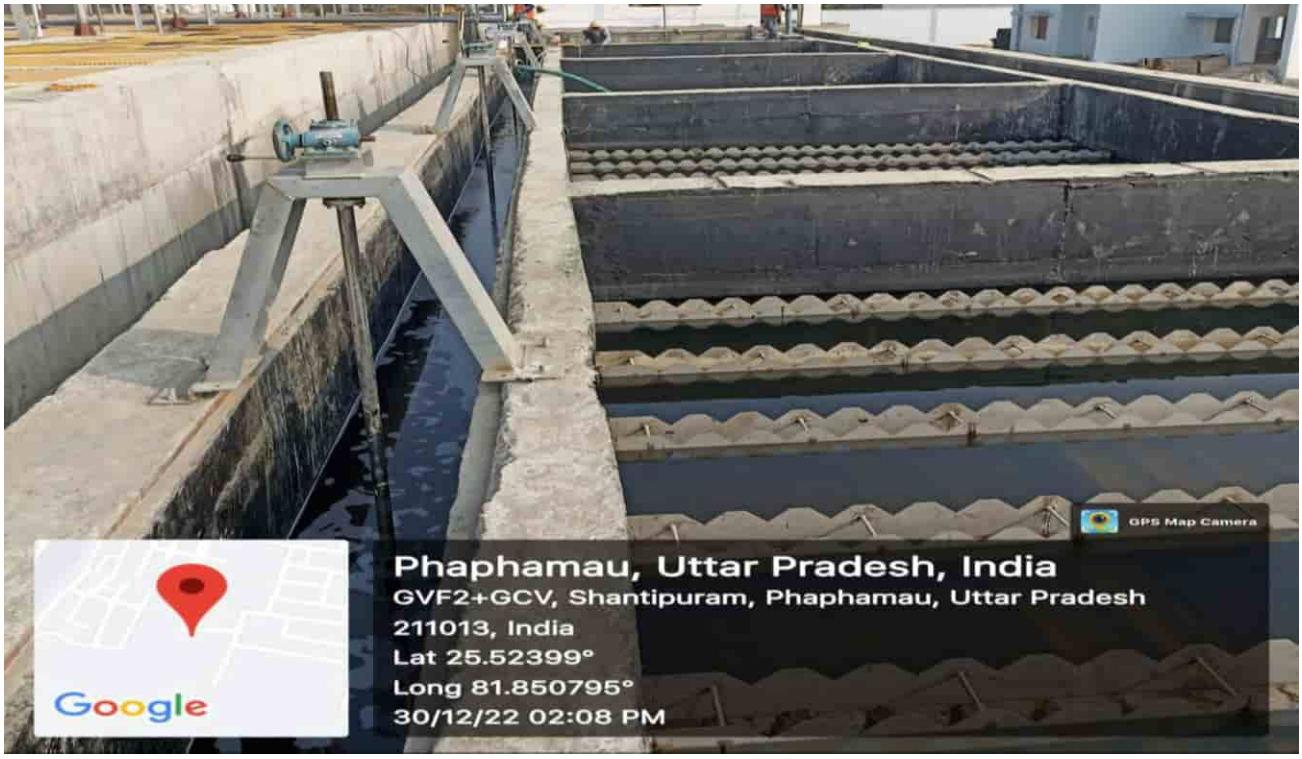
Basna Nalla SPS: Construction work as well as E&M work in progress



MPS – Finishing(E&M) work under progress

PHAPHAMAU FACILITY

FCR (STP): Electrical work in under progress



Tube Settler (STP) – Hydro testing under progress

PHAPHAMAU FACILITY

Process Building (STP) – Panel erection work completed

Process Building (STP) – Grit removal system erection work in progress as well as civil finishing work in also progress

NAINI-II FACILITY

Naini-II (STP) Process Building– Painting and putty work is under progress

Naini-II (Mawaiya SPS)– Finishing work under progress

NAINI-II FACILITY

Naini-II (MPS) – Finishing as well as electric lighting work in under progress

Naini-II (STP) – Road and Kerb stone work in progress

JHUNSI FACILITY

Shastri Bridge SPS – Construction under progress

Jhunsi MPS – Finishing as well as E&M work under progress

JHUNSI FACILITY

Process Building – LCP erection work is under progress

Process Building (Chlorination room)– Chlorination work is under progress

11. Outward Register

List of key design & documents were reviewed by Project Engineer during this period as below.

Sr. No.	PE Transmittal/ Ref No	Description	Outward Date	To (Organization)	Copies To
1.	AIPL/NMCG/PRAYAG/1530	Inspection Reports of Package-III facilities	2-Dec-22	S.E.-2 Circle - UPJN	NMCG, E&M Circle-2, E.E-2 Circle-UPJN, PM-I - UPJN, PWPL, AECOM
2.	AIPL/NMCG/PRAYAG/1531	Submission of structural drawing of Basana Nala SPS- Pkg-1	5-Dec-22	S.E.-2 Circle - UPJN	NMCG, E&M Circle-2, E.E-2 Circle-UPJN, PM-I - UPJN, PWPL, AECOM
3.	AIPL/NMCG/PRAYAG/1532	Submission of Shastri bridge SPS civil design & Drawing- Pkg-I	5-Dec-22	S.E.-2 Circle - UPJN	NMCG, E&M Circle-2, E.E-2 Circle-UPJN, PM-I - UPJN, PWPL, AECOM
4.	AIPL/NMCG/PRAYAG/1533	Regarding pre-requisites for announcement of Commercial Operations Date of Package – I.	6-Dec-22	S.E.-2 Circle - UPJN	NMCG, E&M Circle-2, E.E-2 Circle-UPJN, PM-I - UPJN, PWPL, AECOM
5.	AIPL/NMCG/PRAYAG/1534	Submission of O & M Monthly Progress report for the month of October, 2022 of Package – III	6-Dec-22	S.E.-2 Circle - UPJN	NMCG, E&M Circle-2, E.E-2 Circle-UPJN, PM-I - UPJN, PWPL, AECOM
6.	AIPL/NMCG/PRAYAG/1535	Slow Progress_ Phaphamau facilities under Package-I.	15-Dec-22	S.E.-2 Circle - UPJN	NMCG, E&M Circle-2, E.E-2 Circle-UPJN, PM-I - UPJN, PWPL, AECOM
7.	AIPL/NMCG/PRAYAG/1536	Regarding the submission of MPR of Nov'22.	15-Dec-22	Prayagraj water private limited	NMCG, E&M Circle-2, E.E-2 Circle-UPJN, PM-I - UPJN, PWPL, AECOM

Sr. No.	PE Transmittal/ Ref No	Description	Outward Date	To (Organization)	Copies To
8.	AIPL/NMCG/PRAYAG/1537	Submission of O & M Monthly Progress report for the month of November, 2022 of Package – II	15-Dec-22	S.E.-2 Circle - UPJN	NMCG, E&M Circle-2, E.E-2 Circle-UPJN, PM-I - UPJN, PWPL, AECOM
9.	AIPL/NMCG/PRAYAG/1538	Submission of O & M Tax Invoice of 8th quarter (August - October 2022) of Package - III	17-Dec-22	S.E.-2 Circle - UPJN	NMCG, E&M Circle-2, E.E-2 Circle-UPJN, PM-I - UPJN, PWPL, AECOM
10	AIPL/NMCG/PRAYAG/1539	Inspection Reports of Package-II facilities	25-Dec-22	S.E.-2 Circle - UPJN	NMCG, E&M Circle-2, E.E-2 Circle-UPJN, PM-I - UPJN, PWPL, AECOM
11	AIPL/NMCG/PRAYAG/1540	Inspection Reports of Package-III facilities	25-Dec-22	S.E.-2 Circle - UPJN	NMCG, E&M Circle-2, E.E-2 Circle-UPJN, PM-I - UPJN, PWPL, AECOM
12	AIPL/NMCG/PRAYAG/1541	Submission of O & M Monthly Progress report for the month of September, 2022 of Package – II	25-Dec-22	S.E.-2 Circle - UPJN	NMCG, E&M Circle-2, E.E-2 Circle-UPJN, PM-I - UPJN, PWPL, AECOM
13	AIPL/NMCG/PRAYAG/1542	Submission of revised O & M Monthly Progress report for the month of October, 2022 of Package – II	25-Dec-22	S.E.-2 Circle - UPJN	NMCG, E&M Circle-2, E.E-2 Circle-UPJN, PM-I - UPJN, PWPL, AECOM
14	AIPL/NMCG/PRAYAG/1543	Inspection Reports of Jhunsi facility, Naini-II facility and Phaphamau facility under Package-I	25-Dec-22	S.E.-2 Circle - UPJN	NMCG, E&M Circle-2, E.E-2 Circle-UPJN, PM-I - UPJN, PWPL, AECOM

Sr. No.	PE Transmittal/ Ref No	Description	Outward Date	To (Organization)	Copies To
15	AIPL/NMCG/PRAYAG/1544	Submission of O & M Monthly Progress report for the month of November, 2022 of Package – III	31-Dec-22	S.E.-2 Circle - UPJN	NMCG, E&M Circle-2, E.E-2 Circle-UPJN, PM-I - UPJN, PWPL, AECOM

12. Inward Register

List of key design & documents were received by Project Engineer during this period as below.

Sr. No.	PWPL / UPJN Transmittal reference number	Description	Date	From
1.	1452/PWPL/(PRAYAGRAJ)/369	Regarding submission of technical & financial proposal for tapping of five drains in Naini-II STP (Sewerage District-G) and one drain under Phaphamau STP (Sewerage District-F) under Package-I.	1-Dec-22	PM-I - UPJN
2.	1453/PWPL/(PRAYAGRAJ)/370	Regarding Naini-II STP facility under Package-I	1-Dec-22	PM-I - UPJN
3.	PWPL/UPJN/PRAYAGRAJ/SITE /075/22	Submission of Rainwater Harvesting Structure- Pkg-1	2-Dec-22	Prayagraj water private limited
4.	1460/PWPL/(PRAYAGRAJ)/372	Regarding O&M Payment of Qtr- 5 for package-II facilities, withheld amount to be released. release amount	3-Dec-22	PM-I - UPJN
5.	1462/PWPL/(PRAYAGRAJ)/373	Regarding Slow progress of Basna SPS	3-Dec-22	PM-I - UPJN
6.	1463/PWPL/(PRAYAGRAJ)/374	Regarding Slow progress of Shastri Bridge SPS	3-Dec-22	PM-I - UPJN
7.	PWPL/UPJN/PRAYAGRAJ/SITE /866	Regarding the submission of MPR of Nov'22.	7-Dec-22	Prayagraj water private limited
8.	PWPL/UPJN/PRAYAGRAJ/SITE /865	Regarding submission of Technical & Financial proposal for tapping of 05 Drains in Naini-II STP Facility under Package-I.	8-Dec-22	Prayagraj water private limited

Sr. No.	PWPL / UPJN Transmittal reference number	Description	Date	From
9.	PWPL/UPJN/PRAYAGRAJ/SITE /867	Reg. variation to scope of work for Phaphamau Facility due to additional Interception of Incoming sewer network of Phaphamau Phase-I & II under Package-I as per Clause 21 of Concession Agreement	9-Dec-22	Prayagraj water private limited
10.	1471/PWPL/(PRAYAGRAJ)/375	Payment certification for 0&M work of Package-II of Quarter-VII	9-Dec-22	PM-I - UPJN
11.	PWPL/UPJN/PRAYAGRAJ/O&M/544	Submission of Proposal from Pumping sewage from sasukhaderi Pumping station to Numayadahi STP.	16-Dec-22	Prayagraj water private limited
12.	1491/PWPL/(PRAYAGRAJ)/377	Regarding Slow work progress of Phaphamau STP Facility under Package-I	16-Dec-22	PM-I - UPJN
13.	PWPL/UPJN/PRAYAGRAJ/SITE /868	Development and rehabilitation of sewerage treatment plants associated infrastructure at Prayagraj, Uttar Pradesh on PPP HAM Basis – Reply letter regarding slow progress of Shastri Bridge	16-Dec-22	Prayagraj water private limited
14.	1493/PWPL/(PRAYAGRAJ)/378	Regarding Naini-II STP Facility under Package-I	16-Dec-22	PM-I - UPJN
15.	1496/PWPL/(PRAYAGRAJ)/379	Regarding Naini- II STP facility under Package-I	19-Dec-22	PM-I - UPJN
16.	1510/PWPL/(PRAYAGRAJ)/382	Regarding Minutes of Meeting held at the chamber of PM, GPCU, UPJN, Prayagraj.	21-Dec-22	PM-I - UPJN
17.	1512/PWPL/(PRAYAGRAJ)/383	Regarding O& M Payment of 8th Quarter (August 2022 to October 2022) of Package - III	21-Dec-22	PM-I - UPJN

Sr. No.	PWPL / UPJN Transmittal reference number	Description	Date	From
18.	PWPL/UPJN/PRAYAGRAJ/O&M/551	Regarding Incoming volume of sewage is more than design capacity resulted increase in chemical consumption and repair & maintenance cost – Submission of Proposal	22-Dec-22	Prayagraj water private limited
19.	PWPL/UPJN/PRAYAGRAJ/O&M/553	Upgradation of Package -II & III STP facility to achieve revised NGT norms as specified NGT OA No. 1069/2018, date of hearing 30.04.2019	23-Dec-22	Prayagraj water private limited
20.	PWPL/UPJN/PMCG/076/2022	Regarding change of applicable GST percentage for Package-I, II & III along with O&M.	28-Dec-22	Prayagraj water private limited
21.	PWPL/UPJN/PRAYAGRAJ/SITE /871	Regarding Trail operations of Naini-II & Phaphamau Facility under Package-I. Reference	29-Dec-22	Prayagraj water private limited
22.	1516/PWPL/(PRAYAGRAJ)/386	Regarding Trial operations of Naini-II and Phaphamau STP under Package-I	29-Dec-22	PM-I - UPJN

13. EHS targets, Achievement & compliance report for the month of December' 2022

Sr. No.	Goals	Target of the month	Achievement of this Month	Previous Month achievement	Remark
1	Zero total recordable injuries	100%	100%	100%	
2	All personnel Health and Safety inducted	100%	100%	100%	
3	100% incident reporting and investigation	100%	100%	100%	
4	100% adherence of usage of appropriate PPE's at work	100%	100%	100%	

14. Status of statutory permits:

Sr. No.	Applicable Permit	Authority	Quantity	Remarks
	Phaphamau Facility (Package - I)			
1	Power connection (During commissioning Period)	Electricity Board	2 No.	Approved by NMCG vide letter no-Pr-12012/6/ 2018 /PPP / NMCG Dated 24.06.2022 • Power connection at STP is completed. • Pole and wire erection work under Progress at Basna Nalla SPS.
2	Consent to Establish	State Pollution Control Board (SPCB)	1 No.	Received
3	Tree cutting	Forest Department	88 No.	Received NOC From Forest Dept for Cutting 88 Nos. of trees.
4	Road cutting & crossing	Public Works Department	NA	Not Required
5	Railway Crossing	Commissioner Railway Safety	NA	Not Required
6	National Highway cutting & crossing	National Highway Authority of India	1 No.	Permission Received from NH PWD vide letter no. 70/NH-96/330 dated 12th Jan 2022 and work has been completed.

Sr. No.	Applicable Permit	Authority	Quantity	Remarks
7	Revenue Road cutting & crossing	Panchayat/Local Authority	NA	Not Required
8	Obtaining No Objection Certificate for various sewerage facilities under the ULB for handing them over to JN	ULB/District Administration	NA	Not Required
9	Construction of Weirs/pipeline crossings	Irrigation department/ULB	2 No.	Received
10	Approach Road to new Facilities	Forest Department/ Panchayat/Local Authority/Irrigation Department	NA	Not Required
11	Consent to operate for Existing Facilities	ULB and SPCB	NA	NA
	Naini-II Facility (Package - I)			
1	Power connection (During commissioning Period)	Electricity Board	3 No.	• Approved by NMCG vide letter no-Pr-12012/6/ 2018 /PPP / NMCG Dated 24.06.2022 • Power connection at STP and Mawaiya SPS is completed. • Pole and wire erection work under Progress at Mahewaghat SPS.
2	Consent to Establish	State Pollution Control Board (SPCB)	1 No.	Received
3	Tree cutting	Forest Department	-	Will be applied as and when required, presently not required.
4	Road cutting & crossing	Public Works Department	1 No.	Applied on dated 19.10.2020 for STP main line. NOC received from Mahewaghat SPS to Naini-II MPS on 08th Dec'2020 from Provincial Division.

Sr. No.	Applicable Permit	Authority	Quantity	Remarks
				NOC received from PDA on 03.02.2021.
5	Railway Crossing	Commissioner Railway Safety	1 No.	Permission received from Railway vide Letter No. 86-W/KM/821/L-PRYJ-NYN Dated:16.07.2021
6	National Highway cutting & crossing	National Highway Authority of India	NA	NA
7	Revenue Road cutting & crossing	Panchayat/Local Authority	1 No.	Total 01 nos. NOC received from PDA on 03.02.2021
8	Obtaining No Objection Certificate for various sewerage facilities under the ULB for handing them over to JN	ULB/District Administration	NA	Not Required
9	Construction of Weirs/pipeline crossings	Irrigation department/ULB	6 No.	Received
10	Approach Road to new Facilities	Forest Department/ Panchayat/Local Authority/Irrigation Department	NA	Not Required
11	Consent to operate for Existing Facilities	ULB and SPCB	1 No.	NA
	Jhunsi Facility (Package - I)			
1	Power connection (During commissioning Period)	Electricity Board	2 No.	Approved by NMCG vide letter no-Pr-12012/6/ 2018 /PPP / NMCG Dated 24.06.2022
2	Consent to Establish	State Pollution Control Board (SPCB)	1 No.	Received
3	Tree cutting	Forest Department	NA	Not Required
4	Road cutting & crossing	Public Works Department	NA	NA

Sr. No.	Applicable Permit	Authority	Quantity	Remarks
5	Railway Crossing	Commissioner Railway Safety	1 No.	Permission received from railway vide letter No W/98-13/2020/71/W- DATED 29/03/2022
w	National Highway cutting & crossing	National Highway	NA	NA
7	Revenue Road cutting & crossing	Panchayat/Local Authority	1 No.	Permission received
8	Obtaining No Objection Certificate for various sewerage facilities under the ULB for handing them over to UPJN	ULB/District Administration	NA	Not Required
9	Construction of Weirs/pipeline crossings	Irrigation department/ULB	13 No	Received
10	Approach Road to new Facilities	Forest Department/ Panchayat/Local Authority/Irrigation Depar4ent	NA	Not Required
11	consent to operate for Existing Facilities	ULB and SPCB	NA	NA

15. Plant & Machinery Status

Sr. No.	Machinery	Phaphamau 14 MLD	Naini II 42 MLD	Jhunsi 16 MLD	Total
1.	JCB	1	1	2	4
2.	Dumper	-	-	-	-
3.	Proclaim	-	2	2	4
4.	Ajax	1	2	2	5
5.	Hydra	-	1	1	2
6.	Roller	-	1	-	1
7.	Submersible Pump 2HP	2	1	7	10
8.	Diesel Pump 5 HP	-	-	-	-
9.	5KV generator	4	3	3	10
10.	Total Station	-	1	-	1
11.	Water tanker	1	1	1	3
12.	Auto level	1	2	2	5
13.	Mixing machine	1	4	1	6
14.	Vibrator	3	10	6	16
15.	Tractor	-	3	1	4
16.	Concrete Chipping Machine	2	-	2	4
17.	Welding Machine	5	9	2	16
18.	Grinding Machine	2	10	2	14
19.	Gas cutting set	3	4	1	8
20.	Chain saw machine	-	-	1	1
21.	Chain Block	-	3	1	4
22.	RM 800	-	-	-	-
23.	Plywood cutting machine	4	5	2	11
24.	Steel cutting machine	8	10	2	10

16. ANNEXURE'S

Annexure- I: **PROJECT ENGINEER INSPECTION REPORT AND RECOMMENDATION FOR PACKAGE-I**

Annexure- II: **KPI REPORTS OF PACKAGE -II AND PROJECT ENGINEER INSPECTION REPORT AND RECOMMENDATION**

Annexure- III: **KPI REPORTS OF PACKAGE -III AND PROJECT ENGINEER INSPECTION REPORT AND RECOMMENDATION**

Annexure- IV: **PROJECT ENGINEER ACTIVITY AS PER TOR**

Annexure- V: **QUALITY CONTROL / QUALITY ASSURANCE**

ANNEXURE-I

PROJECT ENGINEER INSPECTION REPORT AND RECOMMENDATION FOR PACKAGE-I

Table of Contents

1. JHUNSI STP AND ASSOCIATE INFRASTRUCTURE

1.1 Inspection Report

Date of site visit	7th,15th and 21st Dec 2022
Site Visitor	1. Mr. Santosh Kumar, PM, GPCU, UPJN(R), Prayagraj 2. Mr. Tauseef Ahmed, PE, GPCU, UPJN(R), Prayagraj 3. Mr. Satwant Singh, APE, GPCU, UPJN(R), Prayagraj 4. Mr. Amit Ranjan, AECOM 5. Mr Gaurav Pandey, AECOM 6. Mr. Sharad, PWPL.
Name of Facility	16 MLD Jhunsi STP & Associated Infrastructure, Prayagraj.

A. FCR Tank-

- RCC work at FCR tank along with Hydrotesting is completed.
- Erection of all the structural steel member must adhere **clause 1.21.2 a & B of schedule 10 Part-B of Concession Agreement.**

1.21.2 Painting on structural steel work

Primer and finish paints shall be compatible with each other to avoid cracking and wrinkling and shall be from the same manufacturer for each painting system.

a. Primer

Two coats of primer shall be applied on the steel structures. First coat of lead-free, oil-based, high-quality, corrosive resistant steel primers such as Red Oxide/ Zinc Chromate as specified shall be applied before any member of steel structure are placed in position or taken out of workshop. Second coat of primer shall be applied after the erection is completed and before painting commences.

b. Paint

Two coat of epoxy paint shall be applied on all structural steel members. Paint delivered to the fabrication shop/site shall be ready mixed, in original sealed containers, as packed by the manufacturer. The application of paint shall be as per manufacturer's instructions. The coating thickness shall consist of the following minimum dry film thickness, or as recommended by the manufacturer, if thicker:

First coating : 100 µm

Second coating : 100 µm

- Concessionaire is required to finalize the framing arrangement of solar system along with base plate & railing at the top of FCR at earliest.

1.21.3 Galvanizing of structural steel

Galvanising of structural member shall conform to IS 4759, 209, 2629, 2633 and 6745.

- Painting work of FCR tank is not started yet. It is suggested to start the painting work at the earliest. Painting should be done as per clause 1.4.1, schedule 10 PART-B of concession agreement & as per approved Drawing of FCR tank.
- "C" profile installation completed for FCR module arrangement.
- "I" nut installation completed for diffuser grid frame.
- Diffuser grid frame installation completed in FCR tank.
- Air diffuser piping work is completed.
- FCR module basket installation work is Completed.
- Installation of FCR module work and plant rack is completed.

B. Staff Quarter –

- RCC work of Staff Quarter is completed.
- Brick work, Plumbing & Lighting work is completed.
- At Staff quarter Plaster work of inside & outside wall is completed & putty work is under progress.
- Painting & Flooring of staff quarter should be done as per approved Drawing.

SCHEDULE OF FINISHING	
DESCRIPTION	
EXTERNAL PLASTER	20 MM THICK SMOOTH FINISHED PLASTER IN TWO LAYER IN C.M 1:4
INTERNAL PLASTER	12 MM THICK IN CM 1:4 FOR SINGLE BRICK THICK WALL 12 MM THICK IN CM 1:3 FOR HALF BRICK THICK WALL
CEILING PLASTER	6 MM THICK CEILING PLASTER IN CM 1:3
SCHEDULE OF FLOORING	
ROOM	DESCRIPTION
LIVING ROOM, BED ROOMS	600 X 600 VITRIFIED TILES FLOORING 100mm HEIGHT VITRIFIED TILES SKIRTING
KITCHEN PLATFORM	CERAMIC TILES (300x300) ANTI SKID TILES JET BLACK GRANITE SLAB
TOILET AND WASH AREA	300x300 ANTI SKID CERAMIC TILES FLOORING AND CERAMIC TILE DADO ON WALL UPTO DOOR HEIGHT
STAIR STEPS	KOTA STONE FLOORING (30MM)
BALCONY	CERAMIC FLOORING
SCHEDULE OF PAINTING	
ROOM	DESCRIPTION
INSIDE	OIL BOUND WASHABLE DISTEMPER
OUTSIDE	ACRYLIC EMULSION PAINT

C. Process Building-

- RCC work is completed. Brick work & plaster work is under progress. Putty work under progress.
- Installation of EOT at Blower room and SDU is completed.
- 400 mm dia DI K9 pipelaying under progress.
- Cable trench work under progress
- Installation of HT, LT panel, DG and transformer is completed.
- Fixing of Grit mechanism is under progress.
- Installation of Mechanical and manual screen is completed.
- Installation of Mechanical and manual date is completed.
- FCR blower completed
- Installation of Grit blower is completed and piping work is balance.

D. Tube Settler-

- Civil work of Tube settler is competed.
- Painting work is not started yet. It is suggested to start the painting work at the earliest. Painting should be done as per clause 1.4.1, schedule 10 PART-B of concession agreement & as per approved Drawing
- Tube settler media, launder, poppet valve installation and installation of EOT at Tonner room is completed.
- Chlorinator erection work is completed.
- Screw pump installation is not started yet.

E. Security Cabin-

- Concessionaire is required to finish all the Remaining work of security cabin without any further delay.

F. Main Pumping Station-

- RCC work along with hydrotesting is completed.
- Painting work is not started yet. It is suggested to start the painting work at the earliest. Painting should be done as per clause 1.4.1, schedule 10 PART-B of concession agreement & as per approved Drawing.
- Panel Installation work is under progress.
- Concessionaire is suggested to expedite the E & M work with additional manpower & Resources and complete the work within stipulated time.

G. Shastri bridge SPS-

- 10th lift of wall is completed and desilting work in wet well is under progress. Concessionaire is suggested to complete the desilting work as earliest and plan for next lift of wall.

H. Rising Main from Shastri bridge SPS to Jhunsi MPS:

- Total 3691-meter (DI 700 mm Día) laying is completed out of 3875 m.
- During the visit, the bedding is not found as per specification. It is instructed to concessionaire strictly follow the specification.
- It is suggested to provide hard Barricades (Pipe & Pipe) around excavated trench & GI sheet at the end of daily work around open Trench to avoid any inconvenience to Local Public.

I. Trunk Main & I & D works

- Total 389 m laying of Trunk Main (700 mm Dia) from Ulta Quila-I to Haveliya Nalla is completed.
- Total 535 m laying of Trunk Main (500 mm Dia) from Lakkar Nalla to Haveliya Nalla is completed.
- Total 692 m laying of Trunk Main (300mm Dia) from Gangoli Shivalay to Bhola Mandir is completed.
- Total 155 M laying of dia. 200 mm completed.
- Total 1055 m laying of dia. 800 mm completed.
- Total 52 m laying of outfall completed.
- During the visit, the bedding is not found as per specification. It is instructed to concessionaire strictly follow the specification.17 Nos of manhole is completed out of 49 and 8 Nos of manhole is under progress. It is also observed that pouring of concrete was done without vibrator. Work of construction of manhole is very slow.
- Execution work of I & D structures are under progress at 9 nalla locations

Sl. No.	I&D Name	Work Status
1	Augharwa Nalla	RCC work is completed and Fixing of gates and Screen is not started
2	Bhola Mandir Nalla	RCC work is completed and Fixing of gates and Screen is not started
3	Gangoli Shivalla Nalla-I	RCC work is completed and Fixing of gates and Screen is not started
4	Gangoli Shivalla Nalla-II	RCC work is completed and Fixing of gates and Screen is not started
5	Savitri Nagar Nalla	RCC work is completed and Fixing of gates and Screen is not started
6	Dham Nalla	RCC work is completed and Fixing of gates and Screen is not started

7	Shastri Bridge Nalla	RCC work is completed and Fixing of gates and Screen is not started
8	Triveni Marg Nalla-I	RCC work is completed and Fixing of gates and Screen is not started
9	Triveni Marg Nalla-II	RCC work is completed and Fixing of gates and Screen is not started
10	Ulta Quila Nalla -I	RCC work is completed and Fixing of gates and Screen is not started
11	Ulta Quila Nalla-II	RCC work is completed and Fixing of gates and Screen is not started
12	Havelia Nalla	RCC work is completed and Fixing of gates and Screen is not started
13	Lakkar Nala	RCC work is completed and Fixing of gates and Screen is not started

J. Applicable Permits:

- Concessionaire is suggested to update The Status of Applicable Permit to UPJN/Project Engineer on Weekly Basis. Also, it is suggested to check, identify & apply for all the applicable permits required for whole Jhunsi Facility as no hindrance will be accepted in future due to new applicable permit issue.

K. Other miscellaneous activities-

- Concessionaire is suggested to take all the precaution during execution & follow all the standard safety Norms to avoid any causality during work.
- Concessionaire is required to provide proper Hard barricading (Pipe & pipe with G.I sheet) around Deep excavated area to avoid any casualty at site during construction.
- It is suggested to avoid direct placing of steel on ground & also cement slurry should be sprayed on steel to protect from corrosion due to moisture.
- Concessionaire is required to start the construction of Retaining wall & boundary wall at earliest.

1.2 Recommendation's-

- Concessionaire is suggested to execute the construction work with proper planning & prior information (or RFI) should be given for all the activities.
- Concessionaire is suggested to execute the construction work with proper planning & prior information (or RFI) should be given for all the activities.
- Proper Finishing is required at Joint of RCC Wall /Column by grouting method.
- It is suggested to maintain all the Safety & Quality measures at site & carry out works with good engineering practice.
- Concessionaire should also strictly follow schedule 10 PART-B of concession agreement & relevant IS Standard for all civil execution works.
- Concessionaire is suggested to improve the workmanship quality to achieve the desired outcome.
- Approved Designs/Drawings/document should be kept at site during construction work.
- Concessionaire shall submit the micro level plan day wise for current milestone for better monitoring and project schedule completion controls.
- Concessionaire is suggested to deploy enough manpower during the day and night shifts to expedite the Electrical and mechanical work to avoid further delay where civil construction work is completed.
- It is suggested to Concessionaire fix the Top Level of Manhole at HFL.
- Concessionaire is suggested to start the HT cable laying and Interconnecting pipeline within Sewage treatment plant.
- Concessionaire is suggested to maintain all the necessary safety at the time of electrical and mechanical work as per schedule 8 of Concession agreement.
- It is suggested to start the painting work at the earliest. Painting should be done as per clause 1.4.1, schedule 10 PART-B of concession agreement & as per approved Drawing.

2. NAINI-II STP AND ASSOCIATE INFRASTRUCTURE

2.1 Inspection Report

Name of Facility	42 MLD Naini – II STP & Associated Infrastructure, Prayagraj.
Date of visit	8th, 12th, and 20th Dec 2022
Site Visitors	1. Mr. Santosh Kumar, PM, GPCU, UPJN(R), Prayagraj 2. Mr. Tauseef Ahmed, PE, GPCU, UPJN(R), Prayagraj 3. Mr. Sudheer Kumar, APE, GPCU, UPJN(R), Prayagraj 4. Mr. Amit Ranjan, AECOM 5. Mr Gaurav Pandey, AECOM 6. Mr Sudhir Singh Tomar, AECOM 7. Mr. Pushpender, PWPL.

A. FCR unit:

- Civil work Along with hydrotesting is completed.
- Painting work of FCR tank is not started yet. It is suggested to start the painting work at the earliest. Painting should be done as per clause 1.4.1, schedule 10 PART-B of concession agreement & as per approved Drawing of FCR tank.
- It is suggested to concessionaire proper repairing & grinding shall be done for outer and inner wall wherever required.
- Erection of all the structural steel member must adhere clause 1.21.2 a & B of schedule 10 Part-B of Concession Agreement.

1.21.2 Painting on structural steel work

Primer and finish paints shall be compatible with each other to avoid cracking and wrinkling and shall be from the same manufacturer for each painting system.

a. Primer

Two coats of primer shall be applied on the steel structures. First coat of lead-free, oil-based, high-quality, corrosive resistant steel primers such as Red Oxide/ Zinc Chromate as specified shall be applied before any member of steel structure are placed in position or taken out of workshop. Second coat of primer shall be applied after the erection is completed and before painting commences.

b. Paint

Two coat of epoxy paint shall be applied on all structural steel members. Paint delivered to the fabrication shop/site shall be ready mixed, in original sealed containers, as packed by the manufacturer. The application of paint shall be as per manufacturer's instructions. The coating thickness shall consist of the following minimum dry film thickness, or as recommended by the manufacturer, if thicker:

First coating :100 µm

Second coating : 100 µm

- At Tank A, C" profile installation is completed. Diffuser grid frame installation work is completed.
- Air blower installation work and header pipe erection work completed.
- Installation of Plant rack in FCR tank is completed and remaining under progress.
- Air diffuser piping work is completed.
- DI pipe (lean, average, and peak) laying work is completed from grit chamber to FCR tank
- Grating installation work is under progress on FCR tank.

- FCR module basket installation work is completed.

B. Tube-Settler Unit:

- The RCC work of this unit has been completed but its external finishing work, joint filling and painting work is still pending.
- The 8 nos. out of 8 Chamber is completed.
- Media installation work is completed.
- During the visit, it was observed that the the STP was not able to accommodate required design flow which may be due to problem in launder in tube settler. It is suggested to concessioner rectify all the identified defects/deficiencies in the Facilities as per Clause 8.8 (f) and 8.15 (a) (iii) of Concession Agreement at the earliest.

C. Process Building unit:

- **Primary Treatment Unit (PTU):**

1. Wall electrification, plumping and other misc. works are under progress. Putty work is under progress.
2. Testing of Screen in inlet chamber is completed.
3. Gate testing is balance with Actuator.

- Installation of Poly Dosing System is completed, and testing is pending.
- Sludge dewatering until installation work is completed.
- Individual Flow meter at inlet of Sludge dewatering units is pending.
- Blower installation and testing is completed.
- Installation of DG is completed,
- Panel room finishing work is under progress.
- Admin room finishing work is under progress.

D. Boundary Wall:

- Brick work, plastering work are in progress,
- 85% RCC & Brick work Completed. Work is very slow. It is suggested Concessionaire work should be expedite by increasing manpower.

E. Naini-II MPS and I&D works:

- The finishing work of wet well is pending since long time.
- Fixing and finishing work of tiles at the edge of the slab is not satisfactory. Kindly rectify it.
- Installed handrail is not safe. It is required to change immediately to avoid any accident.
- Finishing work is required after fixing of door, and window.
- It is instructed to concessionaire to complete repairing of joints with special materials & grinding of internal & external surface otherwise Mile stone

certification would not be possible by UPJN and Project Engineer.

- LT panel installation work completed.
- 02 No. mechanical screen installation work completed.
- 01 No. manual screen installation work completed
- Submersible pump Branch pipeline and header pipeline work is completed.
- 05 no. submersible pump installation work completed out of 5.
- All gates installation is completed.
- I&D works Status

Sl. No	I&D Name	Work Status
1	Mawaiya Nalla	Completed
2	Sachha Baba	Work not started
3	Khakhrauni Nalla	Completed
4	Mahewaghat-I Nalla	Completed
5	Mahewaghat -II Nalla	Completed.
6	Mahewaghat-III Nalla	Completed

F. Mahewaghat SPS:

- Wet well and Inlet channel is completed.
- For battery & panel room, RCC slab at level 93 is completed and brickwork is under progress.
- Painting work is under progress. It is suggested to start the painting work at the earliest. Painting should be done as per clause 1.4.1, schedule 10 PART-B of concession agreement & as per approved Drawing.
- Boundary wall work is under progress.
- It is suggested to concessionaire, gradation of construction material (Aggregate and sand) must be done before RCC work. At the start of concrete pouring, Slump Cone, Cube moulds & admixture measuring jar must be available at site.
- At one side SPS wall was out of plumb, it is suggested to concessionaire kindly take necessary action to rectify.
- E&M erection work almost completed.

G. Mawaiya Nalla SPS:

- RCC work is completed
- Painting work is not started yet. It is suggested to start the painting work at the earliest. Painting should be done as per clause 1.4.1, schedule 10 PART-B of concession agreement & as per approved Drawing.
- Staff quarter work was under progress.
- It is instructed to concessionaire to complete repairing of joints with special materials & grinding of internal & external surface otherwise Milestone

certification would not be possible by UPJN and Project Engineer.

- It was observed that steel reinforcement was directly placed on ground surface. steel reinforcement should not be stacked direct on ground, that can be stacked on wooden batten, Steel reinforcement shall ordinarily be stored in such a way as to avoid distortion and to prevent deterioration and corrosion.
- Site instruction register was not available at site, concessionaire is suggested to keep instruction register at site on regular basis.
- Mechanical & manual screen erection work is completed.
- Air valve installation is not started as on date.
- The concessionaire is requested to carry-out all pending works .
- 05 no. pump installation completed out of 5.

H. Trunk Sewer pipeline:

- **Rising main:**
- MPS: 900 mm dia - 120 m laid out of 187
- Mawaiya SPS: 800 mm dia - 683.50 m Laid out of 700m
- Mahewaghat SPS : 350 mm dia - 687.00 m laid out of 700m
- **Gravity Main** - (Proposed Length/Laid Length)
- Mawaiya SPS: 1400 mm dia - 2962.50 m laid out of 3082.50 m
  1600 mm dia - 997.50 m laid out of 997.50 m
- .Mahewaghat SPS:
  600 dia - 4077.50 m laid out of 4077.50 m
- Effluent Pipeline: 1600 mm dia. - 685.0 m laid out of 730

I. Staff Quarter:

- The individual building, staff quarter is not completed as on date. Electrical, plumbing & finishing work is balance in staff quarter.
- It is noticed that the work in Staff quarter started in Feb-March'20 and still work is balance, it is showing the progress of work is very poor.
- The concessionaire is requested to increase the manpower and expedite the work to meet the progress & follow all the safety norms at site.

J. Other miscellaneous activities:

- Finishing and Grouting work is required in MPS.
- Work progress of internal road and Drain work is very slow. Wall of drain is not straight. Kindly take necessary action to rectify.
- In MPS, the levelling is also required at the bottom of wet well.
- The quality of hand railing is not good and any accident may happen in future.
- The painting work of all treatment unit is still pending since long time for which we are continuously requesting for more than two months but this work is still pending.
- Toilets are not operational at site due to unavailability of water and absence of

cleaning, which violate the sanitation guidelines and involves health risk for workers. It suggested to concessionaire resolve this issue earliest and make all toilets operational at site.

- There is regular issue in availability of concrete from batching plant.
- Availability of concrete pump is not adequate.
- Concessionaire is required to provide proper hard barricading (Pipe & pipe with G.I sheet) around Deep excavated area to avoid any casualty at site during construction.
- Proper Stacking of Steel should be done at site & cement slurry should be sprayed on steel to protect from corrosion due to moisture.

2.2 Recommendation's

- It suggested to concessionaire, Exposed surfaces of concrete shall be kept continuously in a damp of wet condition by ponding or by covering with a layer of sacking, canvas, hessian or similar materials and kept constantly wet for at least seven days from the date of concrete
- It is suggested to concessionaire, Expedite the work by deploying additional manpower and machinery & pipes should be made available at site.
- It is suggested to concessionaire make alternate batching plant arrangement. So that work will not be delay due to unavailability of concrete.
- It is already suggested to concessionaire; hindrance register must be maintained at all the facilities.
- Proper Finishing is required at Joint of RCC Wall /Column by grouting method.
- Work quality should be maintained & proper arrangement should be made for curing of structure.
- Copy of all approved design and drawing should be available at site.
- The concessionaire is suggested to implement all ESHS norms at site.
- The concessionaire is requested to follow 'Schedule-10 Part-B' of the concessionaire agreement and IS-456 and other relevant IS codes for all the site execution activities and works as and when required.
- The concessionaire is suggested to take necessary action to incorporate all the observation otherwise timely completion of milestones will not be possible and any delay will be attributed at the concessionaire's end.
- Concessionaire is suggested to check the inlet gate leakage at Naini-II MPS as per IS code.
- Concessionaire is suggested to please provide the support in all gates spindle.
- Concessionaire is suggested to maintain all the necessary safety at the time of electrical and mechanical work as per schedule 8 of Concession agreement.
- Concessionaire is suggested please rectify the cable trench support as per observation in Air blower room.

3. PHAPHAMAU STP AND ASSOCIATE INFRASTRUCTURE

3.1 Inspection Report

Date of site visit	9th ,13th 17Th and 20th Dec 2022
Site Visitor	1. Mr. Santosh Kumar, PM, GPCU, UPJN(R), Prayagraj 2. Mr. Tauseef Ahmed, PE, GPCU, UPJN(R), Prayagraj 3. Mr Amit RANJAN, AECOM 4. Mr Gaurav Panday, AECOM 5. Mr. Ashish Singhai, PWPL 6. Mr. Rahul Sharma PWPL
Name of Facility	14 MLD Phaphamau STP & Associated Infrastructure

A. FCR Tank-

- FCR Civil Construction work completed. Hydrotesting work also completed.
- It is informed to concessionaire proper finishing must be done at all the grouting points.
- Painting work of FCR tank is not started yet. It is suggested to start the painting work at the earliest. Painting should be done as per clause 1.4.1, schedule 10 PART-B of concession agreement & as per approved Drawing of FCR tank.
- Erection of all the structural steel member must adhere clause 1.21.2 a & B of schedule 10 Part-B of Concession Agreement.

1.21.2 Painting on structural steel work

Primer and finish paints shall be compatible with each other to avoid cracking and wrinkling and shall be from the same manufacturer for each painting system.

a. Primer

Two coats of primer shall be applied on the steel structures. First coat of lead-free, oil-based, high-quality, corrosive resistant steel primers such as Red Oxide/ Zinc Chromate as specified shall be applied before any member of steel structure are placed in position or taken out of workshop. Second coat of primer shall be applied after the erection is completed and before painting commences.

b. Paint

Two coat of epoxy paint shall be applied on all structural steel members. Paint delivered to the fabrication shop/site shall be ready mixed, in original sealed containers, as packed by the manufacturer. The application of paint shall be as per manufacturer's instructions. The coating thickness shall consist of the following minimum dry film thickness, or as recommended by the manufacturer, if thicker:

First coating :100 µm

Second coating : 100 µm

- Concessionaire is required to finalize the framing arrangement of solar system along with base plate & railing at the top of FCR at earliest.

1.21.3 Galvanizing of structural steel

Galvanising of structural member shall conform to IS 4759, 209, 2629, 2633 and 6745.

- Painting work of FCR tank is not started yet. It is suggested to start the painting work at the earliest. Painting should be done as per clause 1.4.1, schedule 10 PART-B of concession agreement & as per approved Drawing of FCR tank
- "C" profile installation completed for FCR module arrangement.
- "I" nut installation completed for diffuser grid frame.
- Diffuser grid frame installation is completed.

- Installation of Plant rack in FCR tank is completed and remaining under progress.
- Air diffuser piping work is completed.
- DI pipe (lean, average, and peak) laying work is under progress from grit chamber to FCR tank
- Grating installation work is under progress on FCR tank.
- FCR module basket installation work is completed.
- Instrumentation work and cable laying work is in progress.

B. Staff Quarter –

- Staff Quarter structure work is completed. Finishing, electrification and plumbing work is balance.
- It is informed to Concessionaire door & window must be install as per concessionaire agreement & specification.
- Painting & Flooring of staff quarter should be done as per approved Drawing.

SCHEDULE OF FINISHING	
DESCRIPTION	
EXTERNAL PLASTER	20 MM THICK SMOOTH FINISHED PLASTER IN TWO LAYER IN C.M 1:4
INTERNAL PLASTER	12 MM THICK IN CM 1:4 FOR SINGLE BRICK THICK WALL 12 MM THICK IN CM 1:3 FOR HALF BRICK THICK WALL
CEILING PLASTER	6 MM THICK CEILING PLASTER IN CM 1:3
SCHEDULE OF FLOORING	
ROOM	DESCRIPTION
LIVING ROOM, BED ROOMS	600 X 600 VITRIFIED TILES FLOORING 100mm HEIGHT VITRIFIED TILES SKIRTING
KITCHEN PLATFORM	CERAMIC TILES (300x300) ANTI SKID TILES JET BLACK GRANITE SLAB
TOILET AND WASH AREA	300x300 ANTI SKID CERAMIC TILES FLOORING AND CERAMIC TILE DADO ON WALL UPTO DOOR HEIGHT
STAIR STEPS	KOTA STONE FLOORING (30MM)
BALCONY	CERAMIC FLOORING
SCHEDULE OF PAINTING	
ROOM	DESCRIPTION
INSIDE	OIL BOUND WASHABLE DISTEMPER
OUTSIDE	ACRYLIC EMULSION PAINT

C. Process Building-

- RCC work is completed, and Brick work and plaster work is under progress.
- Civil work is completed in grit Mechanism in PTU.
- Gate installation work in Inlet chamber is completed.
- Mechanical fine screen installation work is completed at PTU.
- Mechanical Grit Mechanism installation work is completed at PTU.
- It is instructed to concessionaire to complete repairing of joints with special materials & grinding of internal & external surface..
- It is suggested to concessionaire, speed up the plaster work of process building as the work progress is very slow.
- DG, LT Panel, HT panel, APFC panel and air blower installation is completed.
- It is informed to concessionaire all site observation given by UPJN & Project engineer must be closed at the earliest.

D. Tube Settler-

- RCC work along with hydrotesting is completed.
- Media and launder Installation work is completed.
- Screw pump and sludge line erection is not started yet.
- Chlorinator installation work is under progress.

E. Security Cabin-

- Execution work of Security Cabin is not started yet.

F. Main Pumping Station-

- RCC work of MPS is completed. Finishing work is under progress.
- Gate installation work is completed.
- Mechanical and manual screen Inlet and outlet gates installation is Completed.
- Installation of LT Panel, DG and EOT is completed.
- EOT installation work is not started yet.

G. Basna Nalla SPS-

- Civil work is completed and finishing work is under progress.
- Electrotechnical work is under progress.Electrotechnical work is very slow. It is informed to concessionaire increase manpower and speed up work progress.

H. Trunk Sewer & I & D works

- Total laying of 800 dia. RCC pipe along NH 845 m completed with 11 nos manhole out of 845 m
- Execution work of I & D structures are under progress at 2 nalla locations.

Sl No	I&D Name	Work Status
1	Basna Nalla	completed
2	Shantipuram Nalla	completed

I. Applicable Permits:

- Concessionaire is suggested to update The Status of Applicable Permit to UPJN/Project Engineer on Weekly Basis. Also, it is suggested to check, identify & apply for all the applicable permits required for whole Prathama Facility as no hindrance will be accepted in future due to new applicable permit issue.

J. Other miscellaneous activities-

- Concessionaire is suggested to take all the precaution during execution & follow all the standard safety Norms to avoid any causality during work.
- Concessionaire is required to provide proper Hard barricading (Pipe & pipe with G.I sheet) around Deep excavated area to avoid any casualty at site during construction.
- It is suggested to avoid direct placing of steel on ground & also cement slurry should be sprayed on steel to protect from corrosion due to moisture.

3.2 Recommendation's

- It is observed that work progress is very slow which may impact the scheduled-on time completion of this project. Concessionaire is suggested to increase the manpower, material and machinery and expedite the work without any further delay and complete the work within the timelines of Approved Construction Plan.
- Concessionaire is suggested to execute the construction work with proper planning & prior information (or RFI) should be given for all the activities.
- Proper Finishing is required at Joint of RCC Wall /Column by grouting method.
- It is suggested to provide enough manpower & resources to expedite the work.
- resolve all above-mentioned shortcomings so that in future, work can be executed smoothly.
- It is suggested to maintain all the Safety & Quality measures at site & carry out works with good engineering practice.
- Concessionaire should also strictly follow schedule 10 PART-B of concession agreement & relevant IS Standard for all civil execution works.
- Concessionaire is suggested to improve the workmanship quality to achieve the desired outcome.
- Approved Designs/Drawings/document should be kept at site during construction work.
- Concessionaire is suggested to provide the balance material at site as earliest to avoid the further delay.
- Concessionaire shall submit the micro level plan day wise for current milestone for better monitoring and project schedule completion controls.

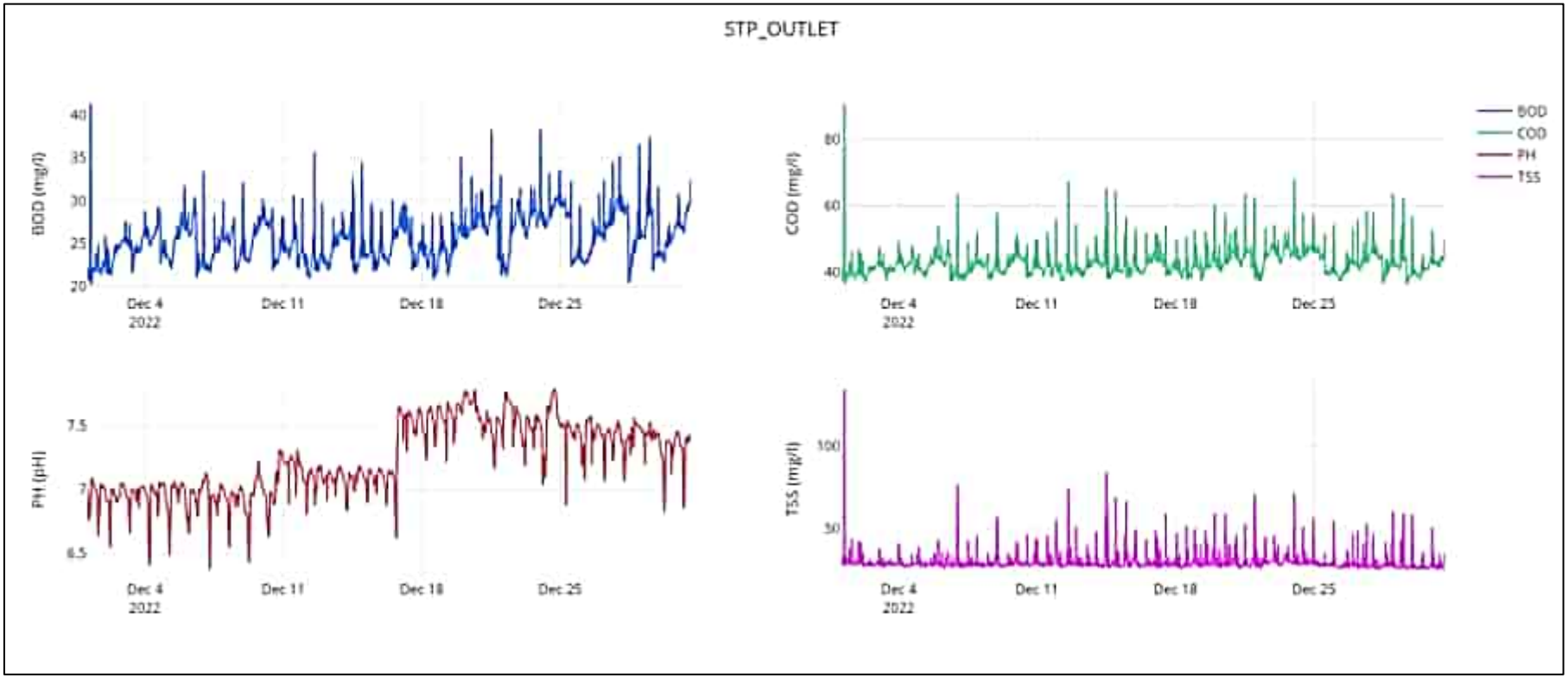
ANNEXURE-II

KPI REPORTS OF PACKAGE -II, PROJECT ENGINEER INSPECTION REPORT AND RECOMMENDATION

Table of Contents

1. NAINI-I STP AND ASSOCIATE INFRASTRUCTURE

1.1 KPI Report



Source: Online analyzer,

*** BOD in Mg/L, COD in Mg/L and TSS in Mg/L**

Note: 1. Rectification of problem for variation in data is going on as calibration of multi parameter analyzer from OEM is in progress.

Naini-I STP, 80 MLD STP at Prayagraj

INLET FLOW & QUALITY REPORT

Date	Daily Feed Quantity MLD (Design- 80 MLD)		pH		BOD (mg/l)		COD (mg/l)		TSS (mg/l)		FECAL COLIFORM		FRC	DEWATERED SLUDGE		REMARKS
	M3	MLD	Inlet pH (Design- <9)	Final pH (Design- 6.5 to 8.0)	Inlet BOD (Design- <250 mg/l)	Final BOD (Design - <30 mg/l)	Inlet COD (Design- <500 mg/l)	Final COD (Design <50 mg/l)	Inlet TSS (Design- <500 mg/l)	FinalTSS (Design <50 mg/l)	Inlet (Design - NA)	Final (Design - <1000 MPN/100 ml)	Final (Design - 0.2 mg/l)	Outlet Concentration (>20%)	Fecal Coliform (20,00,000 MPN/gTS)	
1-Dec-22	120390	120.39	7.29	7.33	140	23	338	43	307	29	NA	500	0.5	24.9	1700000	
2-Dec-22	117670	117.67	7.33	7.38	135	24	329	45	328	28	NA	600	0.4	23.8	1300000	
3-Dec-22	114920	114.92	7.16	7.22	140	25	335	40	302	29	NA	400	0.5	24.05	1400000	
4-Dec-22	110800	110.80	7.22	7.24	145	26	338	44	286	27	NA	700	0.4	24.8	1700000	
5-Dec-22	116410	116.41	7.29	7.31	130	23	324	43	294	30	NA	500	0.5	24.9	1200000	
6-Dec-22	115280	115.28	7.33	7.34	120	26	332	40	303	28	NA	700	0.3	24.5	1200000	
7-Dec-22	110300	110.30	7.13	6.98	135	23	330	42	292	30	NA	800	0.4	24.8	1700000	
8-Dec-22	108090	108.09	7.09	6.94	125	25	320	41	305	28	NA	600	0.5	24.03	1300000	
9-Dec-22	110590	110.59	7.18	7.22	145	24	336	43	294	26	NA	800	0.5	24.68	1700000	
10-Dec-22	105980	105.89	7.23	7.02	135	26	339	44	305	31	NA	500	0.4	24.66	1400000	
11-Dec-22	113900	113.90	7.18	7.2	130	23	324	42	299	30	NA	600	0.5	24.3	1200000	
12-Dec-22	115740	115.74	7.11	7.09	135	24	329	40	303	28	NA	700	0.3	24.32	1300000	
13-Dec-22	121350	121.35	7.16	7.11	125	25	336	42	292	29	NA	500	0.5	24.9	1700000	
14-Dec-22	120550	120.55	7.09	7.08	125	26	340	44	304	31	NA	700	0.4	24.36	1400000	
15-Dec-22	119610	119.61	7.13	7.11	130	24	329	43	299	32	NA	600	0.5	24.4	1300000	
16-Dec-22	119050	119.05	7.08	7.21	125	26	336	42	302	28	NA	500	0.3	24.5	1700000	
17-Dec-22	121340	121.34	7.12	7.35	135	24	328	44	312	33	NA	700	0.3	24.68	1200000	
18-Dec-22	117560	117.56	7.2	7.48	125	24	320	40	303	32	NA	600	0.4	24.36	1400000	
19-Dec-22	119190	119.19	7.16	7.51	140	25	326	42	305	31	NA	400	0.3	24.78	1300000	
20-Dec-22	125620	125.62	7.22	7.55	135	26	330	41	282	29	NA	800	0.4	24.8	1700000	
21-Dec-22	119190	119.19	7.3	7.46	130	24	336	43	305	30	NA	500	0.3	24.5	1300000	
22-Dec-22	106380	106.38	7.23	7.45	125	25	324	44	303	32	NA	700	0.4	24.9	1200000	
23-Dec-22	117510	117.51	7.17	7.42	138	26	329	46	292	28	NA	500	0.4	24.66	1400000	
24-Dec-22	116720	116.72	7.19	7.48	135	26	339	44	304	29	NA	400	0.4	24.9	1400000	
25-Dec-22	116890	116.89	7.13	7.45	138	24	320	43	294	25	NA	500	0.3	24.68	1300000	
26-Dec-22	118440	118.44	7.28	7.43	140	25	326	42	292	29	NA	400	0.4	24.8	1400000	
27-Dec-22	118450	118.45	7.33	7.4	125	24	308	46	304	32	NA	700	0.5	24.66	1200000	
28-Dec-22	111930	111.93	7.19	7.34	135	27	326	42	299	28	NA	600	0.4	25.4	1400000	
29-Dec-22	104280	104.28	7.21	7.45	130	26	336	44	305	26	NA	800	0.4	24.9	1300000	
30-Dec-22	115710	119.71	7.32	7.42	140	25	324	40	316	30	NA	700	0.3	24.32	1700000	
31-Dec-22	118910	118.91	7.31	7.38	125	28	336	43	314	32	NA	800	0.2	24.38	1400000	
Average	118153.23	115.89	7.20	7.30	132.77	24.90	329.77	42.65	301.77	29.45	NA	606.45	0.40	24.60	1412903.23	

Source: Logbook of Laboratory at Sewage Treatment Plant

1.2 Inspection Report

Month of Site Inspection	December 2022
Site Inspectors	1. Mr. Santosh Kumar, PM-I, UPJN. 2. Mr. Rahul Paswan, JE, UPJN. 3. Mr. Sudhir Kumar Tomar, AECOM 4. Mr. Rahul Azaad, PWPL. 5. Mr. Rahul Chaudhary, PWPL. 6. Mr. Prashant, PWPL
Place(s) of Inspection	• 80 MLD STP at Naini-i, Prayagraj • 80 MLD MPS at Gaughat, Prayagraj • 35 MLD SPS at Chacharnalla, Prayagraj

Visit was done on 30th Nov 2022, 05th Dec 2022, 14th Dec 2022, 19th Dec 2022 and following observations were made:

- **Status of Availability:**

S. No.	Facility Name	Actual Flow Pumped /Received at Facility (MLD)
1	Naini-I STP	105.98 to 121.35
2	Gaughat MPS	107.75 to 122.43
3	Chacharnalla SPS	35.24 to 40.94

Note: 1) Source for above data is Site record for flow of STP/MPS/SPS.

- **Status of KPIs:**

S. No.	Parameter Name	Design Value	Parameter Value
1	BOD – Effluent	< 30 mg/l	23 to 26 mg/l
2	TSS – Effluent	< 50 mg/l	26 to 32 mg/l
3	pH – Effluent	6.5 – 9.0	6.94 to 7.38
4	Fecal coliform – Effluent	<= 1000 MPN/100 ml	400 to 800 MPN/100 ml
5	Consistency – Sludge	> 20 %	23.80 to 24.90 %
6	Fecal Coliform – Sludge	< 20,00,000 MPN/gTS	1200000 to 1700000 MPN/gTS

Note: 1) Source for above data is Site record for Laboratory of STP maintain by Concession.

- **Status of Energy Consumption:**

S. No.	Facility Name	Actual Energy Consumption (KWH/MLD)
1	Naini I STP	26.35 to 53.99
2	Naini I Associated Infrastructure	72.29 to 76.07

Note: 1) Source for above data is site record for Power Consumption of STP.

- **Status of various units & records at site:**

1. Online analyzer at inlet is working but it is not showing correct values of parameters as compared to lab reports. As per current situation, inlet analyzer requires calibration every day for showing correct values of inlet parameters which is not a correct working condition. Also, KPI reports of this Multiparameter analyzer generated through SCADA system were studied and it was found that variation can be seen in between recorded values of KPIs in laboratory and recorded values of KPIs in reports generated by multiparameter analyzers through SCADA system which is more than prescribed limit given in 'Guidelines for Online Continuous Effluent Monitoring Systems (OCEMS)' by Central Pollution Control Board.
2. Online analyzer at outlet is working. Validation of Calibration was done in presence of representatives of Aaxis Nano Technologies (OEM of Multiparameter analyzer) along with UPJN officials with the help of stock solutions of pH, COD, TSS on 29th Sep 2022. Since then, reports generated through SCADA system were studied and it was found that reports are considerably stabilized but still variation can be seen in between recorded values of KPIs in laboratory and recorded values of KPIs in reports generated by multiparameter analyzers through SCADA system which is more than prescribed limit given in 'Guidelines for Online Continuous Effluent Monitoring Systems (OCEMS)' by Central Pollution Control Board. Also, it is observed that sudden spikes/drops can be seen in the values of parameters given in the report which is fundamentally not correct. Concessionaire is required to further fine tune the working of analyzers for getting more stability in reports.
3. Data transfer from online analyzer at the outlet of STP to CPCB servers is in progress. By studying the graph available at the online portal, it was found that sudden spikes/drops can be seen in the graphs available at the online portal which is fundamentally not correct. These types of incidents have been observed in past also. Concessionaire is required to rectify these problems.
4. Communication of data from PLC system of Chacharnalla SPS has started coming to SCADA system of STP but the same is not started for Gaughat MPS due to problem in router fitted at PLC system of Gaughat MPS, router configuration is completed but data transfer to STP is not started yet. Also, report generation regarding raw sewage pumped, level of sump and running hour of equipment is not started yet.
   Furthermore, there is problem in receiving signals at PLC/SCADA control system from some equipment/instruments and it is also not possible to control some of the equipment (mainly mechanical screens) from PLC/SCADA control system. Also, mechanical screens have provisions in PLC system for being remotely operated and differential level sensors were also installed for the same. Therefore, the system is available, but it is not working due to lack of wiring, etc., hence provision must be made for operating mechanical screens through SCADA which in turn can be operated manually or remotely as per requirement.

5. Flowmeters at inlet of STP is working.
6. Outlet flowmeter is not working. This is a long-term pending issue hence Concessionaire to please rectify the problem at the earliest. Also, RCC chamber for the flowmeter is not constructed.
7. In Naini-I STP, main MCC panel doesn't have provision for taking power from secondary sources like DG, Solar power generation system and Biogas power generation system simultaneously. Also, it is observed that Biogas engine is operated in daytime due to which power generated from solar system is wasted during daytime. Therefore, it is

suggested to operate Biogas engine in nighttime so that solar power generation system can be operated at full efficiency and full power generated from the same can be used to run equipment.

It is true that Guaranteed Power Consumption of the facility is within limit as per CA but since increase in operation of gas engine will increase the power generation from renewable resources and decrease the power requirement from grid resulting in lowering of electricity bill of the facility which is borne by UPJN.

8. Gas engine is working. Currently, Biogas engine is operated for 9 hours only during the day but as per clause no. 1.1. of Part-G in Schedule-10, the facilities shall run 24 hours every day. Hence, Concessionaire is requested to do the needful as the biogas generated from digesters is wasted by flaring due to improper operation of gas engine.

   Also, reply for Concessionaire's letter PWPL/UPJN/PRAYAGRAJ/O&M/352 dated 5th Feb 2022 is given vide our letter no. AIPL/NMCG/PRAYAG/1367 dated 04th March 2022 for which their response is awaited.
9. All three mechanical screens of 60 MLD part are working. Though the screens are running in auto mode through timer, differential level sensors must also be made operational for running mechanical screens more efficiently through level difference during peak and lean period.
10. In mechanical screens of 60 MLD, rectification of problem for misplaced bars was completed but during recent visit it was found that bars have got loose again. Concessionaire is required to rectify the problem and provide a permanent solution.
11. All two mechanical screens of 60 MLD part are working. Though the screens are running in auto mode through timer, differential level sensors must also be made operational for running mechanical screens more efficiently through level difference during peak and lean period.
12. For 60 MLD, all grit removal units are working.
13. For 20 MLD, all grit removal units are working.
14. All Primary Settling Tanks are working. Scum removal is done manually but it is not efficient as good amount of scum can be seen floating on the surface. Since, Scum removing arrangement is installed, modification are required for the same so that scum collection and removal can be done automatically.
15. In all PSTs, it is observed that lumps of sludge are coming to the top in some parts due to which outlet quality of PSTs is deteriorating.
16. Telescopic valves of Primary Settling Tanks are not working.
17. Installation of actuators is pending for drain valves of Primary Settling Tanks. Concessionaire has told that installation of actuators is not feasible in existing valve arrangement. Existing drain valves were replaced during rehab period and at the same time actuators were also purchased for installation, if these two were not matching then the problem must have been resolved during rehab period itself but since the same is not being done, Concessionaire is required to do necessary modification/replacement work done so that installation work can be completed.
18. All surface aerators are in working condition. It is recommended to install DO analyzer in this tank also for better monitoring.
19. Aeration tank of 20 MLD is in operation. Air is coming out vigorously from 3-4 points due to which air distribution is not proper in the tank which could affect the quality of treatment in aeration tanks. Commissioning of DO analyzer is not completed yet.
20. All Aeration blowers are working.
21. All Final Settling Tanks are working.
22. It is suggested to install torque switches in all clarifiers for having better protection against excessive load on scrapper.

23. Installation of actuators is pending for drain valves of Final Settling Tanks. Concessionaire has told that installation of actuators is not feasible in existing valve arrangement. Existing drain valves were replaced during rehab period and at the same time actuators were also purchased for installation, if these two were not matching then the problem must have been resolved during rehab period itself but since the same is not being done, Concessionaire is required to do necessary modification/replacement work done so that installation work can be completed.
24. In RSPH unit of 60 MLD, 3 out of 4 pumps are working, two pumps are under maintenance. Hence, no pump is in stand-by. This is a long-term pending issue and hence rectification of the problem must be done at the earliest. Concessionaire has committed to rectify the problem by 2nd week of August 2022 but the same is not completed yet.
25. In RSPH unit of 20 MLD, Both Pumps are working.
26. Both chlorinators are in working condition. Both booster pumps are working. One out of two vacuum injectors are not in working condition and hence none is in stand-by.
27. Commissioning of Leak absorption system is completed. Checklist forthe same must be prepared and recorded properly every month.
28. Chlorine analyzer at outlet is not working. Concessionaire have told that it is not required as per CA but clause no. 1.2.1 and clause no. 1.3.1 in Part-E of Schedule-10 in CA clearly states that "Online residual chlorine measuring system" is to be installed.
29. Both thickeners are in working condition. Installation of actuators for drain valves is pending. Installation of flowmeter in one out of two lines from blending tank to thickener is pending.
30. All thickened sludge transfer pumps are working.
31. In TEPH, all pumps are OK for operation for Dandi and Naini Area.
32. For TEPH panel, modification of room is in progress for fulfilling the electrical norms due to installation of new double front panel in old room. Concessionaire has committed to rectify the problem by 31st July 2022.
33. Both DGs are in operation. Installation work of chimney for DGs as per CPCB norms is pending.
34. Sludge dewatering unit is in operation. Installation of various instruments like flowmeter (in poly dosing line), pressure gauge, etc., as per approved drawing are pending.
35. All filtrate pumps are working.
36. In SCADA system, flow variation can be seen in recorded values of daily and monthly flow as per site records. Also, there is variation in between flow recorded in SCADA reports and flow recorded in logbooks. This problem must be rectified.
37. There is variation in recorded values of flow from inlet flowmeter at Naini-I STP and outlet flowmeters of Gaughat MPS, please rectify the problem.
38. Both dewatering feed pumps are working.
39. All Digesters are working.
40. Heat exchangers, sludge recirculation pumps for all digesters are working.
41. In compressor room, all six compressors are working.
42. Both Gas holders are working.
43. Gas flare is working.
44. H2S scrubber unit is working. Analyzers fitted at inlet & outlet unit are working.
45. Installation of service water pumps is pending. It is observed that ground water is being used as service water in whole STP which is a violation of environmental norms. Hence, to stop this installation of service water pumps and laying of required pipeline must be completed at the earliest. Concessionaire has committed to start the work in Aug 2022.
46. Rehabilitation works for storm water pump house are pending. Discussions regarding the feasibility of same has already been done during rehab period and hence the work must

be done accordingly.

47. As already decided, repairing/construction of retaining wall is in progress and must be completed at the earliest for neutralizing the effect of floods so that situation which was faced last year due to floods can be avoided. It must be kept in mind that river level in Yamuna and Ganga has started rising.
48. Rehabilitation works for tube well unit are pending.
49. Landscaping work of the plant must be improved.
50. Construction of storm water drains is in progress.
51. As per Clause no. 1.6 & 1.7.1 of Concession Agreement, Computer Maintenance Management System (CMMS) must be implemented at all Sites. This is not completed yet, Concessionaire to pleasedo the needful.
52. As already discussed, painting of all units from inside and outside is not completed yet. Concessionaire to please do the needful.
53. CCTV camera at the outlet point of STP is not working.
54. As already discussed, all the waste material obtained during Rehabilitation Works must be removed from the site as per point (h) in clause 8.8 of Concession Agreement or it must be properly stacked at one place after taking proper consent from UPJN. Concessionaire have told that this is out of their jurisdiction for which Concessionaire is required to go through the mentioned clause and plan for the same accordingly.
55. For Gaughat MPS, following observations were made during visit:

    a) Replacement of NRV in header line of HNC pumps in Gaughat MPS is required for reducing the effect of water hammering on the pumps. Concessionaire to please do the needful.
    b) 3 HNC pumps are working. One pump is not working due to problem of capacitor fuse.
    c) Two submersible pumps are in working condition and one is under maintenance.
    d) One mechanical screens of HNC pumps is working and one is in maintenance. Currently sensor of one screen which provides overload protection is broken, it must be replaced at the earliest as excessive wear and tear can be caused in screen due to overload.
    Though the screens are running in auto mode through timer, differential level sensors must also be made operational for running mechanical screens more efficiently through level difference during peak and lean period.
    e) Both mechanical screens for submersible pumps are working.
    Though the screens are running in auto mode through timer, differential level sensors must also be made operational for running mechanical screens more efficiently through level difference during peak and lean period.
    f) DG set of 1000 KVA and DG sets of submersible pumps are working. Repairing work of 11 KV DG synchronization panel is pending. Repairing work of 500 KVA/11KV DG set is pending. Concessionaire to please complete all pending works.
    g) It is suggested to install manual screen in receiving chamber of SPS for reducing load on mechanical screens.
    h) Painting for all units in the MPS is not started yet. Concessionaire to please do the needful.
    i) In PLC panels, indication for ON/OFF of mechanical screens, belt/screw conveyor is not coming.

56. For Chacharnalla SPS, following observations were made during visit:

    a) Currently all VNC pumps are working.

b) One out of two mechanical screens are working. One mechanical screen and belt conveyor are under maintenance.
c) Both DG sets are OK for operation.
d) Old DG set is working.
e) Installation of pressure transmitter on header line of VNC pumps is pending.
f) Painting for all units in the MPS is not started yet. Concessionaire to please do the needful.
g) In PLC panels, indication for ON/OFF of mechanical screens, belt conveyor is not coming.

57. Since COD is announced for all Package – II facilities hence Concessionaire is required to implement following documents as per Clause no. 9 & Part-G in Schedule – 10 of Concession Agreement at the earliest:

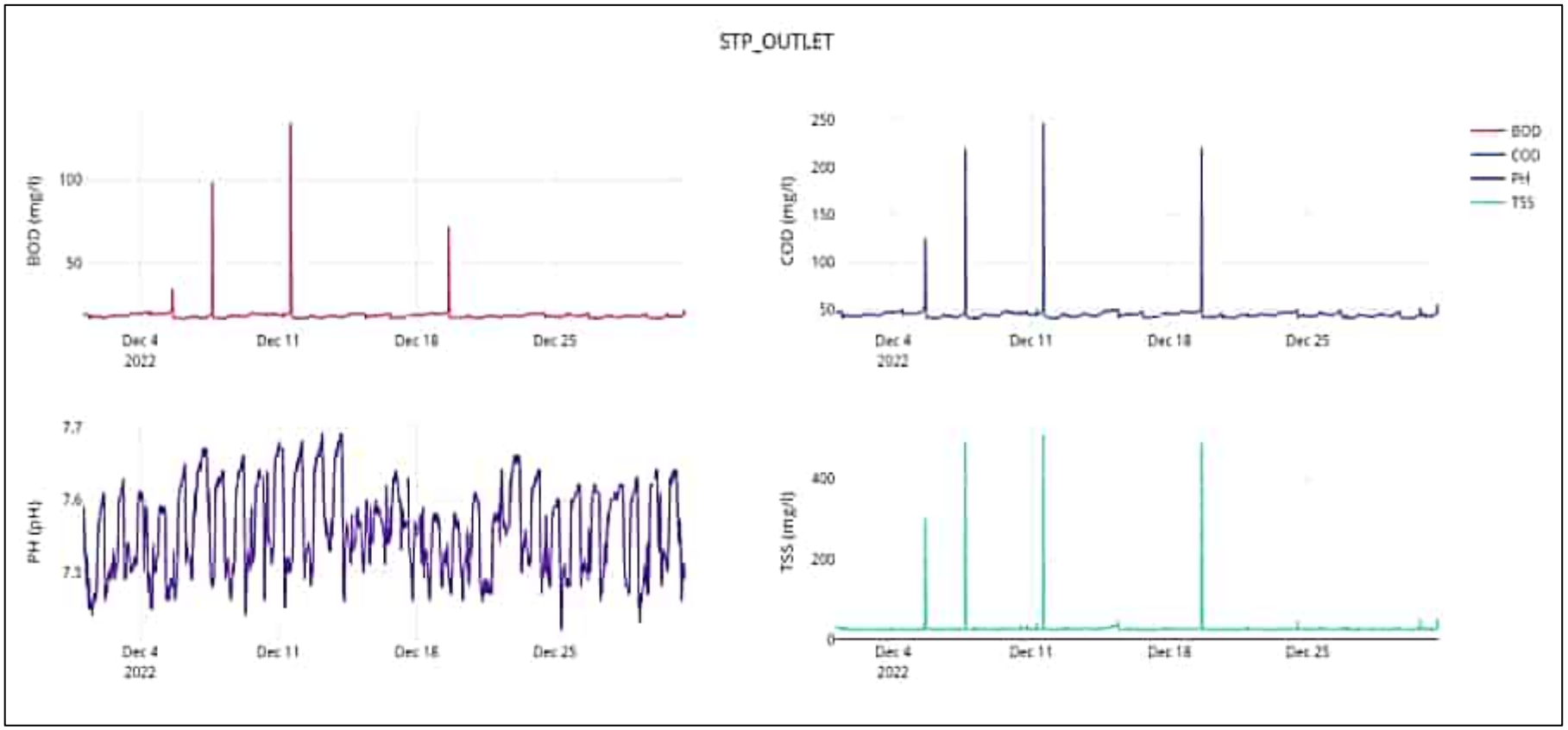
a) Portable samplers must be provided to collect composite samples for monitoring from inlet and outlet of STP as per clause no. 1.3.1 in Part-E of Schedule-10 of CA. Also, all the instruments as mentioned in Table-3 given in clause no. 1.3.1 in Part-E of Schedule-10 of CA must be maintained in the laboratory.
b) Calibration certificates of all the instruments must be submitted as per clause no. 9.8(a)(viii) of Concession Agreement.
c) Testing of TN, NH4-N, TP for composite samples of influent must be performed each day as per Part-G in Schedule-10 of CA.
d) Site Diary as per Clause no. 1.7.2 of Part-G in Schedule – 10 of Concession Agreement.
e) Quarterly report as per Part-G in Schedule-10 of CA.
f) Monthly Environmental Monitoring Report as per Part-G in Schedule-10 of CA.
g) Procedure for recording & disposal of complaints.
h) Safety & Health Records. Incident reports must also be submitted along with action plan.
i) Periodic reports from all facilities must be uploaded on Central Pollution Control Board's Website.
j) Scheduled Maintenance Program specifying the impact of Scheduled Maintenance Periods on the Availability of each facility.

1.3 Recommendation's

- Some of the issues mentioned above are pending since long time and hence must be rectified at the earliest for enhancing the efficiency of the STP.
- Concessionaire must ensure satisfactory working of Online monitoring system & transmit the data as per requirement.
- All the maintenance jobs required for the observations made above must be done as soon as possible to increase the efficiency of plant.
- Permits must be used for all kind of maintenance jobs whether it is Preventive or Corrective. Concessionaire to please ensure the same.
- All the records must be provided as per the observations made above.
- All logbooks must be filled timely and accurately.
- Testing of samples must be done from outlet of PSTs also for checking the efficiency of PSTs.
- Concessionaire to please ensure that all the testing must be done as per the clause no. 1.7.9 of Part-G in Concession Agreement.
- All the old material obtained due to rehabilitation works in various units must be stacked properly at the identified part of the site and proper record must be maintained.
- It is recommended to follow proper safety measures during O&M, and it must be ensured that workers must wear proper PPEs while doing work at Site.
- More awareness trainings for workers must be given for encouraging them to use PPEs.

2. RAJAPUR STP AND ASSOCIATE INFRASTRUCTURE

1.2 KPI Report



Source: Online analyzer,

*** BOD in Mg/L, COD in Mg/L and TSS in Mg/L**

Note: 1. Rectification of problem for variation in data is going on as calibration of multi parameter analyzer from OEM is in progress.

2.In the blank areas, data was not transfer due to some issue in router and flood.

Rajapur STP, 60 MLD STP at Prayagraj
INLET FLOW & QUALITY REPORT

Date	Daily Feed Quantity MLD (Design- 60 MLD)		pH		BOD (mg/l)		COD (mg/l)		TSS (mg/l)		FECAL COLIFORM		FRC	DEWATERED SLUDGE		REMARKS
	M3	MLD	Inlet pH (Design- <9)	Final pH (Design- 6.5 to 9.0)	Inlet BOD (Design- <250 mg/l)	Final BOD (Design - <30 mg/l)	Inlet COD (Design- <500 mg/l)	Final COD (Design - <50 mg/l)	Inlet TSS (Design- <500 mg/l)	FinalTSS (Design <50 mg/l)	Inlet (Design - NA)	Final (Design - <1000 MPN/100 ml)	Final (Design - 0.2 mg/l)	Outlet Concentration (>20%)	Fecal Coliform (20,00,000 MPN/gTS)	
1-Dec-22	78510	78.51	7.54	7.76	125	16	328	40	282	26	NA	600	0.2	24.6	13000000	
2-Dec-22	80120	80.12	7.49	7.72	135	17	344	44	268	25	NA	500	0.3	23.8	14000000	
3-Dec-22	80370	80.37	7.52	7.65	140	18	348	48	315	24	NA	700	0.2	24.15	17000000	
4-Dec-22	80270	80.20	7.46	7.66	145	19	336	44	291	26	NA	400	0.2	23.38	14000000	
5-Dec-22	78460	78.46	7.38	7.64	150	18	332	40	284	25	NA	500	0.3	23.47	13000000	
6-Dec-22	80800	80.80	7.35	7.61	130	17	328	44	273	26	NA	600	0.2	24.97	17000000	
7-Dec-22	79210	79.21	7.28	7.62	135	18	316	40	291	25	NA	500	0.2	24.26	14000000	
8-Dec-22	79090	79.09	7.14	7.57	130	17	308	44	298	26	NA	700	0.3	24.02	13000000	
9-Dec-22	78810	78.81	7.1	7.58	115	18	312	40	297	24	NA	600	0.2	23.21	14000000	
10-Dec-22	81050	81.05	7.36	7.6	130	19	336	48	305	27	NA	700	0.2	24.9	14000000	
11-Dec-22	81370	81.37	7.45	7.59	135	18	332	44	283	25	NA	600	0.3	24.22	17000000	
12-Dec-22	78010	78.01	7.6	7.6	130	16	324	40	291	24	NA	500	0.2	23.26	13000000	
13-Dec-22	80870	80.87	7.45	7.62	125	17	320	44	270	27	NA	700	0.2	24.39	14000000	
14-Dec-22	77490	77.49	7.36	7.59	135	19	328	48	283	28	NA	600	0.3	25.56	13000000	Retaining wall for the tapping point of Rajapur SPS is broken, hence raw sewage is going directly into the river.
15-Dec-22	80140	80.14	7.18	7.57	130	18	316	44	307	29	NA	700	0.2	24.21	14000000	
16-Dec-22	76820	76.82	7.32	7.59	135	17	336	40	289	26	NA	500	0.2	23.42	17000000	
17-Dec-22	79400	79.40	7.34	7.54	125	19	340	44	279	24	NA	600	0.3	24.23	13000000	
18-Dec-22	82020	82.02	7.23	7.55	130	18	332	48	318	27	NA	400	0.2	23.26	14000000	
19-Dec-22	79610	79.61	7.35	7.54	125	17	348	44	310	26	NA	500	0.2	23.57	17000000	
20-Dec-22	79700	79.70	7.22	7.53	135	18	336	40	295	24	NA	600	0.3	24.47	13000000	
21-Dec-22	78090	78.09	7.29	7.52	140	17	328	44	285	26	NA	700	0.2	24.22	17000000	
22-Dec-22	73410	73.41	7.45	7.65	125	16	348	48	296	28	NA	600	0.3	23.47	14000000	
23-Dec-22	81530	81.53	7.36	7.6	145	19	344	44	308	26	NA	500	0.2	23.17	13000000	
24-Dec-22	80630	80.62	7.37	7.56	135	18	336	48	287	24	NA	400	0.2	23.65	14000000	
25-Dec-22	78690	78.69	7.39	7.55	140	17	324	40	295	27	NA	600	0.3	24.85	17000000	
26-Dec-22	79700	79.70	7.31	7.57	145	19	336	44	288	25	NA	500	0.2	23.3	14000000	
27-Dec-22	77580	77.58	7.27	7.58	135	16	324	40	298	26	NA	700	0.3	25.46	17000000	
28-Dec-22	82220	82.22	7.32	7.59	125	17	316	44	283	24	NA	600	0.2	24.03	13000000	
29-Dec-22	80640	80.64	7.31	7.55	130	18	312	40	279	25	NA	500	0.2	25.56	14000000	
30-Dec-22	76560	76.56	7.35	7.58	125	17	308	44	273	26	NA	400	0.3	22.41	13000000	
31-Dec-22	81310	81.31	7.3	7.57	140	18	312	48	286	27	NA	600	0.2	23.97	17000000	
Average	79434.52	79.43	7.34	7.60	133.06	17.61	328.65	43.61	290.55	25.74	NA	567.74	0.24	24.05	1454838.71	

Source: Logbook of Laboratory at Sewage Treatment Plant

2.2 Inspection Report

Month of Site Inspection	December 2022
Site Inspectors	1. Mr. Santosh Kumar, PM-I, UPJN. 2. Mr. Manish Srivastava, JE, UPJN 3. Mr. Sudhir Kumar Tomar, AECOM. 4. Mr. Rahul Azaad, PWPL. 5. Mr. Girijesh, PWPL. 6. Mr. Saurabh, PWPL
Place(s) of Inspection	• 60 MLD STP at Rajapur, Prayagraj • 25 MLD SPS at Rajapur, Prayagraj • 55 MLD MPS at Mumfodganj Prayagraj

Visit was done on 30th Nov 2022 ,3rd Dec 2022, 10th Dec 2022,19th Dec 2022, and following observations were made:

- **Status of Availability:**

S. No.	Facility Name	Actual Flow Pumped /Received at Facility (MLD)
1	Rajapur STP	76.82 to 81.37
2	Rajapur SPS	8.06 to 11.19
3	Mumfodganj MPS	67.92 to 72.61

Note: 1) Source for above data is Register for flow record of STP & MPS.

- **Status of KPIs:**

S. No.	Parameter Name	Design Value	Parameter Value
1	BOD – Effluent	< 20 mg/l	16 to 19 mg/l
2	TSS – Effluent	< 30 mg/l	24 to 29 mg/l
3	pH – Effluent	6.5 – 9.0	7.57 to 7.76
4	Fecal coliform – Effluent	<= 1000 MPN/100 ml	400 to 700 MPN/100 ml
5	Consistency – Sludge	> 20 %	23.21 to 25.56 %
6	Fecal Coliform – Sludge	< 20,00,000 MPN/gTS	1300000 to 1700000 MPN/gTS

Note: 1) Source for above data is Register for Laboratory of STP.

- **Status of Energy Consumption:**

S. No.	Facility Name	Actual Energy Consumption (KWH/MLD)
1	Rajapur STP	15.19 to 26.40
2	Rajapur Associated Infrastructure	53.69 to 59.17

Note: 1) Source for above data is Register for Power Consumption Record of STP.

- **Status of various units & records at site:**

1. Online analyzer at inlet is working but it is not showing correct values of parameters as compared to lab reports. As per current situation, inlet analyzer requires calibration every day for showing correct values of inlet parameters which is not a correct working condition. Also, KPI reports of this Multiparameter analyzer generated through SCADA system were studied and it was found that variation can be seen in between recorded values of KPIs in laboratory and recorded values of KPIs in reports generated by multiparameter analyzers through SCADA system which is more than prescribed limit given in 'Guidelines for Online Continuous Effluent Monitoring Systems (OCEMS)' by Central Pollution Control Board.
2. Online analyzer at outlet is working. Validation of Calibration was done in presence of representatives of Aaxis Nano Technologies (OEM of Multiparameter analyzer) along with UPJN officials with the help of stock solutions of pH, COD, TSS on 29th Sep 2022. Since then, reports generated through SCADA system were studied and it was found that the reports are considerably stabilized but still variation can be seen in between recorded values of KPIs in laboratory and recorded values of KPIs in reports generated by multiparameter analyzers through SCADA system which is more than prescribed limit given in 'Guidelines for Online Continuous Effluent Monitoring Systems (OCEMS)' by Central Pollution Control Board. Also, it is observed that sudden spikes can be seen in the values of parameters given in the report which is fundamentally not correct. Concessionaire is required to further fine tune the working of analyzers for getting more stability in reports.
3. Data transfer from online analyzer at the outlet of STP to CPCB servers is in progress. By studying the graph available at the online portal, it was found that sudden spikes/drops can be seen in the graphs available at the online portal which is fundamentally not correct. These types of incidents have been observed in past also. Concessionaire is required to rectify these problems.
4. Communication of data from PLC system of Mumfordganj SPS has started coming to SCADA system of STP but report generation regarding raw sewage pumped, level of sump and running hour of equipment is not started yet. All the data coming from instruments installed in pumping stations must be recorded in report format similar to the way it has been done for STP.
   Furthermore, there is problem in receiving signals at PLC/SCADA control system from some equipment/instruments and it is also not possible to control some of the equipment (mainly mechanical screens) from PLC/SCADA control system. Also, mechanical screens have provisions in PLC system for being remotely operated and differential level sensors were also installed for the same. Therefore, the system is available, but it is not working due to lack of wiring, etc., hence provision must be made for operating mechanical screens through SCADA which in turn can be operated manually or remotely as per requirement.

5. Flowmeters at inlet of STP is working.
6. Flowmeter at outlet is working. Calibration of flowmeter is completed by site team, Concessionaire is required to get the calibration of flowmeter verified by OEM and submit calibration certificates.
7. Both Grit removal units are working.
8. Both Mechanical Fine screens at PTU are working. Though the screens are running in auto mode through timer, differential level sensors must also be made operational for

running mechanical screens more efficiently through level difference during peak and lean period.

9. Both UASBs were working satisfactorily. Cleaning of launders and scum from top must be done regularly. Also, several distribution cells were found in choked condition, cleaning for the same must be done on regular basis for avoiding such kind of situations. If it is required to increase the manpower, then same must be done at the earliest.
10. Rectification of problem for leakage from HDP pipes of UASB reactors was in progress. It is observed that problem of leakage from HDP inlet pipes is very frequent. For minimizing this problem, it was suggested to give proper supports under the pipes. Concessionaire to please do the needful.
11. 14 surface aerators were found running, all 15 surface aerators are in working condition. It is recommended to install DO analyzer in this tank also for better monitoring.
12. In meter room, no permanent arrangement is being made for safe approach to the electrical panel at increased height which is very dangerous and violates all safety norms. Concessionaire is required to look into the matter & do the needful at the earliest.
13. Both DG sets are working. It is suggested to increase the height of chimney of DG sets as per CPCB norms.
14. All sludge transfer pumps are in working condition.
15. Sludge dewatering unit is working.
16. For chlorination system, temporary arrangement is provided for using effluent water at the inlet of booster pumps. Concessionaire is suggested to make this arrangement permanent.
17. Chlorine analyzer at outlet of STP is not working. Concessionaire have told that it is not required as per CA but clause no. 1.2.1 and clause no. 1.3.1 in Part-E of Schedule-10 in CA clearly states that "Online residual chlorine measuring system" is to be installed.
18. At flood pumping station, one pump is under maintenance. Problem for the same must be rectified at the earliest.
19. It is continuously observed that dewatered sludge is being dumped inside the plant. Concessionaire is required to dump the dewatered sludge in the place given by UPJN.
20. Calibration of flowmeter in outlet line of effluent pumps is pending. Concessionaire to please do the needful and submit calibration reports.
21. In SCADA system, flow variation can be seen in recorded values of daily and monthly flow as per site records. Also, there is variation in between flow recorded in SCADA reports and flow recorded in logbooks. This problem must be rectified.
22. There is variation in recorded values of flow from inlet flowmeter at Rajapur STP and outlet flowmeter of Mumfordganj SPS, please rectify the problem.
23. There is variation in recorded values of flow from inlet flowmeters at Rajapur STP and outlet flowmeter of Rajapur STP, please rectify the problem.
24. Gas holder and gas flare are not in operation. It is part of STP facility hence must be made operational. Also, amount of Gas generation also indicates the performance level of UASBs. Concessionaire is requested to complete the maintenance works and take both into operation as follow-up for the same is being done since rehab period.
25. As already discussed, all the waste material obtained during Rehabilitation Works must be removed from the site as per point (h) in clause 8.8 of Concession Agreement or it must be properly stacked at one place after taking proper consent from UPJN. Concessionaire have told that this is out of their jurisdiction for which Concessionaire is required to go through the mentioned clause and plan for the same accordingly.
26. As per Clause no. 1.6 & 1.7.1 of Concession Agreement, Computer Maintenance Management System (CMMS) must be implemented at all Sites. This is not started yet, Concessionaire to please do the needful.

27. At Rajapur SPS following observations were made:

a) Temporary Bund at tapping Point is damaged due to the rain. It is not repaired yet. Most of the Raw Sewage from nearby nalla is going directly into the Ganga River. Concessionaire is suggested to rectify on urgent basis.
b) Mechanical coarse Screens at SPS is working. Though the screens are running in auto mode through timer, differential level sensors must also be made operational for running mechanical screens more efficiently through level difference during peak and lean period.
c) Operation of mechanical screen at SPS is not possible from SCADA.
d) All submersible pumps are in working condition. Pressure transmitter is not installed in common header line of pumps yet. Also, pumps must be kept in auto mode so that pump can start & stop on the basis of level in the sump.

28. At Mumfodganj MPS following observations were made:

a) At tapping point of SPS, manual screen is broken from bottom side, maintenance for the same is required as lot of waste is going inside SPS which can in turn will choke the pumps.
b) Civil maintenance is required for the floor below bypass gate at tapping point for stopping the leakage from bypass gate.
c) Both Mechanical coarse screens at MPS are working. Though the screens are running in auto mode through timer, differential level sensors must also be made operational for running mechanical screens more efficiently through level difference during peak and lean period.
d) At Mumfodganj MPS, 4 pumps are OK for operation out of 6 Pumps. Pressure transmitter is not installed in common header line of pumps yet. Also, pumps must be kept in auto mode so that pump can start & stop on the basis of level in the sump.
e) Dismantling joint must be provided along with flowmeter for ease in maintenance.
f) NRV must be provided in common header to reduce the effect of water hammering.
g) Site house Keeping & landscaping must be improved. Concessionaire is suggested to keep the Old material Properly.

29. Since COD is announced for all Package – II facilities hence Concessionaire is required to implement following documents as per Clause no. 9 & Part-G in Schedule – 10 of Concession Agreement at the earliest:

a) Portable samplers must be provided to collect composite samples for monitoring from inlet and outlet of STP as per clause no. 1.3.1 in Part-E of Schedule-10 of CA. Also, all the instruments as mentioned in Table-3 given in clause no. 1.3.1 in Part-E of Schedule-10 of CA must be maintained in the laboratory.
b) Calibration certificates of all the instruments must be submitted as per clause no. 9.8(a)(viii) of Concession Agreement. Concessionaire have told to submit it by 5th July but the same is not done yet.
c) Testing of TN, NH4-N, TP for composite samples of influent must be performed each day as per Part-G in Schedule-10 of CA.
d) Site Diary as per Clause no. 1.7.2 of Part-G in Schedule – 10 of Concession Agreement.
e) Quarterly report as per Part-G in Schedule-10 of CA.
f) Monthly Environmental Monitoring Report as per Part-G in Schedule-10 of CA.

g) Procedure for recording & disposal of complaints.
h) Safety & Health Records. Incident reports must also be submitted along with action plan.
i) Periodic reports from all facilities must be uploaded on Central Pollution Control Board's Website.
j) Scheduled Maintenance Program specifying the impact of Scheduled Maintenance Periods on the Availability of each facility.

2.3 Recommendation's

- Some of the issues mentioned above are pending since long time and hence must be rectified at the earliest for enhancing the efficiency of the STP.
- Some of the issues mentioned above are pending since long time and hence must be rectified at the earliest for enhancing the efficiency of the STP.
- Concessionaire must ensure satisfactory working of Online monitoring system & transmit the data as per requirement.
- All the maintenance jobs required for the observations made above must be done as soon as possible to increase the efficiency of plant.
- Permits must be used for all kind of maintenance jobs whether it is Preventive or Corrective. Concessionaire to please ensure the same.
- All the records must be provided as per the observations made above.
- All logbooks must be filled timely and accurately.
- Testing of samples must be done from outlet of UASBs also for checking the efficiency of UASBs.
- Concessionaire to please ensure that all the testing must be done as per the clause no. 1.7.9 of Part-G in Concession Agreement.
- All the old material obtained due to rehabilitation works in various units must be stacked properly at the identified part of the site and proper record must be maintained.
- It is recommended to follow proper safety measures during O&M, and it must be ensured that workers must wear proper PPEs while doing work at Site.
- More awareness trainings for workers must be given for encouraging them to use PPEs.

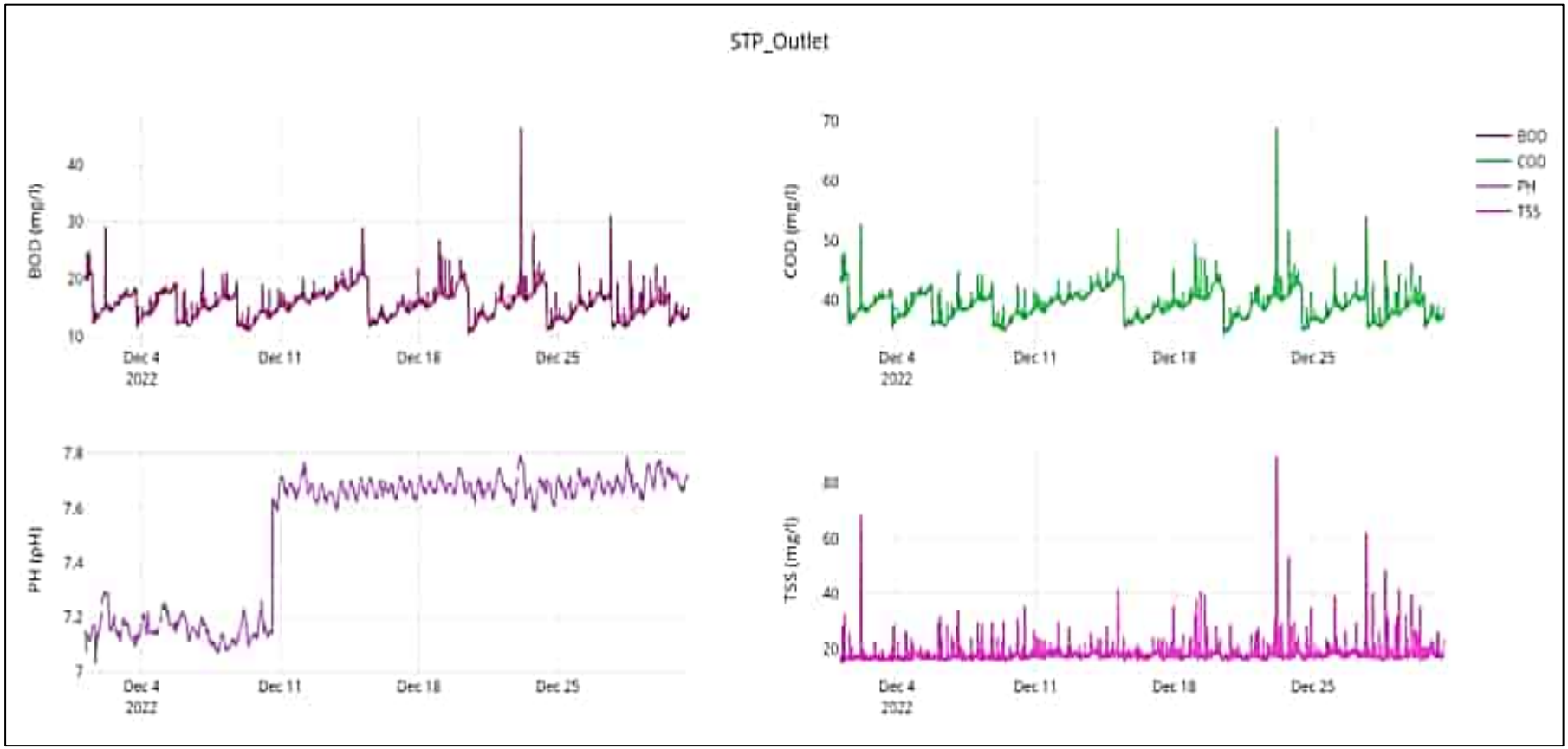
ANNEXURE-III

KPI REPORTS OF PACKAGE -III, PROJECT ENGINEER INSPECTION REPORT AND RECOMMENDATION

Table of Contents

1. NUMAYADAHI STP AND ASSOCIATE INFRASTRUCTURE

1.1 KPI Report



Source: Online analyzer,

*** BOD in Mg/L, COD in Mg/L and TSS in Mg/L**

Note: 1. Rectification of problem for variation in data is going on as calibration of multi parameter analyzer from OEM is in progress.

2. In the blank areas, data was not transfer due to some issue in router.

Numayadahi STP, 50 MLD STP at Prayagraj
INLET FLOW & QUALITY REPORT

Date	Daily Feed Quantity MLD (Design- 50 MLD)		pH		BOD (mg/l)		COD (mg/l)		TSS (mg/l)		FECAL COLIFORM		FRC	DEWATERED SLUDGE		REMARKS
	M3	MLD	Inlet pH (Design- <9)	Final pH (Design- 6.5 to 9.0)	Inlet BOD (Design- <250 mg/l)	Final BOD (Design - <20 mg/l)	Inlet COD (Design- <500 mg/l)	Final COD (Design - <50 mg/l)	Inlet TSS (Design- <500 mg/l)	Final TSS (Design - <30 mg/l)	Inlet (Design - NA)	Final (Design - <1000 MPN/100 ml)	Final (Design - 0.2 mg/l)	Outlet Concentration (>20%)	Fecal Coliform (20,00,000 MPN/gTS)	
1-Dec-22	50030	50.03	7.19	7.70	139	16	328	36	248	19	NA	400	0.3	24.37	1400000	
2-Dec-22	50040	50.04	7.17	7.58	133	15	312	40	278	19	NA	500	0.3	23.79	1300000	
3-Dec-22	52120	52.12	7.29	7.65	136	16	336	40	255	18	NA	600	0.3	23.14	1200000	
4-Dec-22	55820	55.82	7.21	7.72	129	14	324	36	298	20	NA	400	0.3	23.42	1400000	
5-Dec-22	59550	59.55	7.20	7.68	136	18	320	40	266	19	NA	500	0.2	23.53	1700000	
6-Dec-22	58520	58.52	7.32	7.62	130	12	328	32	280	20	NA	600	0.3	23.05	1300000	
7-Dec-22	56630	56.63	7.19	7.64	143	16	340	40	244	19	NA	400	0.3	24.41	1200000	
8-Dec-22	57010	57.01	7.24	7.46	140	17	336	36	289	17	NA	600	0.2	25.01	1200000	
9-Dec-22	56300	56.30	7.16	7.62	136	13	328	36	240	20	NA	500	0.3	24.26	1700000	
10-Dec-22	59200	59.20	7.17	7.68	160	14	316	40	269	18	NA	400	0.4	24.28	1400000	
11-Dec-22	61480	61.48	7.16	7.72	140	17	324	36	272	19	NA	600	0.3	24.82	1100000	
12-Dec-22	59930	59.93	7.31	7.52	150	16	332	40	255	18	NA	500	0.2	23.70	1200000	
13-Dec-22	60130	60.13	7.42	7.67	135	17	328	44	260	20	NA	600	0.3	24.20	1200000	
14-Dec-22	60430	60.43	7.28	7.69	130	19	340	40	280	19	NA	400	0.4	24.80	1300000	
15-Dec-22	61490	61.49	7.10	7.72	140	15	336	36	232	18	NA	600	0.2	23.59	1200000	
16-Dec-22	58370	58.37	7.18	7.74	155	13	344	40	268	19	NA	500	0.3	24.91	1200000	
17-Dec-22	60660	60.66	7.16	7.64	130	15	320	36	282	20	NA	400	0.3	23.11	1700000	
18-Dec-22	63090	63.09	7.19	7.60	140	16	328	40	280	18	NA	600	0.4	24.82	1300000	
19-Dec-22	59780	59.78	7.22	7.72	145	17	320	44	268	21	NA	500	0.3	23.58	1700000	
20-Dec-22	60190	60.19	7.16	7.64	140	15	340	40	260	19	NA	400	0.4	24.91	1400000	
21-Dec-22	58750	58.75	7.24	7.72	130	16	332	40	252	20	NA	600	0.4	23.35	1700000	
22-Dec-22	57420	57.42	7.21	7.68	150	18	308	36	289	18	NA	400	0.3	23.91	1400000	
23-Dec-22	56950	56.95	7.24	7.70	145	16	340	40	252	23	NA	500	0.4	24.50	1300000	
24-Dec-22	58810	58.81	7.12	7.80	135	14	328	36	272	21	NA	500	0.4	23.89	1400000	
25-Dec-22	60720	60.72	7.18	7.66	140	12	324	40	268	20	NA	400	0.3	24.98	1200000	
26-Dec-22	60390	60.39	7.14	7.60	135	18	320	44	240	21	NA	600	0.3	23.93	1400000	
27-Dec-22	55810	55.81	7.22	7.72	150	18	336	36	292	24	NA	400	0.4	23.47	1300000	
28-Dec-22	57850	57.85	7.19	7.64	140	15	344	40	284	22	NA	500	0.4	23.44	1300000	
29-Dec-22	59770	59.77	7.15	7.72	130	13	324	44	266	20	NA	600	0.4	23.52	1400000	
30-Dec-22	60470	60.47	7.21	7.79	140	17	328	44	274	21	NA	400	0.3	23.56	1700000	
31-Dec-22	59430	59.43	7.15	7.66	140	16	320	40	263	21	NA	500	0.4	22.47	1300000	
Average	**58359.35**	**58.36**	**7.21**	**7.67**	**139.42**	**15.61**	**328.52**	**39.10**	**266.57**	**19.71**	**NA**	**496.77**	**0.32**	**23.97**	**1370967.74**	

Source: Logbook of Laboratory at Sewage Treatment Plant

1.2 Inspection Report

Month of Site Inspection	December 2022
Site Inspectors	1. Mr. Santosh Kumar, PM-I, UPJN. 2. Mr. Tauseef Ahmed, AE, UPJN. 3. Mr. Satwant, JE, UPJN. 4. Mr. Sudhir Kumar Tomar, AECOM. 5. Mr. Rahul Kumar Azaad, PWPL. 6. Mr. Vijay Dwivedi, PWPL. 7. Mr. Jitender, PWPL.
Place(s) of Inspection	• 50 MLD STP at Numayadahi, Prayagraj • 50 MLD MPS at Ghagharnalla, Prayagraj • 15 MLD SPS at Sasur Kadheri, Prayagraj • 16.5 MLD SPS at Lukarganj, Prayagraj

Visit was done on 29th Nov 2022, 2nd Dec 2022, 8th Dec 2022, 15th Dec 2022 and following observations were made:

- **Status of Availability:**

S. No.	Facility Name	Actual Flow Pumped /Received at Facility (MLD)
1	Numayadahi STP	50.03 to 61.49
2	Ghagharnalla MPS	51.23to 62.66
3	Sasur Kadheri SPS	18.79 to 32.80
4	Lukerganj SPS	4.71 to 5.56

Note: 1) Source for above data is Site record for flow of STP/MPS/SPS.

- **Status of KPIs:**

S. No.	Parameter Name	Design Value	Parameter Value
1	BOD – Effluent	< 20 mg/l	12 to 18 mg/l
2	TSS – Effluent	< 30 mg/l	17 to 21 mg/l
3	pH – Effluent	6.5 – 9.0	7.46 to 7.72
4	Fecal coliform – Effluent	<= 1000 MPN/100 ml	400 to 600 MPN/100 ml
5	Consistency – Sludge	> 20 %	23.05 to 25.01%
6	Fecal Coliform – Sludge	< 20,00,000 MPN/gTS	1100000 to 1700000 MPN/gTS

Note: 1) Source for above data is Site record for Laboratory of STP.

- **Status of Energy Consumption:**

S. No.	Facility Name	Actual Energy Consumption (KWH/MLD)
1	Numayadahi STP	68.58 to 70.16
2	Numayadahi Associated Infrastructure	93.88 to 102.66

Note: 1) Source for above data is Site record for Power Consumption of STP.

- **Status of various units & records at site:**

1. Online analyzer at inlet is working but it is not showing correct values of parameters as compared to lab reports. As per current situation, inlet analyzer requires calibration every day for showing correct values of inlet parameters which is not a correct working condition. Also, KPI reports of this Multiparameter analyzer generated through SCADA system were studied and it was found that variation can be seen in between recorded values of KPIs in laboratory and recorded values of KPIs in reports generated by multiparameter analyzers through SCADA system which is more than prescribed limit given in 'Guidelines for Online Continuous Effluent Monitoring Systems (OCEMS)' by Central Pollution Control Board.
2. Online analyzer at outlet is working. Validation of Calibration was done in presence of representatives of Aaxis Nano Technologies (OEM of Multiparameter analyzer) along with UPJN officials with the help of stock solutions of pH, COD, TSS on 14th July 2022. Since then, reports generated through SCADA system were studied and it was found that reports are considerably stabilized but still variation can be seen in between recorded values of KPIs in laboratory and recorded values of KPIs in reports generated by multiparameter analyzers through SCADA system which is more than prescribed limit given in 'Guidelines for Online Continuous Effluent Monitoring Systems (OCEMS)' by Central Pollution Control Board. Also, it is observed that sudden spikes/drops can be seen in the values of parameters given in the report which is fundamentally not correct. Concessionaire is required to further fine tune the working of analyzers for getting more stability in reports.
3. Data transfer from online analyzer at the outlet of STP to CPCB servers is in progress. By studying the graph available at the online portal, it was found that sudden spikes/drops can be seen in the graphs available at the online portal which is fundamentally not correct. These types of incidents have been observed in past also. Concessionaire is required to rectify these problems.
4. Communication of data from PLC system of Ghagharnalla MPS, Sasur Kadheri SPS and Lukerganj SPS has started coming to SCADA system of STP but report generation regarding raw sewage pumped, level of sump and running hour of equipment is not started yet. All the data coming from instruments installed in pumping stations must be recorded in report format similar to the way it has been done for STP.
   Furthermore, there is problem in receiving signals at PLC/SCADA control system from some equipment/instruments and it is also not possible to control some of the equipment (mainly mechanical screens) from PLC/SCADA control system. Also, mechanical screens have provisions in PLC system for being remotely operated and differential level sensors were also installed for the same. Therefore, the system is available, but it is not working due to lack of wiring, etc., hence provision must be made for operating mechanical screens through SCADA which in turn can be operated manually or remotely as per requirement.

5. Flowmeter at inlet of STP is working.
6. Flowmeter at outlet of STP is not working.
7. Both grit removal units are in operation.
8. Both Mechanical Screens are working. Differential level sensors are not synchronized with mechanical screens hence screens cannot run in auto mode. Screen electric panel repairing is required.
9. All Biotowers were in operation. Replacement of net is required for all biotowers.
10. Though overhauling of mechanical screens is completed in rehabilitation period but still

considerable amount of plastic waste is reaching the biotowers hence the gap must be checked around mechanical screens or otherwise this plastic waste can choke up the media which will ultimately lower the efficiency of Biotowers.

11. All Aeration tanks are working.
12. All Aeration blowers are in working condition & two blowers were found running.
13. DO analyzer at the outlet of Aeration tank no. 2 is not working properly, please check & rectify the problem.
14. Pressure transmitter & temperature transmitter are not installed yet on header line of Aeration blowers.
15. All Centrifuges are working along with Sludge Feed pumps and Poly dosing pumps. Sludge generation is 6-7 trolleys per day.
16. All Sludge Recirculation Pumps are in working condition.
17. Both Secondary clarifiers were found in operation.
18. Both booster pumps & both chlorinators are in working condition & chlorine dosing was found to be running at 3 to 4 Kg/hr. Residual chlorine was checked & found to be around 0.2 – 0.3 mg/l.
19. Rehabilitation of Leak absorption system is completed. Testing of system for working in auto modewas checked and it was found that air blower & caustic pump start running at 3 ppm, but it must be set around 1 ppm for providing better safety measures. Concessionaire is requested to do the needful.
20. Chlorine analyzer for the effluent is not giving correct values.
21. Minor Seepages from Biotowers & some other units can be seen, and this must be rectified.
22. As per Clause no. 1.6 & 1.7.1 of Concession Agreement, Computer Maintenance Management System (CMMS) must be implemented at all Sites. This is not started yet, Concessionaire to pleasedo the needful.
23. Painting of units in the STP is completed from outside. It is suggested to start the painting work for all units from inside also.
24. All CCTV cameras are working. It is suggested to change the position of CCTV camera at outlet so that it can show the free fall area of effluent at CCT.
25. In SCADA system, flow variation can be seen in recorded values of daily and monthly flow as per site records. Also, there is variation in between flow recorded in SCADA reports and flow recorded in logbooks. This problem must be rectified.
26. There is variation in recorded values of flow from inlet flowmeter at Numayadahi STP and outlet flowmeter of Ghagharnalla MPS, please rectify the problem.
27. There is variation in recorded values of flow from inlet flowmeter at Numayadahi STP and outlet flowmeter of Numayadahi STP, please rectify the problem.
28. For Ghagharnalla MPS, following issues are required to be resolved:

    a) Earlier during normal days, it was observed that overflow occurs sometimes during peak time due to deposition of sludge in the path of nalla towards tapping point even after running MPS at full capacity. Hence, UPJN is requested to please look into the matter and do the needful.
    b) Repairing of wall of pump house towards sump is required so that no sewage can go inside the pump house in any situation.
    c) Currently, all HNC pumps (5 new + 1 old) are in working condition.
    d) Earlier during normal days, there was minor leakage of sewage from the retaining wall at the tapping point of MPS, this must be rectified as raw sewage is going directly into the river.
    e) Both Mechanical screens are working.

f) Both DG sets are working.
g) During the shutdown taken in the month of May-21, NRV was taken out from the main header line for maintenance purpose but it is not reinstalled till date. Concessionaire to please do the needful so that effect of back hammering on the pumps can be reduced.
h) Painting for all units in the MPS is not started yet. Concessionaire to please do the needful.

29. For Sasur Kadheri SPS, following issues are required to be resolved:

a) Earlier during normal days, it was found that raw sewage keeps overflowing from the retaining wall even when the pumping from this SPS is around 25-30 MLD which is around 170 – 200% of the total capacity of SPS i.e., 15 MLD. Due to the amount of overloading on the SPS, overflow of the sewage from retaining wall cannot be stopped. Hence, UPJN is requested to please look into the matter and do the needful.
b) Currently all submersible pumps in the SPS are OK for operations.
c) Both Mechanical screens are working.
d) Both DG sets are OK for operation.
e) Painting for all units in SPS is in progress.

30. At Lukerganj SPS,
a) All 6 pumps are OK for operation. It is suggested to complete repairing of old pumps also so that they can be used during emergency situation.
b) Calibration for the outlet flowmeter is completed.
c) One mechanical screen is working and one is in maintenance.
d) Painting for units is in progress
e) Both DG sets are working.

31. Since COD is announced on 01.11.2020 for all Package – III facilities hence Concessionaire is required to implement following documents as per Clause no. 9 & Part-G in Schedule – 10 of Concession Agreement at the earliest:

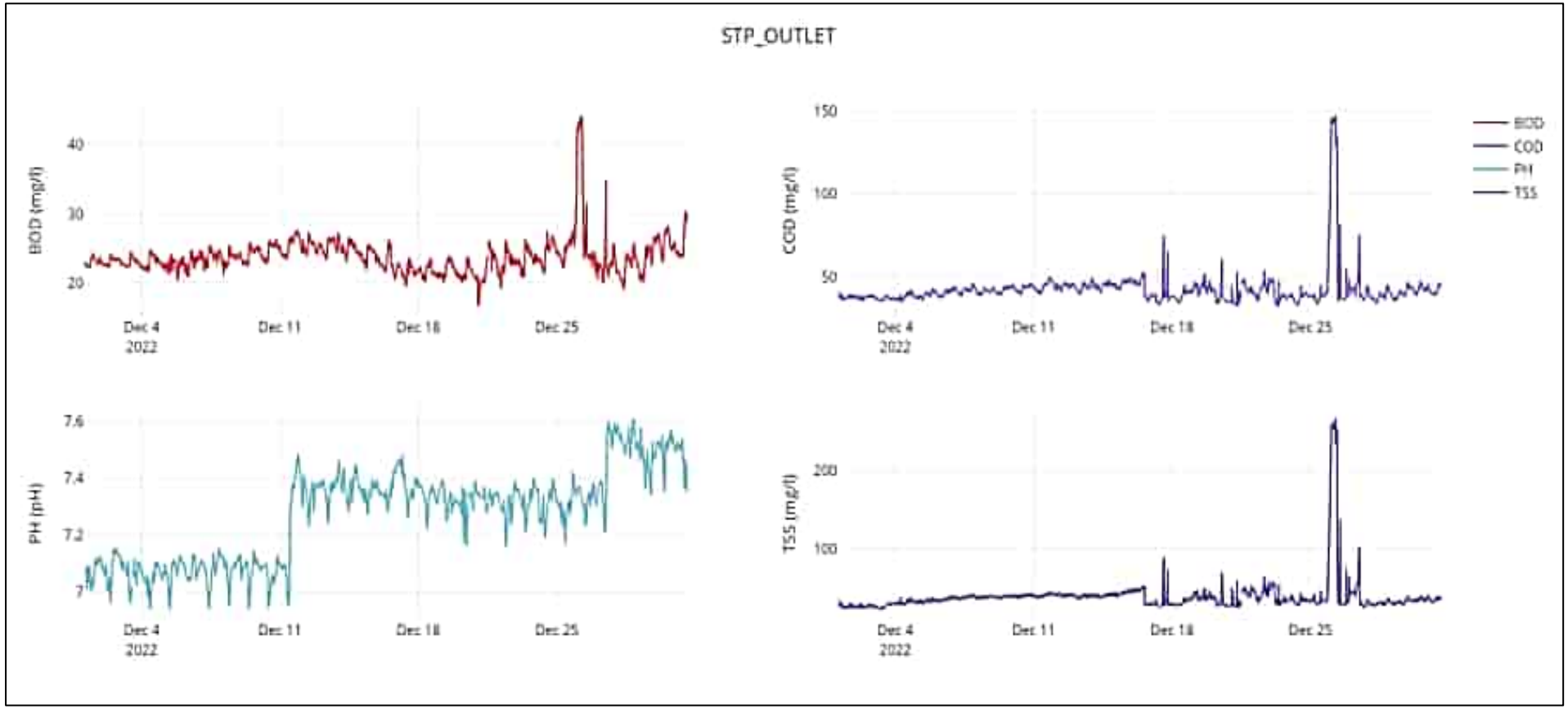
a) Portable samplers must be provided to collect composite samples for monitoring from inlet and outlet of STP as per clause no. 1.3.1 in Part-E of Schedule-10 of CA. Also, all the instruments as mentioned in Table-3 given in clause no. 1.3.1 in Part-E of Schedule-10 of CA must be maintained in the laboratory.
b) Calibration certificates of all the instruments must be submitted as per clause no. 9.8(a)(viii) of Concession Agreement.
c) Testing of TN, NH4-N, TP for composite samples each day as per Part-G in Schedule-10 of CA.
d) Site Diary as per Clause no. 1.7.2 of Part-G in Schedule – 10 of Concession Agreement.
e) Quarterly report as per Part-G in Schedule-10 of CA.
f) Monthly Environmental Monitoring Report as per Part-G in Schedule-10 of CA.
g) Procedure for recording & disposal of complaints.
h) Safety & Health Records. Incident reports must also be submitted along with action plan.
i) Periodic reports from all facilities must be uploaded on Central Pollution Control Board's Website.
j) Scheduled Maintenance Program specifying the impact of Scheduled Maintenance Periods on the Availability of each facility.

1.3 Recommendation's

- Some of the issues mentioned above are pending since long time and hence must be rectified at the earliest for enhancing the efficiency of the STP.
- Concessionaire must ensure satisfactory working of Online monitoring system & transmit the data as per requirement.
- All the maintenance jobs required for the observations made above must be done as soon as possible to increase the efficiency of plant.
- Permits must be used for all kind of maintenance jobs whether it is Preventive or Corrective. Concessionaire to please ensure the same.
- All the records must be provided as per the observations made above.
- All logbooks must be filled timely and accurately.
- Testing of samples must be done from outlet of PSTs also for checking the efficiency of PSTs.
- Concessionaire to please ensure that all the testing must be done as per the clause no. 1.7.9 of Part-G in Concession Agreement.
- All the old material obtained due to rehabilitation works in various units must be stacked properly at the identified part of the site and proper record must be maintained.
- It is recommended to follow proper safety measures during O&M, and it must be ensured that workers must wear proper PPEs while doing work at Site.
- More awareness trainings for workers must be given for encouraging them to use PPEs.

2. SALORI STP AND ASSOCIATE INFRASTRUCTURE

2.1 KPI Report



Source: Online analyzer,

*** BOD in Mg/L, COD in Mg/L and TSS in Mg/L**

Note: 1. Rectification of problem for variation in data is going on as calibration of multi parameter analyzer from OEM is in progress.

2. In the blank areas, data was not transfer due to some issue in router.

Salori STP, 29 MLD STP at Prayagraj
INLET FLOW & QUALITY REPORT

Date	Daily Feed Quantity MLD (Design- 29 MLD)		pH		BOD (mg/l)		COD (mg/l)		TSS (mg/l)		FECAL COLIFORM		FRC	DEWATERED SLUDGE		REMARKS
	M3	MLD	Inlet pH (Design- <9)	Final pH (Design- 6.5 to 9.0)	Inlet BOD (Design- <250 mg/l)	Final BOD (Design - <20 mg/l)	Inlet COD (Design- <500 mg/l)	Final COD (Design- <50 mg/l)	Inlet TSS (Design- <500 mg/l)	Final TSS (Design <30 mg/l)	Inlet (Design - NA)	Final (Design - <1000 MPN/100 ml)	Final (Design - 0.2 mg/l)	Outlet Concentration (>20%)	Fecal Coliform (20,00,000 MPN/gTS)	
1-Dec-22	35640	35.64	7.32	7.45	155	25	352	40	306	27	NA	800	0.2	24.8	1400000	
2-Dec-22	34430	34.43	7.27	7.43	160	24	356	36	318	26	NA	500	0.3	24.6	1500000	
3-Dec-22	33720	33.72	7.33	7.48	165	23	348	40	314	28	NA	700	0.3	23.9	1700000	
4-Dec-22	36630	36.63	7.37	7.46	155	25	340	36	298	32	NA	500	0.2	24.2	1300000	
5-Dec-22	38470	38.47	7.51	7.63	160	24	352	40	308	34	NA	600	0.2	25.1	1400000	
6-Dec-22	36110	36.11	7.32	7.47	155	26	368	44	324	37	NA	800	0.3	24.8	1100000	
7-Dec-22	36020	36.02	7.30	7.52	160	26	360	44	315	38	NA	600	0.2	25.3	1400000	
8-Dec-22	37530	37.53	7.38	7.52	165	25	352	40	332	39	NA	400	0.3	24.6	1200000	
9-Dec-22	35830	35.83	7.36	7.49	155	26	356	44	326	37	NA	500	0.2	25.0	1100000	
10-Dec-22	36190	36.19	7.31	7.54	160	24	360	40	338	40	NA	700	0.3	23.7	1300000	
11-Dec-22	37480	37.48	7.28	7.42	155	27	352	48	305	42	NA	800	0.3	24.2	1700000	
12-Dec-22	35570	35.57	7.27	7.49	160	25	348	44	296	41	NA	600	0.2	24.6	1400000	
13-Dec-22	35080	35.08	7.35	7.38	155	24	356	43	312	38	NA	500	0.3	24.6	1200000	
14-Dec-22	36330	36.33	7.32	7.45	160	26	352	46	309	40	NA	700	0.2	24.5	1700000	
15-Dec-22	40660	40.66	7.36	7.52	155	25	348	48	302	42	NA	800	0.3	24.8	1400000	
16-Dec-22	36570	36.57	7.41	7.48	160	24	360	44	292	40	NA	600	0.3	25.1	1100000	
17-Dec-22	35030	35.03	7.38	7.50	165	23	352	40	298	35	NA	500	0.3	25.3	1100000	
18-Dec-22	38890	38.89	7.35	7.46	160	22	356	36	316	32	NA	400	0.2	24.9	1200000	
19-Dec-22	41320	41.32	7.41	7.52	155	24	360	40	288	34	NA	700	0.3	25.2	1400000	
20-Dec-22	44710	44.71	7.31	7.47	160	23	340	40	312	31	NA	800	0.2	24.3	1700000	
21-Dec-22	43180	43.18	7.38	7.49	165	24	364	44	328	39	NA	700	0.2	23.9	1300000	
22-Dec-22	39020	39.02	7.42	7.54	155	25	368	40	327	38	NA	500	0.3	23.4	1100000	
23-Dec-22	39340	39.34	7.40	7.51	160	24	360	36	336	35	NA	600	0.3	23.7	1200000	
24-Dec-22	38610	38.61	7.36	7.48	165	26	356	40	318	34	NA	500	0.2	24.0	1400000	
25-Dec-22	39860	39.86	7.32	7.45	155	25	364	48	315	45	NA	700	0.3	24.5	1300000	
26-Dec-22	40870	40.87	7.35	7.50	165	26	360	44	324	42	NA	800	0.3	23.8	1200000	
27-Dec-22	40730	40.73	7.34	7.55	155	24	352	40	318	41	NA	600	0.3	24.4	1400000	
28-Dec-22	42120	42.12	7.39	7.52	150	23	348	36	326	31	NA	500	0.2	24.7	1700000	
29-Dec-22	37170	37.17	7.40	7.49	155	25	356	40	317	33	NA	700	0.3	23.6	1300000	
30-Dec-22	37520	37.52	7.33	7.58	160	26	340	44	330	35	NA	600	0.2	24.3	1100000	
31-Dec-22	37670	37.67	7.41	7.51	155	27	360	40	298	36	NA	500	0.3	24.8	1200000	
Average	38011.61	38.01	7.36	7.49	158.55	24.71	354.71	41.45	314.39	36.19	NA	619.35	0.26	24.47	1332258.06	

Source: Logbook of Laboratory at Sewage Treatment Plant

2.2 Inspection Report

Month of Site Inspection	December 2022
Site Inspectors	1. Mr. Santosh Kumar, PM-I, UPJN. 2. Mr. Tauseef, AE, UPJN. 3. Ms. Shilpa, JE, UPJN. 4. Mr. Sudhir Kumar Tomar, AECOM. 5. Mr. Rahul Kumar Azaad, PWPL. 6. Mr. Vaibhav, PWPL
Place(s) of Inspection	• 29 MLD STP at Salori, Prayagraj. • 29 MLD MPS at Salori, Prayagraj.

Visit was done on 26th Nov 2022, 3th Dec 2022, 9th Dec 2022, 16th Nov 2022 and following observations were made:

- **Status of Availability:**

S. No.	Facility Name	Actual Flow Pumped /Received at Facility (MLD)
1	Salori STP	33.72 to 40.66
2	Salori MPS	33.72 to 40.66

Note: 1) Source for above data is site record for flow of STP & MPS.

- **Status of KPIs:**

S. No.	Parameter Name	Design Value	Parameter Value
1	BOD – Effluent	< 30 mg/l	23 to 26 mg/l
2	TSS – Effluent	< 50 mg/l	26 to 42 mg/l
3	pH – Effluent	6.5 – 9.0	7.38 to 7.63
4	Fecal coliform – Effluent	<= 1000 MPN/100 ml	400 to 800 MPN/100 ml
5	Consistency – Sludge	> 20 %	23.70 to 25.30 %
6	Fecal Coliform – Sludge	< 20,00,000 MPN/gTS	1100000 to 1700000 MPN/gTS

Note: 1) Source for above data is site record for Laboratory of STP.

- **Status of Energy Consumption:**

S. No.	Facility Name	Actual Energy Consumption (KWH/MLD)
1	Salori STP	85.98 to 106.92
2	Salori Associated Infrastructure	50.12 to 54.30

Note: 1) Source for above data is site record for Power Consumption of STP.

- **Status of various units & records at site:**

1. Online analyzer at inlet is working but it is not showing correct values of parameters as compared to lab reports. As per current situation, inlet analyzer requires calibration every day for showing correct values of inlet parameters which is not a correct working condition. Also, KPI reports of this Multiparameter analyzer generated through SCADA system were studied and it was found that variation can be seen in between recorded values of KPIs in laboratory and recorded values of KPIs in reports generated by multiparameter analyzers through SCADA system which is more than prescribed limit given in 'Guidelines for Online Continuous Effluent Monitoring Systems (OCEMS)' by Central Pollution Control Board.
2. Data transfer from online analyzer at the outlet of STP to CPCB servers is in progress. By studying the graph available at the online portal, it was found that sudden spikes/drops can be seen in the graphs available at the online portal which is fundamentally not correct. These types of incidents have been observed in past also. Concessionaire is required to rectify these problems.
3. Chlorine analyzer at outlet is removed, Concessionaire is required to install the same per CA but clause no. 1.2.1 and clause no. 1.3.1 in Part-E of Schedule-10 in CA which clearly states that "Online residual chlorine measuring system" is to be installed.
4. Flowmeter at inlet of STP is working.
5. Flowmeter at outlet of STP is working but it is not showing correct readings as compared to that of inlet flowmeter.
6. Earlier during normal days, effluent outfall area was checked, and it was found that appearance of effluent at the outlet is good even though the quality inside STP is being maintained. Hence, it was decided to make arrangement for scattering the effluent for making its appearance good. Concessionaire was instructed to start work for same as soon as the monsoon period gets over.
7. All Grit Removal Units are working.
8. Both Mechanical Screens are working but mechanical screen no.2 is not lifting screenings efficiently. Though the screens are running in auto mode through timer, differential level sensors must also be made operational for running mechanical screens more efficiently through level difference during peak and lean period. Concessionaire is required to rectify the problem.
9. Both FAB units are working.
10. DO analyzers for both FAB units are not working, please rectify the problem.
11. All Aeration blowers are working.
12. Both clarisettlers are working. In Clarisettler no. 1, levelling of outlet launders must be checked as supernatant is not coming equally in all outlet lauders & this can affect the quality of effluent. Concessionaire to please look into the matter & rectify the problem at the earliest.
13. In clarisettlers it is observed that when agitators are operated, sludge starts coming to the top due to which quality deteriorates. Hence, it is suggested to do necessary modifications in agitators so that the problem can be rectified.
14. Quality of effluent is satisfactory.
15. For Sludge dewatering unit, installation of instruments (flowmeter for poly dosing line, etc.) is pending, Concessionaire to please do the needful.
16. Both Sludge transfer pumps for Clarisettler are working.
17. Both Filtrate pumps are working.
18. Both chlorinators and chlorine booster pumps are working.
19. Leak absorption system was checked in auto mode, but it was not working.

Concessionaire is required to rectify the problem. Also, as instructed earlier also, checklist forthe same must be prepared and recorded properly every month.

20. Thickener unit is working.
21. It was found that sludge is being dumped within the STP. Concessionaire to please look into the matter and dump sludge only in the land which is being allotted by UPJN for sludge disposal.
22. At Salori MPS, 5 pumps are OK for operation out of 6. Since the programming for running pumps in auto mode is completed, it is suggested to operate them in auto mode for optimum performance.
23. At Salori MPS, it is suggested to rectify problems in old pumps also so that they be used in emergency situation. Currently, all old pumps are not in working condition.
24. At Salori MPS, one coarse screen is working, and one coarse screen is in maintenance before sump due to which lot of waste is passing and pumps are getting choked and lot of wear and tear is happening in the pumps. Hence, UPJN is requested to instruct M/s Passavant to rectify the problem.
25. As already discussed, all the waste material obtained during Rehabilitation Works must be removed from the site as per point (h) in clause 8.8 of Concession Agreement.
26. As per Clause no. 1.6 & 1.7.1 of Concession Agreement, Computer Maintenance Management System (CMMS) must be implemented at all Sites. This must be implemented from day 1 of O&M period but the same is not completed till date, Concessionaire to please do the needful.
27. Installation & commissioning of Public Address System is not completed yet.
28. Installation of FeCl3 dosing system is completed but it is not made operational yet. Concessionaire to please complete the work at the earliest so that the quality of effluent can be improved further.
29. In SCADA system, flow variation can be seen in recorded values of daily and monthly flow as per site records. Also, there is variation in between flow recorded in SCADA reports and flow recorded in logbooks. This problem must be rectified.
30. There is variation in recorded values of flow from inlet flowmeter at Salori STP and outlet flowmeter of Salori STP, please rectify the problem.
31. Housekeeping in dewatering area must be improved, lot of sludge can be seen scattered in this area.
32. All CCTV cameras are working
33. Since COD is announced on 01.11.2020 for all Package – III facilities hence Concessionaire is required to implement following documents as per Clause no. 9 & Part-G in Schedule – 10 of Concession Agreement at the earliest:

    a) Portable samplers must be provided to collect composite samples for monitoring from inlet and outlet of STP as per clause no. 1.3.1 in Part-E of Schedule-10 of CA. Also, all the instruments as mentioned in Table-3 given in clause no. 1.3.1 in Part-E of Schedule-10 of CA must be maintained in the laboratory.
    b) Calibration certificates of all the instruments must be submitted as per clause no. 9.8(a)(viii) of Concession Agreement.
    c) Testing of TN, NH4-N, TP for composite samples each day as per Part-G in Schedule-10 of CA.
    d) Site Diary as per Clause no. 1.7.2 of Part-G in Schedule – 10 of Concession Agreement.
    e) Quarterly report as per Part-G in Schedule-10 of CA.
    f) Monthly Environmental Monitoring Report as per Part-G in Schedule-10 of CA.
    g) Procedure for recording & disposal of complaints.
    h) Safety & Health Records. Incident reports must also be submitted along with action

plan.

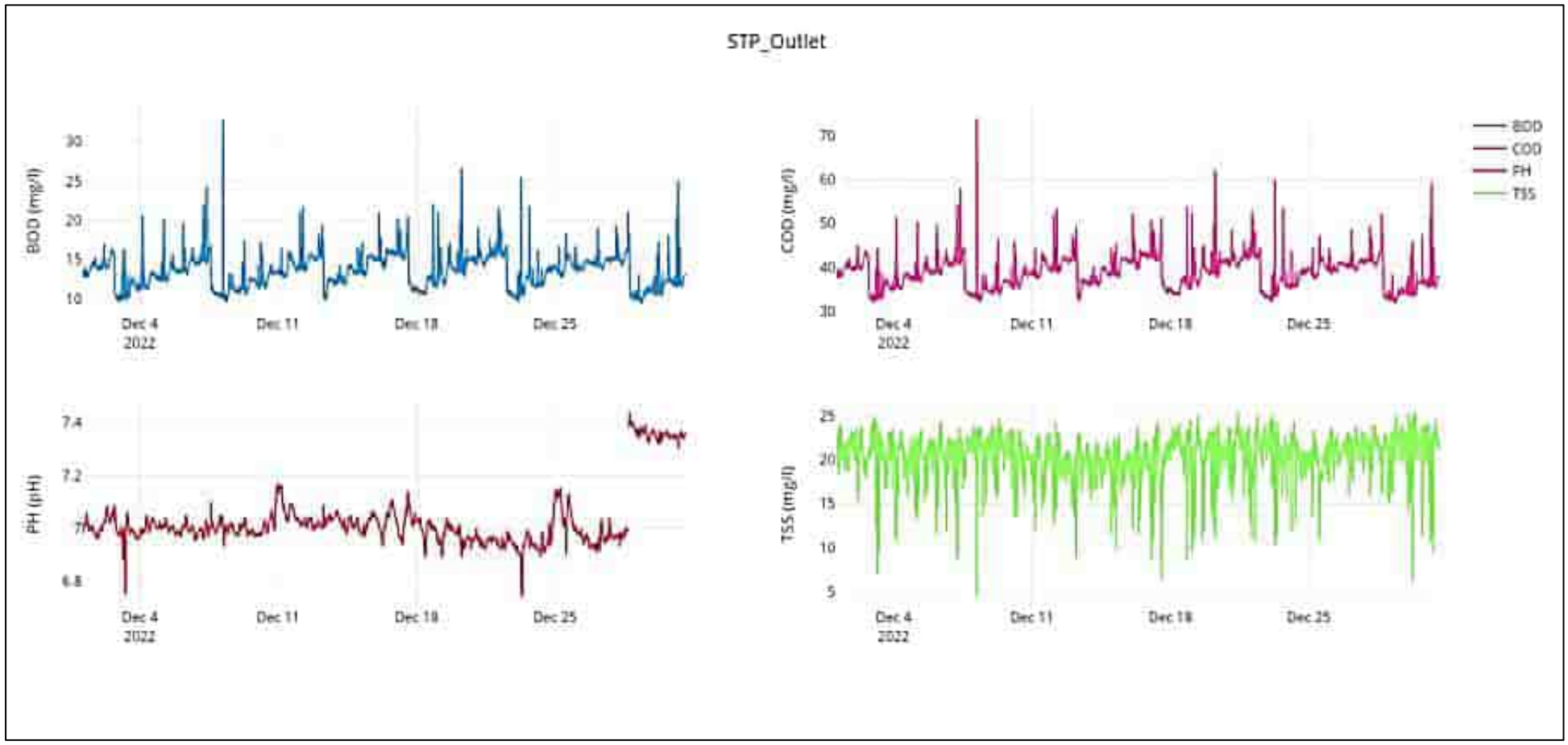
i) Periodic reports from all facilities must be uploaded on Central Pollution Control Board's Website.
j) Scheduled Maintenance Program specifying the impact of Scheduled Maintenance Periods on the Availability of each facility.

2.3 Recommendation's

- Some of the issues mentioned above are pending since long time and hence must be rectified at the earliest for enhancing the efficiency of the STP.
- Concessionaire must ensure satisfactory working of Online monitoring system & transmit the data as per requirement.
- All the maintenance jobs required for the observations made above must be done as soon as possible to increase the efficiency of plant.
- Permits must be used for all kind of maintenance jobs whether it is Preventive or Corrective. Concessionaire to please ensure the same.
- All the records must be provided as per the observations made above.
- All logbooks must be filled timely and accurately.
- Testing of samples must be done from outlet of PSTs also for checking the efficiency of PSTs.
- Concessionaire to please ensure that all the testing must be done as per the clause no. 1.7.9 of Part-G in Concession Agreement.
- All the old material obtained due to rehabilitation works in various units must be stacked properly at the identified part of the site and proper record must be maintained.
- It is recommended to follow proper safety measures during O&M, and it must be ensured that workers must wear proper PPEs while doing work at Site.
- More awareness trainings for workers must be given for encouraging them to use PPEs.

3. KODRA STP AND ASSOCIATE INFRASTRUCTURE

3.1 KPI Report



Source: Online analyzer,

*** BOD in Mg/L, COD in Mg/L and TSS in Mg/L**

Note: 1. Rectification of problem for variation in data is going on as calibration of multi parameter analyzer from OEM is in progress.

2. In the blank areas, data was not transfer due to some issue in router.

Kodra STP, 25 MLD STP at Prayagraj
INLET FLOW & QUALITY REPORT

Date	Daily Feed Quantity MLD (Design- 25 MLD)		pH		BOD (mg/l)		COD (mg/l)		TSS (mg/l)		FECAL COLIFORM		FRC	DEWATERED SLUDGE		REMARKS
	m3	MLD	Inlet pH (Design [illegible])	Final pH (Design- 6.5 to 8.5)	Inlet BOD (Design- <250 mg/l)	Final BOD (Design- <10 mg/l)	Inlet COD [illegible]	Final COD [illegible]	Inlet TSS (Design- <500 mg/l)	Final TSS (Design- <20 mg/l)	Inlet (Design- NA)	Final (Design- <1000 MPN/100 ml)	Final (Design- 0.2 mg/l)	Outlet [illegible]	Fecal Coliform [illegible]	
1-Dec-22	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
2-Dec-22	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
3-Dec-22	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	NA	[illegible]	[illegible]	[illegible]	[illegible]	
4-Dec-22	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
5-Dec-22	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
6-Dec-22	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
7-Dec-22	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
8-Dec-22	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
9-Dec-22	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
10-Dec-22	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
11-Dec-22	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
12-Dec-22	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
13-Dec-22	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	NA	[illegible]	[illegible]	[illegible]	[illegible]	
14-Dec-22	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
15-Dec-22	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
16-Dec-22	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
17-Dec-22	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	NA	[illegible]	[illegible]	[illegible]	[illegible]	
18-Dec-22	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
19-Dec-22	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
20-Dec-22	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
21-Dec-22	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
22-Dec-22	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	NA	[illegible]	[illegible]	[illegible]	[illegible]	
23-Dec-22	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
24-Dec-22	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
25-Dec-22	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
26-Dec-22	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
27-Dec-22	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
28-Dec-22	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
29-Dec-22	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
30-Dec-22	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
31-Dec-22	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
Average	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	NA	[illegible]	[illegible]	[illegible]	[illegible]	

Source: Logbook of Laboratory at Sewage Treatment Plant

3.2 Inspection Report

Month of Site Inspection	December 2022
Site Inspectors	1. Mr. Santosh Kumar PM-I, UPJN. 2. Mr. Tauseef Ahamed, AE, UPJN. 3. Mr. Narendra, JE, UPJN. 4. Mr. Sudhir Kumar Tomar, AECOM. 5. Mr. Rahul Azaad, PWPL. 6. Mr. Rajan, PWPL.
Place(s) of Inspection	• 25 MLD STP at Kodra, Prayagraj • 25 MLD MPS at Kodra, Prayagraj

Visit was done on 28th Nov 2022, 5th Dec 2022, 9th Dec 2022 16th Dec 2022, and following observations were made:

- **Status of Availability:**

S. No.	Facility Name	Actual Flow Pumped /Received at Facility (MLD)
1	Kodra STP	25.23 to 29.35
2	Kodra MPS	25.23 to 29.35

Note: 1) Source for above data is Register for flow record of STP & MPS.

- **Status of KPIs:**

S. No.	Parameter Name	Design Value	Parameter Value
1	BOD – Effluent	< 20 mg/l	11 to 15 mg/l
2	TSS – Effluent	< 30 mg/l	18 to 23 mg/l
3	pH – Effluent	6.5 – 9.0	7.09 to 7.68
4	Fecal coliform – Effluent	<= 1000 MPN/100 ml	400 to 800 MPN/100 ml
5	Consistency – Sludge	> 20 %	23.29 to 24.42%
6	Fecal Coliform – Sludge	< 20,00,000 MPN/gTS	1300000 to 1700000 MPN/gTS

Note: 1) Source for above data is Register for Laboratory of STP.

- **Status of Energy Consumption:**

S. No.	Facility Name	Actual Energy Consumption (KWH/MLD)
1	Kodra STP	64.87 to 98.40
2	Kodra Associated Infrastructure	95.83 to 102.33

Note: 1) Source for above data is Register for Power Consumption Record of STP.

- **Status of various units & records at site:**
  1. Online analyzer at inlet is working but it is not showing correct values of parameters as compared to lab reports. As per current situation, inlet analyzer requires calibration every day for showing correct values of inlet parameters which is not a correct working condition. Also, KPI reports of this Multiparameter analyzer generated through SCADA system were studied and it was found that variation can be seen in between recorded values of KPIs in laboratory and recorded values of KPIs in reports generated by multiparameter analyzers through SCADA system which is more than prescribed limit given in 'Guidelines for Online Continuous Effluent Monitoring Systems (OCEMS)' by Central Pollution Control Board.
  2. Online analyzer at outlet is working. Validation of Calibration was done in presence of representatives of Aaxis Nano Technologies (OEM of Multiparameter analyzer) along with UPJN officials with the help of stock solutions of pH, COD, TSS on 03rd Sep 2022. Since then, reports generated through SCADA system were studied and it was found that the reports are considerably stabilized but still variation can be seen in between recorded values of KPIs in laboratory and recorded values of KPIs in reports generated by multiparameter analyzers through SCADA system which is more than prescribed limit given in 'Guidelines for Online Continuous Effluent Monitoring Systems (OCEMS)' by Central Pollution Control Board. Also, it is observed that sudden spikes can be seen in the values of parameters given in the report which is fundamentally not correct. Concessionaire is required to further fine tune the working of analyzers for getting more stability in reports.
  3. Data transfer from online analyzer at the outlet of STP to CPCB servers is in progress. By studying the graph available at the online portal, it was found that sudden spikes/drops can be seen in the graphs available at the online portal which is fundamentally not correct. These types of incidents have been observed in past also. Concessionaire is required to rectify these problems.
  4. Flowmeter at inlet of STP is working.
  5. Flowmeter at outlet of STP is working but it is not showing correct readings as compared to that of inlet flowmeter.
  6. One grit removal unit is working. One grit removal unit is under maintenance.
  7. Both Mechanical Fine Screens at PTU are working. Though the screens are running in auto mode through timer, differential level sensors must also be made operational for running mechanical screens more efficiently through level difference during peak and lean period.
  8. All Biotowers are working. Small amount of plastic waste is reaching the biotowers which must be rectified by doing overhauling of mechanical screens at PTU.
  9. All Aeration tanks are working.
  10. Both DO Analyzer are not working at aeration tank.
  11. All Aeration blowers are working.
  12. All Centrifuges are in working condition.
  13. Drainage system must be provided near the sludge collection area of dewatering system for avoiding sludge accumulation.
  14. All Sludge Recirculation Pumps are working.
  15. Both Centrifuge Feed Pumps are working.
  16. Both Secondary Clarifiers are working.
  17. Thickener unit is working.
  18. Both Chlorine Dosing Systems are working. Residual chlorine in effluent was found to be around 0.2 to 0.3 mg/l.
  19. Chlorine analyzer for the effluent is not giving correct values.

20. It is continuously observed that dewatered sludge is being dumped inside the plant. Concessionaire is required to dump the dewatered sludge in the place given by UPJN.
21. In SCADA system, flow variation can be seen in recorded values of daily and monthly flow as per site records. Also, there is variation in between flow recorded in SCADA reports and flow recorded in logbooks. This problem must be rectified.
22. There is variation in recorded values of flow from inlet flowmeter at Kodra STP and outlet flowmeter of Kodra STP, please rectify the problem.
23. One Mechanical coarse Screens at MPS is working. One Mechanical coarse Screens is under maintenance Though the screens are running in auto mode through timer, differential level sensors must also be made operational for running mechanical screens more efficiently through level difference during peak and lean period.
24. At Kodra MPS, all 6 pumps are OK for operation. Pressure transmitter is not installed in common header line of pumps yet. Also, pumps must be kept in auto mode so that they can start & stop on the basis of level in the sump.
25. At Kodra MPS, it is suggested to rectify problems in old pumps also so that they be used in emergency situation. Currently, all old pumps are not in working condition.
26. Landscaping of site must be improved; it needs to be made better.
27. As already discussed, all the waste material obtained during Rehabilitation Works must be removed from the site as per point (h) in clause 8.8 of Concession Agreement.
28. As per Clause no. 1.6 & 1.7.1 of Concession Agreement, Computer Maintenance Management System (CMMS) must be implemented at all Sites. This is not started yet, Concessionaire to please do the needful.
29. Installation of Public Address System is done but its commissioning is not completed yet.
30. Painting of units in the STP is completed from outside. It is suggested to start the painting work for all units from inside also.
31. Since COD is announced on 01.11.2020 for all Package – III facilities hence Concessionaire is required to implement following documents as per Clause no. 9 & Part-G in Schedule – 10 of Concession Agreement at the earliest:

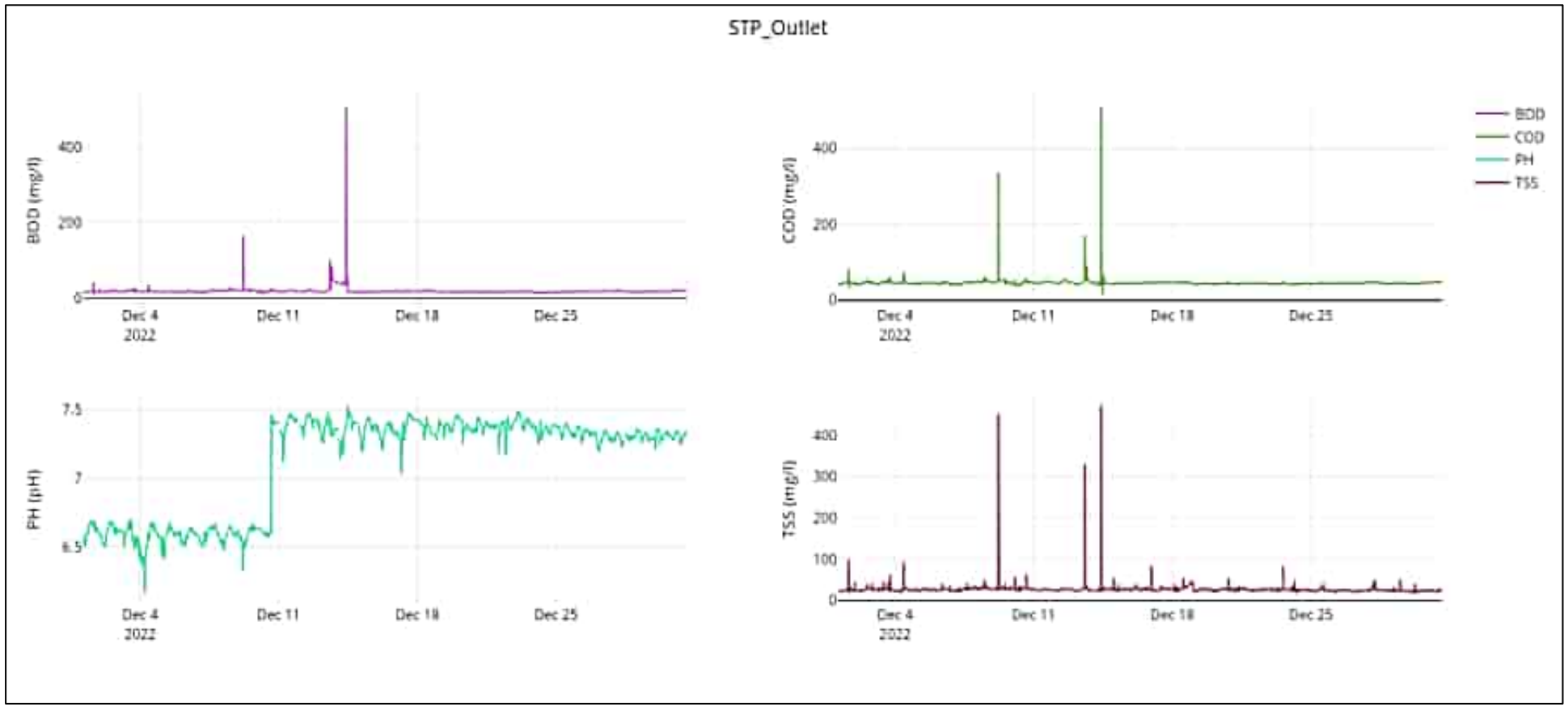
    a) Portable samplers must be provided to collect composite samples for monitoring from inlet and outlet of STP as per clause no. 1.3.1 in Part-E of Schedule-10 of CA. Also, all the instruments as mentioned in Table-3 given in clause no. 1.3.1 in Part-E of Schedule-10 of CA must be maintained in the laboratory.
    b) Calibration certificates of all the instruments must be submitted as per clause no. 9.8(a)(viii) of Concession Agreement.
    c) Testing of TN, NH4-N, TP for composite samples each day as per Part-G in Schedule-10 of CA.
    d) Site Diary as per Clause no. 1.7.2 of Part-G in Schedule – 10 of Concession Agreement.
    e) Quarterly report as per Part-G in Schedule-10 of CA.
    f) Monthly Environmental Monitoring Report as per Part-G in Schedule-10 of CA.
    g) Procedure for recording & disposal of complaints.
    h) Safety & Health Records. Incident reports must also be submitted along with action plan.
    i) Periodic reports from all facilities must be uploaded on Central Pollution Control Board's Website.
    j) Scheduled Maintenance Program specifying the impact of Scheduled Maintenance Periods on the Availability of each facility.

3.3 Recommendation's

- Some of the issues mentioned above are pending since long time and hence must be rectified at the earliest for enhancing the efficiency of the STP.
- Concessionaire must ensure satisfactory working of Online monitoring system & transmit the data as per requirement.
- All the maintenance jobs required for the observations made above must be done as soon as possible to increase the efficiency of plant.
- Permits must be used for all kind of maintenance jobs whether it is Preventive or Corrective. Concessionaire to please ensure the same.
- All the records must be provided as per the observations made above.
- All logbooks must be filled timely and accurately.
- Testing of samples must be done from outlet of PSTs also for checking the efficiency of PSTs.
- Concessionaire to please ensure that all the testing must be done as per the clause no. 1.7.9 of Part-G in Concession Agreement.
- All the old material obtained due to rehabilitation works in various units must be stacked properly at the identified part of the site and proper record must be maintained.
- It is recommended to follow proper safety measures during O&M, and it must be ensured that workers must wear proper PPEs while doing work at Site.
- More awareness trainings for workers must be given for encouraging them to use PPEs.

4. PONGHAT STP AND ASSOCIATE INFRASTRUCTURE

4.1 KPI Report



Source: Online analyzer,

*** BOD in Mg/L, COD in Mg/L and TSS in Mg/L**

Note: 1. Rectification of problem for variation in data is going on as calibration of multi parameter analyzer from OEM is in progress.

2. In the blank areas, data was not transfer due to some issue in router.

Ponghat STP, 10 MLD STP at Prayagraj
INLET FLOW & QUALITY REPORT

Date	Daily Feed Quantity MLD (Design- 10 MLD)		pH		BOD (mg/l)		COD (mg/l)		TSS (mg/l)		FECAL COLIFORM		FRC	DEWATERED SLUDGE		REMARKS
	M3	MLD	Inlet pH (Design- <9)	Final pH (Design- 6.5 to 9.0)	Inlet BOD (Design- <250 mg/l)	Final BOD (Design - <20 mg/l)	Inlet COD (Design- <500 mg/l)	Final COD (Design <50 mg/l)	Inlet TSS (Design- <500 mg/l)	Final TSS (Design - <30 mg/l)	Inlet (Design - NA)	Final (Design - <1000 MPN/100 ml)	Final (Design - 0.2 mg/l)	Outlet Concentration (>20%)	Fecal Coliform (20,00,000 MPN/gTS)	
1-Dec-22	14150	14.15	7.32	7.6	135	15	308	40	294	21	NA	600	0.3	23.79	1400000	
2-Dec-22	12850	12.85	7.24	7.49	145	17	320	44	286	24	NA	800	0.4	23.45	1700000	
3-Dec-22	12330	12.33	7.29	7.41	140	16	312	48	278	23	NA	500	0.3	24.12	1200000	
4-Dec-22	13390	13.39	7.18	7.58	135	15	324	40	293	24	NA	700	0.4	23.58	1400000	
5-Dec-22	13480	13.48	7.36	7.46	140	17	316	44	274	22	NA	600	0.3	23.21	1300000	
6-Dec-22	13450	13.45	7.44	7.35	136	18	332	40	312	25	NA	800	0.4	23.43	1700000	
7-Dec-22	11980	11.98	7.37	7.48	150	17	324	48	288	24	NA	500	0.3	23.89	1400000	
8-Dec-22	14240	14.24	6.74	6.75	140	18	316	44	296	27	NA	400	0.4	24.28	1400000	
9-Dec-22	13290	13.29	6.81	6.68	145	17	328	44	304	26	NA	600	0.3	23.64	1700000	
10-Dec-22	13580	13.58	7.19	7.08	140	16	324	48	280	27	NA	500	0.4	23.80	1300000	
11-Dec-22	13890	13.89	7.12	7.25	145	17	308	44	294	26	NA	400	0.3	24.35	1700000	
12-Dec-22	13910	13.91	7.24	7.44	150	18	312	44	310	26	NA	700	0.4	23.40	1400000	
13-Dec-22	14250	14.25	7.27	7.43	145	19	316	48	302	28	NA	600	0.3	24.30	1300000	
14-Dec-22	14480	14.48	7.32	7.23	140	18	320	44	308	28	NA	500	0.4	23.87	1700000	
15-Dec-22	13930	13.93	7.29	7.38	145	17	312	48	305	25	NA	400	0.3	24.04	1400000	
16-Dec-22	13720	13.72	7.38	7.4	140	18	324	40	297	26	NA	600	0.4	23.87	1300000	
17-Dec-22	14090	14.09	7.27	7.31	150	16	316	44	301	24	NA	700	0.3	24.28	1700000	
18-Dec-22	13850	13.85	7.24	7.34	145	17	312	48	285	28	NA	500	0.4	23.77	1700000	
19-Dec-22	14010	14.01	7.29	7.37	150	16	304	40	299	25	NA	600	0.3	23.24	1300000	
20-Dec-22	12570	12.57	7.26	7.29	140	14	308	44	291	26	NA	400	0.4	24.13	1200000	
21-Dec-22	13860	13.86	7.14	7.25	135	18	316	40	286	24	NA	700	0.3	23.43	1400000	
22-Dec-22	12850	12.85	7.21	7.33	145	14	324	48	279	26	NA	500	0.4	24.08	1300000	
23-Dec-22	12160	12.60	7.19	7.28	140	17	312	40	294	23	NA	600	0.3	23.75	1700000	
24-Dec-22	12120	12.12	7.13	7.35	155	18	308	44	288	25	NA	400	0.4	24.27	1400000	
25-Dec-22	13120	13.21	7.23	7.51	135	14	320	40	276	22	NA	600	0.3	23.86	1700000	
26-Dec-22	12910	12.91	7.35	7.45	145	18	304	40	271	28	NA	500	0.4	24.11	1300000	
27-Dec-22	12330	12.33	7.02	7.39	150	19	300	48	283	21	NA	700	0.3	23.98	1200000	
28-Dec-22	12540	12.54	7.21	7.41	140	15	320	40	272	25	NA	600	0.4	24.27	1400000	
29-Dec-22	12680	12.68	7.31	7.37	135	18	312	40	288	21	NA	400	0.3	23.39	1700000	
30-Dec-22	12800	12.80	7.28	7.42	145	19	308	48	296	26	NA	700	0.4	24.91	1300000	
31-Dec-22	12440	12.44	7.07	7.36	140	16	316	40	279	27	NA	600	0.3	23.44	1700000	
Average	13279.03	13.30	7.22	7.34	142.61	16.84	315.35	43.61	290.61	24.94	NA	570.97	0.35	23.87	1461290.32	

Source: Logbook of Laboratory at Sewage Treatment Plant

4.2 Inspection Report

Month of Site Inspection	December 2022
Site Inspectors	1. Mr. Santosh Kumar PM-I, UPJN. 2. Mr. Tauseef Ahamed, AE UPJN. 3. Mr. Narendra, JE UPJN. 4. Mr. Sudhir Kumar Tomar, AECOM. 5. Mr. Rahul Azaad, PWPL. 6. Mr. Anjani, PWPL.
Place(s) of Inspection	• 10 MLD STP at Ponghat, Prayagraj • 10 MLD MPS at Ponghat, Prayagraj

Visit was done on 28th Nov 2022, 5th Dec 2022, 9th Dec 2022 16th Dec 2022, and following observations were made:

- **Status of Availability:**

S. No.	Facility Name	Actual Flow Pumped /Received at Facility (MLD)
1	Ponghat STP	11.98 to 14.48
2	Ponghat MPS	11.98 to 14.48

Note: 1) Source for above data is Register for flow record of STP & MPS.

- **Status of KPIs:**

S. No.	Parameter Name	Design Value	Parameter Value
1	BOD – Effluent	< 20 mg/l	15 to 18
2	TSS – Effluent	< 30 mg/l	21 to 28
3	pH – Effluent	6.5 – 9.0	6.68 to 7.60
4	Fecal coliform – Effluent	<= 1000 MPN/100 ml	400 to 800
5	Consistency – Sludge	> 20 %	23.21 to 24.35
6	Fecal Coliform – Sludge	< 20,00,000 MPN/gTS	1200000 to 1700000

Note: 1) Source for above data is Register for Laboratory of STP.

- **Status of Energy Consumption:**

S. No.	Facility Name	Actual Energy Consumption (KWH/MLD)
1	Ponght STP	36.31 to 152.75
2	Ponght Associated Infrastructure	89.25 to 95.05

Note: 1) Source for above data is Register for Power Consumption Record of STP.

- **Status of various units & records at site:**

1. Online analyzer at inlet is working but it is not showing correct values of parameters as compared to lab reports. As per current situation, inlet analyzer requires calibration every day for showing correct values of inlet parameters which is not a correct working condition. Also, KPI reports of this Multiparameter analyzer generated through SCADA system were studied and it was found that variation can be seen in between recorded values of KPIs in laboratory and recorded values of KPIs in reports generated by multiparameter analyzers through SCADA system which is more than prescribed limit given in 'Guidelines for Online Continuous Effluent Monitoring Systems (OCEMS)' by Central Pollution Control Board.
2. Online analyzer at outlet is working. Validation of Calibration was done in presence of representatives of Aaxis Nano Technologies (OEM of Multiparameter analyzer) along with UPJN officials with the help of stock solutions of pH, COD, TSS on 02nd Sep 2022. Since then, reports generated through SCADA system were studied and it was found that the reports are considerably stabilized but still variation can be seen in between recorded values of KPIs in laboratory and recorded values of KPIs in reports generated by multiparameter analyzers through SCADA system which is more than prescribed limit given in 'Guidelines for Online Continuous Effluent Monitoring Systems (OCEMS)' by Central Pollution Control Board. Also, it is observed that sudden spikes can be seen in the values of parameters given in the report which is fundamentally not correct. Concessionaire is required to further fine tune the working of analyzers for getting more stability in reports.
3. Data transfer from online analyzer at the outlet of STP to CPCB servers is in progress. By studying the graph available at the online portal, it was found that sudden spikes/drops can be seen in the graphs available at the online portal which is fundamentally not correct. These types of incidents have been observed in past also. Concessionaire is required to rectify these problems.
4. Flowmeter at inlet of STP is working.
5. Flowmeter at outlet of STP is working but it is not showing correct readings as compared to that of inlet flowmeter.
6. Both Mechanical fine screens at PTU are working. Though the screens are running in auto mode through timer, differential level sensors must also be made operational for running mechanical screens more efficiently through level difference during peak and lean period.
7. Both Grit Removal Units are working.
8. Both Biotowers are working. Small amount of plastic waste is reaching the biotowers which must be rectified by doing overhauling of mechanical screens at PTU.
9. All Aeration tanks are working. In Aeration tank no. 2, air is coming out vigorously from 1 point due to which air distribution is not proper in the tank which could affect the quality of treatment in aeration tanks. Maintenance for these tanks must be completed.
10. Both DO Analyzers at aeration tanks are not working.
11. All Aeration Air Blowers are working.
12. All Centrifuges are working along with Sludge Feed pumps and Poly dosing pumps. Sludge generation is 5–6 trolleys per day.
13. Quality of effluent is satisfactory.
14. Drainage system must be provided near the sludge collection area of dewatering system for avoiding sludge accumulation.
15. Both Sludge Recirculation Pumps are working.
16. Both Chlorine Dosing Systems are working. Residual chlorine in effluent was found to be 0.2 to 0.3 mg/l.
17. Chlorine analyzer for the effluent is not giving correct values.

18. It is continuously observed that dewatered sludge is being dumped inside the plant. Concessionaire is required to dump the dewatered sludge in the place given by UPJN.
19. Recording of flow from flowmeters at inlet & outlet is not accurate in SCADA system and the same is not matching site record also, Concessionaire to please check & rectify the problem.
20. At Ponghat MPS, all 6 pumps are OK for operation. Presser transmitter is not installed at pump discharge common header.
21. One mechanical coarse screen at MPS is working and one is in maintenance. Though the screens are running in auto mode through timer, differential level sensors must also be made operational for running mechanical screens more efficiently through level difference during peak and lean period.
22. At Ponghat MPS, it is suggested to rectify problems in old pumps also so that they be used in emergency situation. Currently, all old pumps are not in working condition.
23. As already discussed, all the waste material obtained during Rehabilitation Works must be removed from the site as per point (h) in clause 8.8 of Concession Agreement.
24. As per Clause no. 1.6 & 1.7.1 of Concession Agreement, Computer Maintenance Management System (CMMS) must be implemented at all Sites. This is not started yet, Concessionaire to please do the needful.
25. Installation of Public Address System is done but its commissioning is not completed yet.
26. Painting of units in the STP is completed from outside. It is suggested to start the painting work for all units from inside also.
27. Since COD is announced on 01.11.2020 for all Package – III facilities hence Concessionaire is required to implement following documents as per Clause no. 9 & Part-G in Schedule – 10 of Concession Agreement at the earliest:

    a) Portable samplers must be provided to collect composite samples for monitoring from inlet and outlet of STP as per clause no. 1.3.1 in Part-E of Schedule-10 of CA. Also, all the instruments as mentioned in Table-3 given in clause no. 1.3.1 in Part-E of Schedule-10 of CA must be maintained in the laboratory.
    b) Calibration certificates of all the instruments must be submitted as per clause no. 9.8(a)(viii) of Concession Agreement.
    c) Testing of TN, NH4-N, TP for composite samples each day as per Part-G in Schedule-10 of CA.
    d) Site Diary as per Clause no. 1.7.2 of Part-G in Schedule – 10 of Concession Agreement.
    e) Quarterly report as per Part-G in Schedule-10 of CA.
    f) Monthly Environmental Monitoring Report as per Part-G in Schedule-10 of CA.
    g) Procedure for recording & disposal of complaints.
    h) Safety & Health Records. Incident reports must also be submitted along with action plan.
    i) Periodic reports from all facilities must be uploaded on Central Pollution Control Board's Website.
    j) Scheduled Maintenance Program specifying the impact of Scheduled Maintenance Periods on the Availability of each facility.

4.3 Recommendation's

- Some of the issues mentioned above are pending since long time and hence must be rectified at the earliest for enhancing the efficiency of the STP.
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- Concessionaire must ensure satisfactory working of Online monitoring system & transmit the data as per requirement.
- All the maintenance jobs required for the observations made above must be done as soon as possible to increase the efficiency of plant.
- Permits must be used for all kind of maintenance jobs whether it is Preventive or Corrective. Concessionaire to please ensure the same.
- All the records must be provided as per the observations made above.
- All logbooks must be filled timely and accurately.
- Testing of samples must be done from outlet of PSTs also for checking the efficiency of PSTs.
- Concessionaire to please ensure that all the testing must be done as per the clause no. 1.7.9 of Part-G in Concession Agreement.
- All the old material obtained due to rehabilitation works in various units must be stacked properly at the identified part of the site and proper record must be maintained.
- It is recommended to follow proper safety measures during O&M, and it must be ensured that workers must wear proper PPEs while doing work at Site.
- More awareness trainings for workers must be given for encouraging them to use PPEs.

ANNEXURE-IV

PROJECT ENGINEER ACTIVITY AS PER TOR

Activities carried out as per TOR				
Clouse as per TOR	**Scope**	**Period from 1st Dec 2022 to 31st Dec 2022**		
		Undertaken till previous months	**Undertaken during this month**	**Expected for next month**
4.1 (i)	Review, analysis and qualifying assessment of field investigations carried out and reported by the Concessionaire in respect of topographical surveys, hydraulic & hydrologic data verification, sub-surface investigation including laboratory testing and reports of geologists wherever applicable, investigation of construction material including lab testing.	Yes	Yes	Review of construction material including lab testing.
4,1(ii)	Review, analysis and qualifying assessment of Design Memorandums, specifications and construction drawings prepared and submitted by the concessionaire.	Yes	Yes	Review of construction drawing
4.1(iii)	Conduct Kick Off meetings	Yes	NA	NA
4.1(iv)	Review and Monitor the submissions of the Concessionaire such as: a. Work Schedule b. Detailed Survey report c. Basic Engineering d. Detailed design and Drawings for i. Civil Works 1. Geo-tech reports 2. Lab testing reports 3. Third Party Inspection report ii. Mechanical and Electrical Works iii. Automation and Instrumentation works iv. Any other allied works e.QA/QC plans	Yes	Yes	Review of remaining drawing design of Civil/Mech/Electrical

	f. Environment Health and Safety Plan, material safety data and hazardous chemicals if any.			
4.1(v)	Review of the Drawings and Documents as set forth in Paragraph 4 and 5;	Yes	Yes	Yes
4.1(vi)	Identification of Construction Milestones & Project progress monitoring and issue of Milestone Construction Certificates, Construction Completion Certificate, monitoring Trail run, recommendations for issuance of COD certificate by Jal Nigam etc..	Review and Monitoring of project	Review and Monitoring of project	Review and Monitoring of project
4.1(vii)	To Assist NMCG for getting Statutory permissions	NA	NA	NA
4.1(viii)	Ensure compliance with Statutory provisions under various applicable laws	Yes	Yes	Yes
4.1(ix)	Review, inspection, supervision and monitoring of Construction Works as set forth in Paragraph 6; conducting Tests on completion of construction and issuing Completion/ Provisional Certificate as set forth in Paragraph 6	Yes	Yes	Yes
	Review, inspection and monitoring of O&M as set forth in Paragraph 6;	Yes	Yes	Yes
	determining, as required under the Concession Agreement, the costs of any works or services and/or their reasonableness;	NA	NA	NA
	determining, as required under the Concession Agreement,	Yes	Yes	Yes

	the period or any extension thereof, for performing any duty or obligation			
	Determining the Events of default and guidance on consequent Termination notices and Payment as detailed in clauses 16.1 to 16.5of the Concession Agreement	NA	NA	NA
	Determine deficiencies in the commissioning & trial runs; prepare the final acceptance document for acceptance of commissioning & trial runs. Prepare & Issue Commercial Operation certificate through Uttar Pradesh Jal Nigam	Yes	Yes	NA
	Any other matter which is not specified in ((vi),(vii), or (viii) above and which creates an obligation or liability on the Employer /NMCG beyond the provisions of the Concession Agreement.	Yes	Yes	Yes
4.1(x)	Ensuring Interim Availability of the existing Facilities during construction period and certifying Scheduled Outages during Scheduled Maintenance.	NA	NA	NA
4.1(xi)	The Project Engineer shall submit regular periodic reports, as specified in the Concession Agreement to Uttar Pradesh Jal Nigam and NMCG, in respect of its duties and functions under the Concession Agreement.	YES	YES	YES
4.1(xii)	The Project Engineer shall aid and advise the Employer on any proposal for variation under Article 20 of the Concession Agreement.	Yes	Yes	Yes

4.1(xiii)	Assisting the Parties in resolution of Disputes as set forth in Paragraph 9;	Yes	Yes	Yes
4.1(xiv)	Assisting the employer in the fulfilment of Hand back requirements as detailed in clause 20.3 of the Concession Agreement; and	NA	NA	NA
4.1(xv)	Undertaking all other duties and functions in accordance with this agreement. Project Engineer shall utilize best of analytical tools /computational models for review/analysis of structural/hydraulics wherever essential.	Yes	Yes	Yes
4.2	The Project Engineer shall discharge its duties in an efficient manner, consistent with the highest standards of professionalism and Good Industry Practice.	Yes	Yes	Yes
4.3	The Project Engineer must function in a manner to assist and equip the employer to ascertain that the Concessionaire shall operate and maintain the Facilities in a manner that: (i) Is in compliance with the Technical Specifications, Applicable Laws, Applicable Permits and Good Industry Practice; Results in the Facilities achieving the KPIs as detailed in schedule 9of the Concession Agreement and certify within 7 days the KPI adherence Report as per clause 9.12 of the Concession Agreement;	Yes	Yes	Yes

	(ii) Ensures that the Allahabad Facilities are capable of treating Sewage up to the Design Capacity on a daily basis; (iii) Ensures efficient treatment of Sewage and handling and disposal of STPs By- Products and the Treated Effluent (iv) STPs are safe and reliable, subject to normal wear and tear of the Facilities and the Associated Infrastructure; (v) Is in compliance with the technology license agreement executed by the Concessionaire for the technology, processes, know-how and systems used or incorporated into the Facilities and/or the Associated Infrastructure; (vi) Maintains the safety and security of personnel, material and property at the Site, in accordance with the approved EHS Plan, Applicable Laws and Applicable Permits; and (vii) Ensures that all waste materials and hazardous substances are stored and/or disposed in accordance with the EHS Plan, Applicable Laws and Applicable Permits.			
4.4	Overall, The Project Engineer shall assist the Uttar Pradesh Jal Nigam in supervising the construction, rehabilitation, operation and maintenance of the Facilities and shall work closely with the Uttar Pradesh Jal Nigam and NMCG to	Yes	Yes	Yes

	monitor compliance with the KPIs. The detailed scope of work of the Project Engineer during various stages of the project, to be read in conjunction with the provisions of the Concession Agreement, is outlined in Paragraphs 4-12 of the TOR.			
5.1	During the Development Period, the Project Engineer shall undertake a detailed review of the basic engineering Designs, furnished by the Concessionaire along with supporting data, including the geo-technical and hydrological investigations, characteristics of materials from borrow areas and quarry sites, topographical surveys and Sewage Flow Analysis. The Project Engineer shall complete such review and send its comments/observations to the Uttar Pradesh Jal Nigam and the Concessionaire within 10 (ten) days of receipt of such Drawings. In particular, such comments shall specify the conformity or otherwise of such Drawings with the Scope of the Project and Specifications and Standards.	Yes	Yes	Yes
5.2	The Project Engineer shall review and assist the Uttar Pradesh Jal Nigam in approval of the submissions by the concessionaire relating to the "design and, Construction Plan, rehabilitation Plan of existing facilities" so as to confirm to the scope as per	Yes	Yes	Yes

	Schedule 1 of the Concession Agreement.			
5.3	The basic engineering drawings for the construction and rehabilitation in the above case shall mean the designs and documents to be submitted by the Concessionaire and approved by the Uttar Pradesh Jal Nigam as a Condition Precedent and shall include but not limited to (a) Conduct Kick off meeting, Scrutiny of contractor's submittals (b) Process description, process calculations and hydraulic calculations; (c) List of design codes and standards; (d) Master drawing schedule; (e) Drainage design; (f) STP Facilities layout; (g) Process flow diagram; (h) Hydraulic flow diagram; (i) Mass balance diagram; (j) Process and instrumentation diagram; (k) Single line diagram; (l) Electrical load list; and (m) Structure design and drawings (n) Pump Characteristics and (o) General arrangement diagrams of all units of Facilities and; (p) Any other information, design, drawings, etc needed for effective development/rehabilitation and operation of Facilities..	Yes	Yes	Yes

5.4	The Project Engineer shall review any modified Drawings or supporting Documents sent to it by the Concessionaire and furnish its comments within 10 (ten) days of receiving such Drawings or Documents.	Yes	Yes	Yes
5.5	The Project Engineer shall review the detailed design, construction methodology, quality assurance procedures and the procurement, engineering and construction time schedule sent to it by the Concessionaire and furnish its comments within 10 (ten) days of receipt thereof.	Yes	Yes	Yes
5.6	Upon reference by the NMCG/Uttar Pradesh Jal Nigam, the Project Engineer shall review and; comment on the EPC Contract or any other contract for construction, operation and maintenance of the Project, and furnish its comments within 10 (ten) days from receipt of such reference from the NMCG/Uttar Pradesh Jal Nigam	NA	NA	NA
6.1	In respect of the Designs Drawing and Documents received by the Project Engineer for its review and comments during the Construction Period, the provisions of Paragraph 4 shall also apply, mutatis mutandis.	Yes	Yes	Yes
6.2	The Project Engineer shall review, and assist the Uttar Pradesh Jal Nigam in reviewing the submissions by the concessionaire, the Construction plan as defined in	Yes	Yes	Yes

	clause 8.3, 8.4 and 8.5 of the Concession Agreement including Phase 1 and Phase II Design & Drawings, as well as the 'As Built' drawings on completion and EHS plans as defined in clause 8.6 of the Concession Agreement.			
6.3	The Project Engineer shall assist the Uttar Pradesh Jal Nigam submit their comments on effectiveness or otherwise of the Work plan submitted for meeting the specified payment milestones and completion of the work on or before the scheduled construction completion date.	Yes	Yes	Yes
6.4	The Project Engineer shall review the submissions by the Concessionaire as per Schedule 1 of the Concession Agreement and assist Uttar Pradesh Jal Nigam in assessing the effectiveness them.	Yes	Yes	Yes
6.5	The Project Engineer shall review the monthly progress report furnished by the Concessionaire and send its comments thereon to the / Uttar Pradesh Jal Nigam and the Concessionaire within 7 (seven) days of receipt of such report.	Yes	Yes	Yes
6.6	The Project Engineer shall inspect the Construction Works and the Project as and when necessary and submit a report of such inspection (the "Inspection Report"), preferably after receipt of the monthly progress report from the Concessionaire, but before	Yes	Yes	Yes

	the 20th (twentieth) day of each month in any case. The report shall contain, an overview of the status, progress, quality and safety of construction, including the work methodology adopted, the materials used and their sources, and conformity of Construction Works with the Scope of the Project and the Specifications and Standards. In a separate section of the Inspection Report, the Project Engineer shall describe in reasonable detail the lapses, defects or deficiencies observed by it in the construction of the Project. The Project Engineer shall send a copy of its Inspection Report to the / Uttar Pradesh Jal Nigam and the Concessionaire within 3 (three) days of the inspection.			
6.7	However serious lapses, defects and/or deficiencies shall be reported to the Uttar Pradesh Jal Nigam/NMCG immediately without waiting for the monthly progress submissions as mentioned in the previous paragraph.	Yes	Yes	Yes
6.8	For determining that the Construction Works conform to Specifications and Standards, the Project Engineer shall require the Concessionaire to carry out, or cause to be carried out, tests on a sample basis, to be specified by the Project Engineer in accordance with approved norms/Good Industry Practice for quality	Yes	Yes	Yes

	assurance. The Project Engineer shall issue necessary directions to the Concessionaire for ensuring that the tests are conducted in a fair and efficient manner and shall monitor and review the results thereof.			
6.9	The timing of tests referred to in Paragraph 6.8, and the criteria for acceptance/ rejection of their results shall be determined by the Project Engineer in accordance with the norms /rules and Good Industry Practice. The tests shall be undertaken on a random sample basis and shall be in addition to, and independent of, the tests that may be carried out by the Concessionaire for its own quality assurance in accordance with Good Industry Practice.	Yes	Yes	Yes
6.10	In the event that the Concessionaire carries out any remedial works for removal or rectification of any defects or deficiencies, the Project Engineer shall require the Concessionaire to carry out, or cause to be carried out, tests to determine that such remedial works have brought the Construction Works into conformity with the Specifications and Standards, and the provisions of this Paragraph 5 shall apply to such tests.	Yes	Yes	Yes
6.11	In the event that the Concessionaire fails to achieve any of the Project	Yes	Yes	Yes

	Milestones, the Project Engineer shall undertake a review of the progress of construction and identify potential delays, if any. If the Project Engineer identifies that completion of the Project is not feasible within the time specified in the Concession Agreement, it shall require the Concessionaire to indicate within 15 (fifteen) days the steps proposed to be taken to expedite progress, and the period within which COD shall be achieved. Upon receipt of a report from the Concessionaire, the Project Engineer shall review the same and send its comments to the NMCG/ Uttar Pradesh Jal Nigam and the Concessionaire forthwith.			
6.12	If at any time during the Construction Period, the Project Engineer determines that the Concessionaire has not made adequate arrangements for the safety of workers and common public in the zone of construction or that any work is being carried out in a manner that threatens the safety of the workers and the common public, it shall make a recommendation to the NMCG/ Uttar Pradesh Jal Nigam forthwith, identifying the whole or part of the Construction Works that should be suspended for ensuring safety in respect thereof.	NA	NA	NA
6.13	In the event that the Concessionaire carries out any	NA	NA	NA

	remedial measures to secure the safety of suspended works and common public, it may, by notice in writing, require the Project Engineer to inspect such works, and within 3 (three) days of receiving such notice, the Project Engineer shall inspect the suspended works and make a report to the NMCG/ Uttar Pradesh Jal Nigam forthwith, recommending whether or not such suspension may be revoked by the NMCG/ Uttar Pradesh Jal Nigam.			
6.14	If suspension of Construction Works is for reasons not attributable to the Concessionaire, the Project Engineer shall determine the extension of dates set forth in the project completion schedule, to which the Concessionaire is reasonably entitled, and shall notify the NMCG/ Uttar Pradesh Jal Nigam and the Concessionaire of the same.	NA	NA	NA
6.15	Upon reference from the NMCG/ Uttar Pradesh Jal Nigam, the Project Engineer shall make a fair and reasonable assessment of the costs of providing information, works and services and certify the reasonableness of such costs for payment by the NMCG/ Uttar Pradesh Jal Nigam to the Concessionaire.	NA	NA	NA
6.16	The Project Engineer shall aid and advise the Concessionaire in preparing the Operation & Maintenance Manual.	NA	NA	NA

6.17	Upon reference from the NMCG/ Uttar Pradesh Jal Nigam the Project Engineer shall undertake the assessment of cost of civil works, as per applicable schedule of rates, for the reduction of Scope of work if any as per Article 21.	Yes	Yes	Yes
6.18	The Project Engineer shall review the construction progress as per payment milestones proposed by the concessionaire and provide necessary recommendation/s to Uttar Pradesh Jal Nigam for issuance of 'Milestone Construction Certificates'.	Yes	Yes	Yes
6.19	The Project Engineer shall support the employer in ensuring that the provisions specified in Clause 8, of the Concession Agreement including those for liquidated damages and Bonus, are being complied with.	Yes	Yes	Yes
6.20	On completion of construction and at behest of Employer, the Project Engineer may review the work done as per 'as built' drawings and identify defects and suggest changes as per clause 8.14(a)of the Concession Agreement.	Yes	NA	NA
6.21	Similarly, the Project Engineer may inspect the trial process and may point out the defects and cause changes or retrial of the process as per clause 8.15(d) of the Concession Agreement	Yes	Yes	Yes
6.22	Project Engineer shall ensure that the Concessionaire shall meet the Guaranteed Interim	Yes	NA	NA

	Availability of the existing Allahabad STPs and associated infrastructure within 30 days from the Effective Date of the Concession Agreement.			
6.23	Project Engineer shall also ensure that the STP by-products and Treated Effluents discharged from the Existing Facilities meet the relevant Discharge Standards in accordance with the Clause 9.12(c) of the Concession Agreement, from 1 year from the Effective Date	Yes	Yes	Yes
6.24	Project Engineer shall ensure that the Concessionaire shall meet the Guaranteed Interim Availability of the existing Allahabad STP and associated infrastructure within 30 days from the Effective Date of the Concession Agreement.	Yes	NA	NA
6.25	Project Engineer shall also ensure that the STP by-products and Treated Effluents discharged from the Existing Facilities meet the relevant Discharge Standards in accordance with the Clause 9.12(c) of the Concession Agreement, from 1 year from the Effective Date.	Yes	Yes	Yes
7.1	In respect of the Designs, Drawings, and Documents received by the Project Engineer for its review and comments during the Operation Period, the provisions of Paragraph 4 shall apply, mutatis mutandis.	Yes	Yes	Yes
7.2	The Project Engineer shall review the O&M Manual	NA	NA	Yes

	(Clause 9.2) and the Scheduled Maintenance Programme submitted by the concessionaire and provides its recommendations on the same, including suggestions for change, if any. The O&M Manual shall cover: a) O&M Procedures; b) O&M Plan; c) Provision of Spare Parts; d) Sampling and Testing Methodologies; e) Storage and control of Inventory; f) Arrangements for data security and Integrity; g) Procedures for recording and disposal of complaints; h) Operational Contingencies Plans; i) Human Resources Plans; j) EHS Plans; k) Emergency procedures; l) Management of Assets Plans. And m) Annual Scheduled Maintenance Programme.			
7.3	The Project Engineer shall review the annual Maintenance Program furnished by the Concessionaire and send its comments thereon to the NMCG/ Uttar Pradesh Jal Nigam and the Concessionaire within 10 (ten) days of receipt of the Maintenance Program.	Yes	Yes	Yes
7.4	The Project Engineer shall review the reports generated from online monitoring	Yes	Yes	Yes

	systems to assess adherence to KPIs and submit the monthly KPI Adherence Report to Uttar Pradesh Jal Nigam			
7.5	The Project Engineer shall verify the daily reports submitted by the concessionaire regarding the volume of sewage and its quality re influent standards and monitor and record the same on regular basis;	Yes	Yes	Yes
7.6	The Project Engineer shall monitor, review and advise the Uttar Pradesh Jal Nigam on the reports submitted by the concessionaire as per clause 9.8(b)(iii) (A) to (G) of the Concession Agreement.	Yes	Yes	Yes
7.7	The Project Engineer shall regularly verify the report submitted by the concessionaire on the tests conducted at the Inlet Point, the Outlet Point or at any other point at the Facilities for the Digested Sludge. Separately, the Project Engineer shall also have the right to take random samples of the incoming Sewage, the Digested Sludge and the Treated Effluent at any time during the O&M Period to test compliance with the Influent Standards and the Discharge Standards.	Yes	Yes	Yes
7.8	The Project Engineer shall review the monthly status report furnished by the Concessionaire (as required under clause 9.8(b)(iii)(E) the Concession Agreement) and send its comments thereon to the NMCG/ Uttar Pradesh Jal	Yes	Yes	Yes

	Nigam and the Concessionaire within 7 (seven) days of receipt of such report			
7.9	The Project Engineer shall inspect the Project once every month, preferably after receipt of the monthly status report from the Concessionaire, but before the 20th (twentieth) day of each month in any case, and make out an O&M Inspection Report setting forth an overview of the status, quality and safety of O&M including its conformity with the Maintenance Requirements and Safety Requirements. In a separate section of the O&M Inspection Report, the Project Engineer shall describe in reasonable detail the lapses, defects or deficiencies observed by it in O&M of the Project. The Project Engineer shall send a copy of its O&M Inspection Report to the NMCG/ Uttar Pradesh Jal Nigam and the Concessionaire within 7 (seven) days of the inspection.	Yes	Yes	Yes
7.10	The Project Engineer may inspect the project more than once in a month, if any lapses, defects or deficiencies require such inspections.	Yes	Yes	Yes
7.11	The Project Engineer shall in its O&M Inspection Report specify the tests, if any, that the Concessionaire shall carry out, or cause to be carried out, for the purpose of determining that the project is in conformity with the Maintenance Requirements. It shall monitor	Yes	Yes	Yes

	and review the results of such tests and the remedial measures, if any, taken by the Concessionaire in this behalf.			
7.12	The Project Engineer shall determine if any delay has occurred in completion of repair or remedial works in accordance with the Concession Agreement, and shall also determine the Damages, if any, payable by the Concessionaire to the NMCG/ Uttar Pradesh Jal Nigam for such delay.	Yes	Yes	Yes
7.13	The Project Engineer shall monitor and review the curing of defects and deficiencies by the Concessionaire.	Yes	Yes	Yes
7.14	In the event that the Concessionaire notifies the Project Engineer of any modifications that it proposes to make to the project, the Project Engineer shall review the same and send its comments to the NMCG/ Uttar Pradesh Jal Nigam and the Concessionaire within 15 (fifteen) days of receiving the proposal.	NA	NA	NA
7.15	The Project Engineer shall undertake sewage flow sampling, as and when required by the NMCG/ Uttar Pradesh Jal Nigam, under and in accordance with the provisions of this agreement.	Yes	Yes	Yes
7.16	The Project Engineer shall review and report to the employer on all the reports (Daily, Monthly, Quarterly and Annual), including monthly	Yes	Yes	Yes

	Environmental Monitoring Reports as detailed in Schedule 10(Part G) of the Concession Agreement.			
7.17	The Project Engineer shall provide necessary training/capacity building to the operators/technicians of the STP, as and when required, so as to address the gap in skill sets of the manpower deployed by the Concessionaire.	Yes	Yes	Yes
7.18	The Project Engineer will provide necessary assistance to NMCG and UP Jal Nigam for the understanding various projects undertaken through other Central Government/State Government schemes /Urban Local Bodies and advice NMCG/UP Jal Nigam accordingly so that the overall objective preventing flow of untreated sewage into the river Yamuna is accomplished. The support by the proposed PE will include, but not limited to the following: 7.18.1 Preparation of a road map/policy note for completion of sewage related work at the City Level taking into consideration various schemes implemented through NMCG/Central/State Government funding and/or through Urban Local Body funding; 7.18.2 Assist in developing dovetailing partnerships with other schemes in the sewage sector like AMRUT, SMART	NA	NA	NA

	City Mission and Swachh Bharat Mission to develop Synergistic plans. 7.18.3 Assist in identification of suitable new technologies for improving sewage infrastructure, economizing investment and for sustainable development and operation of the project; 7.18.4 Collecting information on regular monitoring and of implementation of various projects by the project implementing agencies/Urban Local Bodies and to produce status report;			
7.19	Assist in identification of bottlenecks in implementation of projects and suggesting remedial actions.	Yes	Yes	Yes

ANNEXURE-V

QUALITY CONTROL / QUALITY ASSURANCE

SL NO	DESCRIPTION	IS CODE	FROM 1ST DEC TO 31ST DEC 2022				REMARKS
			AS PER IS NO OF TEST REQUIRED	NO OF TEST CONDUCTED	NO OF TEST ACCEPTED	NO OF TEST REJECTED	
1	Aggregate Impact Value	IS 2386-Part 4	ONE TEST/300 CUM	1	1	0	Aggregate Impact value test conduct in Jhunsi and found satisfactory
2	Aggregate Impact Value	IS 2386-Part 4	ONE TEST/300 CUM	1	1	0	Aggregate Impact value test conduct in Jhunsi and found satisfactory
3	Sand gradation	IS 2386-Part 1	ONE TEST/300CUM	1	1	0	Sand Gradation Test conduct in Jhunsi and found satisfactory
4	Sand gradation	IS 2386-Part 1	ONE TEST/300CUM	1	1	0	Sand Gradation Test conduct in Jhunsi and found satisfactory
5	Cube test	IS 516-2001	Quantity of concrete (m3) Number of samples 1-5 1 6-15 2 16-30 3 31-50 4 51 and above 4 plus one additional sample for each additional 50 m3 or part thereof.	06	06	0	Naini-II approach road drain & Jhunsi SPS cube test at Jhunsi site and found satisfactory for 7 Days
6	Cube test	IS 516-2001	Quantity of concrete (m3) Number of samples 1-5 1 6-15 2 16-30 3 31-50 4 51 and above 4 plus one additional sample	12	12	0	Naini-II approach road drain cube test at Jhunsi site and found satisfactory for 28 Days
7	Cube test (Manhole)	IS 516-2001	Quantity of concrete (m3) Number of samples 1-5 1 6-15 2 16-30 3 31-50 4	02	02	0	Jhunsi Manhole cube test conduct at Jhunsi. Cube test is acceptable for 7 Days.

			51 and above 4 plus one additional sample				
8	Cube test (Manhole)	IS 516-2001	Quantity of concrete (m3) Number of samples 1-5 1 6-15 2 16-30 3 31-50 4 51 and above 4 plus one additional sample	02	02	0	Jhunsi Manhole cube test conduct at Jhunsi. Cube test is acceptable for 28 Days.
9	Silt Content in Sand	IS 2386: 1963-Part 2	50 M3 – 1 TEST	1	1	0	Silt Content Test conduct in Jhunsi and found satisfactory
10	Silt Content in Sand	IS 2386: 1963-Part 2	50 M3 – 1 TEST	1	1	0	Silt Content Test conduct in Jhunsi and found satisfactory
11	Sieve analysis (Aggregate 10mm)	IS 2386	ONE TEST/300 M3	1	1	0	Sieve Test Activity conduct in Jhunsi site found acceptable
12	Sieve analysis (Aggregate 10mm)	IS 2386	ONE TEST/300 M3	1	1	0	Sieve Test Activity conduct in Jhunsi, found acceptable
13	Sieve analysis (Aggregate 20mm)	IS 2386	ONE TEST/300 M3	1	1	0	Sieve Test Activity conduct in , Jhunsi site found acceptable
14	Sieve analysis (Aggregate 20mm)	IS 2386	ONE TEST/300 M3	1	1	0	Sieve Test Activity conduct in Jhunsi, site found acceptable
15	Brick Test	IS 1077 & 3495	1 SAMPLE/50000 BRICKS	1	1	0	brick test activity conduct at Junsi(Phaphamau bricks) and result found acceptable
16	OPC CEMENT 43 GRADE	IS 4031	I TEST PER LOT	1	1	0	Ultratech (Third party batch report Submitted)