REPORT OF THE OVERSIGHT COMMITTEE, NGT, U.P, LUCKNOW

IN THE MATTER OF:-

ORIGINAL APPLICATION NO. 909/2018

IN RE: CONFEDERATION OF TRANS HINDAN RWA'S GHAZIABAD

VERSUS

U. P. STATE POLLUTION CONTROL BOARD & ORS.

INDEX

REPORT OF THE OVERSIGHT COMMITTEE, UP, LUCKNOW IN COMPLIANCE OF THE ORDER OF THE HON'BLE NATIONAL GREEN TRIBUNAL PASSED IN OA NO. 909 OF 2018 IN RE: CONFEDERATION OF TRANS HINDON RWA'S GHAZIABAD VERSUS U.P. STATE POLLUTION CONTROL BOARD & ORS.

1. Background

This application was filed by the Resident Welfare Association for the non-compliance of the Solid Waste Management Rules, 2016 as door to door collection of garbage was not being done from Indirapuram, Vasundhara and Vaishali. The untreated waste was being dumped at Shakti Khand, Indirapuram. After noticing the allegation of failure of the statutory authorities, the Tribunal vide order dated 19.11.2018 constituted a Joint Committee headed by the District Magistrate, Ghaziabad and representatives of Ghaziabad Development Authority, Municipal Corporation Ghaziabad and State Pollution Control Board to prepare an action plan and execute the same. The District Magistrate, Ghaziabad was made the Nodal Agency for the purpose. In the light of the factual report submitted to the Hon'ble NGT by the concerned statutory authorities and the Oversight Committee, it was found that no scientific management of the garbage was being done at the Shakti Khand legacy waste site.

2. The Directions of the Hon'ble NGT

2.1 The Hon'ble NGT in its order dated 15.04.2021, on basis of the factual reports submitted by the Oversight Committee dated 09.04.2021, observed that the disposal of the legacy waste lying at Shakti Khand had already been delayed. Therefore, it directed the Municipal Corporation Ghaziabad to ensure that the work of disposal of legacy waste should be completed positively by June 2021. Similarly, it directed that the work of disposal of legacy waste lying at Pratap Vihar should also be completed on priority by the year end. It was made clear that no further extension will be given to complete these works. Ghaziabad Municipal Corporation was also directed to make all the decentralized waste processing plants fully operational within the next three months.

Further, in relation to the pending issues of bioremediation/phyto-remediation of all the 11 untapped drains, Municipal Corporation was directed to ensure completion of these works within next 3 months. Along with these issues they were to monitor the performance of one city one operator scheme also regularly and ensure that payments are linked with performance.

The Ghaziabad Nagar Nigam was also directed to take further action expeditiously for remediation of legacy waste, operationalization of decentralized waste processing plant and remediation of 11 drains as recommended by the Oversight Committee.The GNN was furtherdirected to give its progress report to the Oversight Committee within next three months. The Hon'ble NGT also directed to constitute a joint committee of the CPCB and UPPCB to give factual compliance report on bio-mining of legacy waste at different sites with adoption of SoP and Guidelines of the CPCB and routing of recovered material to authorized agencies, assessing the adequacy of existing and proposed facilities mentioned for solid waste processing and diversion of drains to identified STPs. Report was to indicate performance of bio-remediation of one drain and progress with respect to remaining drains.The Oversight Committee wasalso directed to review the progress made by the State government in resolving inter-departmental issues.

2.2 On not finding the action taken by various authorities satisfactory, the Hon'ble NGT in its order dated 22.10.2021 decided to hold the authorities accountable by way of compensation on "polluter pays principle" and departmental action for their failure in breach of constitutional obligation under the "Public Trust Doctrine", apart from liability for prosecution under the Criminal Law. It also clarified that the remedial action by higher authorities may include review of posting of key officers dealing with the waste management, including Commissioner, Nagar Nigam and fixing liability under the Civil and Criminal Law.

Accordingly, the Chief Secretary, Uttar Pradesh with the assistance of Additional Chief Secretary, Nagar Vikas, UP and/or any other authorities was directed to review the situation within one month. Compensation payable in terms of orders of this Tribunal was to be deposited with the CPCB within one month which was to be utilized for restoration of damage

to the environment by preparing an appropriate action plan. The situation was required to be constantly reviewed preferably on daily basis for the next one month and at suitable intervals thereafter. The Additional Chief Secretary, Nagar Vikas, UP was directed to file compliance status after coordinating with concerned authorities after three months. Pending assessment quantification of compensation, the Ghaziabad Nagar Nigam was to deposit interim compensation of Rs. 1 crore with the CPCB within 15 days, to be utilised for restoration of the environment. The Nigam was given thefreedom to recover the amount out of the salary of erring officers.

The Hon'ble NGT also directed the CPCB to give an independent report on the issue of management of solid as well as liquid waste in the area in question before the next date which was to include, inter alia, the area of both the legacy sites reclaimed, quantity of waste bio-mined, routing of recovered material for further usage lifting of stabilised organic fraction by the Fertilizer agencies and blending by NPK to enhance fertilizer nutritive value. It also stipulated an inquiry on whether any more legacy waste site still exists and the RDF contains plastic/chlorinated plastic used as fuel, use of storm water drains for disposal of sewage, performance of STPs and the gap between sewage generation and treatment.

14. The Additional Chief Secretary, Nagar Vikas, UP was directed to be present in person by Video Conferencing on the next date".

3. Status of Compliance

S.No.	Issues	Action Taken
1	Cleaning and bioremediation of legacy waste dump located at Shakti Khand, Indirapuram and Pratap Vihar.	• The bioremediation of the legacy waste at the Shakti Khand, Indirapuram site has been completed in Dec 2021. • 50-55% of the bioremediation work has been done at the Pratap Vihar legacy waste site. The remaining work will be completed by April 2022.
2	Decentralized waste processing plants for complete disposal of the	• Four garbage factories were proposed: -Shakti Khand, Indirapuram legacy waste

	solid waste being generated in the Municipality	site with 500-700 TPD capacity -Govindpuram with 300 TPD capacity -Sihani Garbage Factory with 150 TPD capacity -Hindon Vihar Garbage Factory 300-350 TPD capacity • At present two garbage factory namely Sihani Garbage Factory and Hindon Vihar Garbage Factory are operational. • The construction work of other two garbage factories has not started yet.
3	The bioremediation / phyto-remediation of all 11 untapped drains	• The bio-remediation work is being done at 33 points in 10 untapped drains. • The phyto-remediation is being done using Smart Solar Oxygenation system which was customized and designed for Brij Vihar drain. To replicatethe aforementioned technique in remaining 10 drains, tender has been given to Ms/Hanumat enterprises to supply smart Solar oxygenation systems vide letter dated 06.07.2021. • Bio/Phytoremediation Lab is functional and working on the development of *euglean* and bioreactor technology. The technology will only be used in treating the remaining drains post successful trials. • For the waste water treatment and rejuvenation of the Sahibabad/Brij Vihar Drain, the work order has been issued to M/s Agrotech Risk Pvt. Ltd, Noida.. The company had submitted the work plan for the aforementioned work which is under re-evaluation at Nagar Nigam Ghaziabad. The timeline to complete the work is October 2022. • The water quality analysis of the drains was done on 14.10.2021, 20.11.2021,

		17.12.2021 and 01.01.2022. The analysis report suggests that only pH was within the limits in all the drains. BOD for all the drains was beyond the permissible limits. COD was within the permissible limits for all the drains except for Arthla and Karedha drain. TSS was beyond the permissible limits in all the drains except for Indrapuram drain on 14.10.2021, 01.12.2021, 01.01.2022 and Jawali drain on 14.10.2021,01.12.2021. Total Coliform Bacteria was also recorded beyond the permissible limits in all the drains.
4	Ghaziabad Nagar Nigam may deposit interim compensation payable in terms of the orders of this Tribunal of Rs. 1 crore with the CPCB within 15 days, to be utilised for restoration of the environment. The Nigam is free to recover the amount out of the salary of erring officers	This part of the direction has been stayed by the Hon'ble Supreme court on 10.01.2022.
5	Utilization of the treated waste water in the Municipality	Work orders have been issued to VA Tech Wabag Limited to develop a Public Private Partnership (PPP)-Hybrid Annuity Model (HAM) to set up a Tertiary Treatment Plant to treat Secondary treated water from Indirapuram Sewage treatment Plant to supply Industrial Grade Water to Sahibabad Industrial Estate, Ghaziabad for Ghaziabad Nagar Nigam.The timeline to complete the work is December 2023.

Compliance received from Ghaziabad Nagar Nigam is annexed as **Annexure 1** and **Annexure 2**. Water quality analysis data received from UPPCB is annexed as **Annexure 3**.

4. Recommendations:

In view of the above we recommend as follows:

1. The Hon'ble NGT in its order dated 20.10.2021 had directed the Chief Secretary to review this case on daily basis with assistance of Additional Chief Secretary. The Oversight Committee has requested the progress report, but no report has been received so far. Based on the progress received from the GNN it emerges that in compliance of the direction to make all the decentralized waste processing plants fully operational within the next three months, only 2 out of the 4 proposed Garbage Treatment Plants have been made operational. Work has not started at all on two Plants. The Chief Secretary may be redirected to review the situation and ensure their completion at the earliest. The UPPCB may be directed to take action and impose EC on the Municipality for polluting the environment on polluters pay principle.

2. The Ghaziabad Nagar Nigam may be directed to complete the ongoing clearing work at the Pratap Vihar Legacy waste site within the promised timelines. Any further delay in the current timelines should follow appropriate action against the agencies and individuals under the Environment and Criminal Law.

3. The water quality reports of the drains indicate that the bio/phytoremediation is not effective and the level of pollutants is beyond the permissible limits. The GNN and UPPCB needs to be directed to check the efficacy of the system and take appropriate action against the defaulting agencies and individuals. After all it is only an interim measure, so the GNN should be directed to expedite the works on tapping of these drains and complete them in the shortest possible time.

4. In the micro-shed level planning the quantity of the waste water flowing in the drains should also be quantified so that a long term treatment and reuse plan/strategy for waste water is developed by the GNN to secure healthy environment for the residents.

The Member Secretary, UPPCB is directed to send this report to the Registrar General, National Green Tribunal, Principal Bench, New Delhi for placing the same before the Hon'ble Tribunal with a copy to the Chief Secretary, Government of Uttar Pradesh for necessary action. The report also be uploaded on the website of the Committee.

21-02-2022 21-02-2022

X Anant Kumar Singh

Anant Kumar Singh
Member, Oversight Committee

X SVS Rathore

Justice SVS Rathore
Chairman, Oversight Committee

Feb 21, 2022

Annexures: As above

Please visit our website: ***oscngt.upsdc.gov.in*** for more information.

गाजियाबाद नगर निगम, गाजियाबाद

प्रेषक,

नगर आयुक्त,
नगर निगम गाजियाबाद।

सेवा में,

सचिव,
पर्यावरण वन एवं जलवायु परिवर्तन
अनुभाग-7,उ0प्र0 शासन,
लखनऊ।

पत्रांक-1304/न.आ./विधि0/2021-22 दिनांकः 14/02/2022

विषयः- मा0 राष्ट्रीय हरित अधिकरण में लम्बित वाद ओ0ए0 संख्या-909/2018 कन्फेडरेशन ऑफ ट्रान्स हिण्डन रेजीडेन्टस वेलफेयर एसो0 व अन्य में पारित आदेश दिनांक 22.10.2021 के अनुपालन के सम्बन्ध में।

महोदय,

कृपया उपर्युक्त विषयक कार्यालय पत्रांकः-एन.जी.टी.-20/81-7-2022-01(रिट)/2019 लखनऊ दिनांक 04 फरवरी, 2022 का सन्दर्भ ग्रहण करने का कष्ट करें। मा0 राष्ट्रीय हरित अधिकरण द्वारा दिये गये आदेश के अनुपालन में वर्तमान में इन्दिरापुरम स्थित डम्पिंग ग्राउण्ड का बायोरेमीडेशन का कार्य दिसम्बर 2021 में शत-प्रतिशत पूर्ण करा लिया गया है तथा प्रताप विहार में 50-55 प्रतिशत कार्य पूर्ण हो गया है तथा शेष कार्य 30 अप्रैल 2022 तक पूर्ण कराया जाना सम्भावित है। कार्य की अद्यतन स्थिति का विस्तृत विवरण साथ संलग्न है।

उपरोक्त के अतिरिक्त यह भी अवगत कराना है कि मा0 अधिकरण के आदेश दिनांक 22.10.2021 में नगर निगम पर अधिरोपित 1 करोड़ रूपये की पर्यावरण क्षतिपूर्ति जुर्माने के विरुद्ध नगर निगम गाजियाबाद द्वारा मा0 उच्चतम न्यायालय में सिविल अपील संख्या-7916/2021, म्युनिसिपल कॉर्पोरेशन गाजियाबाद बनाम केन्द्रीय पॉल्यूशन कन्ट्रोल बोर्ड एवं अन्य योजित की गयी जिसमें सुनवाई करते हुयें दिनांक-10.01.2022 को मा0 उच्चतम न्यायालय द्वारा 1 करोड़ रू0 के पर्यावरण क्षतिपूर्ति जुर्माने को स्टे कर दिया गया है तथा ओवर साईट कमेटी के अध्यक्ष न्यायाधीश श्री एस0वी0एस0 राठौड़ इलाहाबाद हाई कोर्ट द्वारा दिनांक 21.12.2021 को लिगेसी वेस्ट साईट के निरीक्षण के दौरान गाजियाबाद नगर निगम द्वारा कराये जा रहे बायोरेमिडेशन के कार्यों को सन्तोषजनक पाये जाने पर मा0 अधिकरण के समक्ष अपनी रिपोर्ट प्रेषित की गयी, प्रताप विहार स्थित लिगेसी बेस्ट साईट पर बायोरेमीडेशन का कार्य प्रगति पर है, जिसे अप्रैल 2022 तक पूर्ण कराये जाने हेतु नगर निगम पूर्ण रूप से प्रयासरत है। उक्त वर्णित दोनो लिगेसी बेस्ट साईट पर कराये गये जा रहे कार्यों की अद्यतन स्थिति के स्थलीय फोटोग्राफ अवलोकनार्थ संलग्न है। कृपया उपरोक्त के सम्बन्ध में आख्या सादर अवलोकनार्थ प्रस्तुत है।

संलग्नः-यथोक्त।

(महेन्द्र सिंह तंवर)
आई.ए.एस.
नगर आयुक्त
गाजियाबाद नगर निगम।

प्रतिलिपिः

1. अपर मुख्य सचिव, नगर विकास विभाग, उ0प्र0 शासन लखनऊ।
2. राज्य मिशन निदेशक स्वच्छ भारत मिशन-नगरीय राज्य मिशन निदेशालय उ0प्र0 लखनऊ।
3. पर्यावरण वन एंव जलवायु परिवर्तन विभाग उ0प्र0 सरकार।

नगर आयुक्त
गाजियाबाद नगर निगम।

गाजियाबाद नगर निगम, गाजियाबाद

प्रेषक,

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संलग्नः-यथोक्त।

(महेन्द्र सिंह तंवर)
आई.ए.एस.
नगर आयुक्त
गाजियाबाद नगर निगम।

प्रतिलिपिः

1. अपर मुख्य सचिव, नगर विकास विभाग, उ0प्र0 शासन लखनऊ।
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3. पर्यावरण वन एंव जलवायु परिवर्तन विभाग उ0प्र0 सरकार।

नगर आयुक्त
गाजियाबाद नगर निगम।


Google
Ghaziabad, Uttar Pradesh, India
ROSE TOWER, FRAGRANCE SIDDHARTH VIHAR, sector-3, Siddharth Vihar, Pratap Vihar, Ghaziabad, Uttar Pradesh 201009, India
Lat N 28° 39' 4.3632"
Long E 77° 23' 43.2816"
01/01/22 15:30


Google
Mahiuddin Pur Kanawni, Uttar Pradesh, India
Unnamed Road, Pratap Vihar, Mahiuddin Pur Kanawni, Uttar Pradesh 201009, India
Lat N 28° 39' 8.4024"
Long E 77° 23' 43.0224"
25/12/21 11:47


Google
Mahiuddin Pur Kanawni, Uttar Pradesh, India
Unnamed Road, Pratap Vihar, Mahiuddin Pur Kanawni, Uttar Pradesh 201009, India
Lat N 28° 39' 4.0824"
Long E 77° 23' 40.9272"
01/01/22 15:34


Google
Ghaziabad, Uttar Pradesh, India
ROSE TOWER, FRAGRANCE SIDDHARTH VIHAR, sector-3, Siddharth Vihar, Pratap Vihar, Ghaziabad, Uttar Pradesh 201009, India
Lat N 28° 39' 4.23"
Long E 77° 23' 43.4904"
01/01/22 15:30

उत्तर प्रदेश शासन
संख्या–एन0जी0टी0–20/81–7–2022–01(रिट)/2019
पर्यावरण, वन एवं जलवायु परिवर्तन अनुभाग–7
लखनऊ : दिनांक : 04 फरवरी, 2022

अपर मुख्य सचिव,
नगर विकास विभाग,
उ0प्र0 शासन।

कृपया मुख्य सचिव, उ0प्र0 शासन के स्तर से निर्गत पर्यावरण, वन एवं जलवायु परिवर्तन अनुभाग–7, उ0प्र0 शासन के पत्र संख्या–एन.जी.टी.–384/81–7–2021–01(रिट)/2019, दिनांक 18.11.2021 एवं अपर मुख्य सचिव, पर्यावरण, वन एवं जलवायु परिवर्तन विभाग, उ0प्र0 शासन के स्तर से निर्गत पत्र संख्या–मु0स0–217/81–7–2021–01(रिट)/2019, दिनांक 30.11.2021 का कृपया संदर्भ ग्रहण करने का कष्ट करें, जिसके द्वारा ओ0ए0 संख्या–909/2018 कन्फेडरेशन आफ ट्रांस हिण्डन आर0डब्ल्यू0ए0 गाजियाबाद बनाम यू0पी0 स्टेट पॉल्यूशन कन्ट्रोल बोर्ड एवं अन्य में मां0 एन0जी0टी0 द्वारा पारित आदेश दिनांक 22.10.2021 के पैरा–12 पर दिए गए आदेशों का अक्षरशः अनुपालन सुनिश्चित करने तथा कृत कार्यवाही की अनुपालन आख्या से मुख्य सचिव, उ0प्र0 शासन को 15 दिन के अन्दर अवगत कराते हुए पर्यावरण, वन एवं जलवायु परिवर्तन विभाग, उ0प्र0 सरकार (ई–मेल soenvups@rediffmail.com) एवं सदस्य सचिव, उ0प्र0 प्रदूषण नियंत्रण बोर्ड, लखनऊ को (ई–मेल ms@uppcb.in, ceo1@uppcb.in) को अवगत कराये जाने हेतु अनुरोध किया गया है, परन्तु अभी तक अनुपालन आख्या नगर विकास विभाग से अप्राप्त है।

2– अग्रेतर उ0प्र0 प्रदूषण नियंत्रण बोर्ड द्वारा अवगत कराया गया है कि ओवरसाईट कमेटी के ई–मेल पत्र दिनांक 04.01.2022 द्वारा भी उपरोक्त संदर्भित आदेश की अनुपालन आख्या चाही गयी है।

3– अतः अनुरोध है कि प्रश्नगत वाद में मा0 एन0जी0टी0 द्वारा दिनांक 22.10.2021 को पारित आदेश के अनुपालन में नगर विकास विभाग द्वारा की गयी कार्यवाही की आख्या पर्यावरण, वन एवं जलवायु परिवर्तन विभाग, उ0प्र0 तथा सदस्य सचिव, उ0प्र0 प्रदूषण नियंत्रण बोर्ड, लखनऊ को (ई–मेल–soenvups@rediffmail.com, ms@uppcb.in, ceo1@uppcb.in) प्रेषित कराने का कष्ट करें।

भवदीय,

(आशीष तिवारी)
सचिव।

संख्या–एन0जी0टी0–20(1)/81–7–2022–01(रिट)/2019, तद्दिनांक

प्रतिलिपि–निम्नलिखित को सूचनार्थ एवं उपरोक्तानुसार अपने से सम्बन्धित बिन्दुओं पर आवश्यक कार्यवाही करने हेतु प्रेषित :–

1– स्टाफ आफिसर, मुख्य सचिव, उ0प्र0 शासन।
2– जिलाधिकारी, गाजियाबाद।
3– सदस्य सचिव, उ0प्र0 प्रदूषण नियंत्रण बोर्ड, लखनऊ।
4– नगर आयुक्त, नगर निगम, गाजियाबाद।
5– गार्ड फाइल।

आज्ञा से,

(नीता चौधरी)
उप सचिव।

eProcurement System Government of Uttar Pradesh

Uttar Pradesh Tenders

Tender Details

Date : 06-Jul-2021 05:57 PM

Print

Basic Details

Organisation Chain	Directorate of Local Bodies UP||Ghaziabad Municipal Corporation		
Tender Reference Number	73/Jalkal/2021-22 Dt 18-06-2021		
Tender ID	2021_DOLBU_600320_12		
Tender Type	Open Tender	**Form of contract**	Percentage
Tender Category	Works	**No. of Covers**	2
General Technical Evaluation Allowed	No	**ItemWise Technical Evaluation Allowed**	No
Payment Mode	Offline	**Is Multi Currency Allowed For BOQ**	No
Is Multi Currency Allowed For Fee	No	**Allow Two Stage Bidding**	No

Payment Instruments

Offline	S.No	Instrument Type
	1	FDR - Fixed Deposit
	2	RTGS - RTGS Payment

Cover Details, No. Of Covers - 2

Cover No	Cover	Document Type	Description
1	Fee/PreQual/Technical	.pdf	Tender Fee, EMD and Other Documents as per Tender Document/NIT
2	Finance	.xls	BOQ

Tender Fee Details, [Total Fee in ₹ * - 2,360]

Tender Fee in ₹	2,360		
Fee Payable To	ICICI Bank RDC Rajnagar Gzb A/C 628601041088	**Fee Payable At**	IFSC Code - ICIC0006286
Tender Fee Exemption Allowed	No		

EMD Fee Details

EMD Amount in ₹	50,000	**EMD through BG/ST or EMD Exemption Allowed**	No
EMD Fee Type	fixed	**EMD Percentage**	NA
EMD Payable To	Account Officer Ghaziabad Nagar Nigam	**EMD Payable At**	Ghaziabad

Work /Item(s)

Title	Supply of oxidation system for bioremediation of drains located within municipal limits.				
Work Description	Supply of oxidation system for bioremediation of drains located within municipal limits.				
Pre Qualification Details	Tender Fee, EMD and Other Documents as per Tender Document/NIT				
Independent External Monitor/Remarks	NA				
Tender Value in ₹	0.00	**Product Category**	Miscellaneous Works	**Sub category**	NA
Contract Type	Tender	**Bid Validity(Days)**	90	**Period Of Work(Days)**	0
Location	Ghaziabad Nagar Nigam	**Pincode**	201001	**Pre Bid Meeting Place**	NA
Pre Bid Meeting Address	NA	**Pre Bid Meeting Date**	NA	**Bid Opening Place**	Jalkal Vibhag Nagar Nigam Ghaziabad
Should Allow NDA Tender	No	**Allow Preferential Bidder**	No		

Critical Dates

Publish Date	01-Jul-2021 12:00 PM	**Bid Opening Date**	12-Jul-2021 04:00 PM
Document Download / Sale Start Date	01-Jul-2021 12:00 PM	**Document Download / Sale End Date**	12-Jul-2021 02:00 PM
Clarification Start Date	NA	**Clarification End Date**	NA
Bid Submission Start Date	01-Jul-2021 12:00 PM	**Bid Submission End Date**	12-Jul-2021 02:00 PM

Tender Documents

NIT Document

S.No	Document Name	Description	Document Size (in KB)
1	Tendernotice_1.pdf	NIT	414.81

Work Item Documents

S.No	Document Type	Document Name	Description	Document Size (in KB)
1	BOQ	BOQ_927380.xls	BOQ	339.50

Latest Corrigendum List

S.No	Corrigendum Title	Corrigendum Type	View
1	Date_Corrigendum	Date	
2	Term and Condition	Technical Bid	

Tender Inviting Authority

Name	Executive Engineer Nagar Nigam Ghaziabad
Address	Jalkal Vibhag Nagar Nigam Ghaziabad

7/01/22

OFFICE OF THE GENRAL MANAGER(JAL) GHAZIABAD NAGAR NIGAM

| JALKAL |

Draft

Ref No. 28 Date: 03-1-22

WORK ORDER

To,
VA TECH WABAG LIMITED
"WABAG HOUSE" No. 17,
200 Feet Thoraipakkam- Pallavaram Main Road,
SunnambuKolathur,
Chennai 600117, India

Sub: Public Private Partnership (PPP)-Hybrid Annuity Model (HAM) to set up a Tertiary Treatment plant to trea secondary treated water from Indirapuram Sewage Treatment Plant to supply Industrial Grade Water tc Sahibabad Industrial Estate, Ghaziabad for Ghaziabad Nagar Nigam

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Ref: Your Bid Submitted on 26/11/2021
Dear Sir,
In reference to **NIT No: 04/GNN/TTP/01/2021-22, dated: 21/09/2021** and subsequen Corrigendum/Clarifications for the above noted work, This is to inform you that of the bids submitted b bidders' comparative Statement of bids prepared and recommended by the consultant M/s GREEN design & Engineering Services Pvt. Ltd., Surat and the said recommendations accepted and recommended by GNN Bon committee on dt 31-12-2021, the lowest Rate quoted by you of Rs. 45.90/KL of treated water supplie (including GST) for above work has been accepted and sanctioned by Municipal Commissioner, Ghaziaba Nagar Nigam.

Agreement/Deposit &Time Limit:

1. This is to notify that Bid opened on 26/11/2021 through E-procurement portal for the subjected projec and the Financial Bid Quoted by **VA TECH WABAG LIMITED** for **Rs. 45.90/KL** (including GST) is the L-Bidder, is hereby accepted by Municipal Commissioner of Ghaziabad Nagar Nigam.
2. The total time limit for the project from the date of this work order shall be 24 months for executio (Including monsoon and Trial run, Penalty will be laid as per clause No-8.9 of section 6A of Genera Tender condition of contract) and then after 15 years of O&M.
3. Before starting the work, contact the concern staff of the department, for necessary guidance of th work. You shall have to work under supervision of third-party inspecting agency or projec management consultant agency, if approved by GNN.
4. You are also requested to keep the progress of the work as per physical and financial bar chart whic shall be submitted by you within 30 days.
5. All the equipments shall be tested in presence of Ghaziabad Nagar Nigam/ TPI/PMC representative a manufacturer's works before shipment and/or dispatch for the site. At least 15 days' notice should b given for the same. The complete detail drawing for all equipments shall be prepared and got approve prior to manufacture it, well in advanced. No dispute shall be entertained at a later date. The makes c all the equipments/items shall be as per the same mentioned in tender documents.
6. You are hereby requested to confirm your acceptance of this work order within 7 days of its issue an return the duplicate copy of the Work order duly signed in acknowledgement there of. There after, yo are required to execute the Contract Agreement within 30 (Thirty) days of issue of work order.
7. Further, as per Bid document, you are required to furnish Performance Security as per tende conditions, within 30 (Thirty) days of the Date of work order. The performance security shall be Vali till 60 (Sixty) days beyond fulfilment of all the obligations of the Contractor under the Contrac including defect liability and maintenance, if any.

Contract Labour:

1. You shall obtain the necessary license from the competent authority under the "Contract Labour Abolition and Regulation Act, 1979" (latest amendment) and all such licenses, consents, registration etc. necessary for starting, execution and completion of this work. You shall be solely responsible for strict compliance of all current labour laws, regulations, rules etc. as well as all the amendments in laws of new labour laws emerging in future until the completion of this work. For any further guidance you are requested to contact GM(JAL), E.E(JAL), AE(JAL) of this department. If you will start/execute the work without the labour license, you will only be held responsible for any situation arising than after.
2. You shall also note that no child labour shall be employed at work site by you during the execution of this entire work and in the event of finding any child labour at any time during the execution of the work, the necessary legal steps will be taken against you.
3. You should be careful that the progress of the work should be as per tender Terms & conditions. It should be noted that, if the contractor fails to comply with the schedule as per tender, liquidated damage will be operated as per tender condition and the same shall be recovered from the running bill of work.
4. You are required to comply to all the Terms and Conditions as set forth in the Bid document and subsequent addendums/Corrigendum's issued.
5. You are hereby also intimated to start all preliminary works along with preparation and submission of detailed designs as per Bid documents.

Yours Faithfully

General Manage
Ghaziabad Nagar Nigan

Copy:-

1. Additional Chief Secretary Urban Development Department, Government of Uttar Pradesh, Lucknow.
2. Mayor Madam, Ghaziabad Nagar Nigam.
3. Commissioner, Meerut Mandal.
4. District Magistrate, Ghaziabad.
5. Vice Chairman, GDA.
6. Municipal Commissioner, Ghaziabad Nagar Nigam.
7. Bond Committee Members, Ghaziabad Nagar Nigam.
8. E.E PWD Ghaziabad.
9. Executive Engineer, Zone-6 GDA.
10. Joint Commissioner- Industries, DIC.
11. Zonal In charge Indraprastha Gas Ltd.
12. Departmental Director, District Forest Office Ghaziabad.
13. Executive Engineer, EUDD-II, Vasundhra, Ghaziabad.
14. Superintendent Engineer, Uttar Pradesh Awas and Vikas Parishad Ghaziabad.
15. Project Manager, Yamuna Pollution Control Unit(one), Uttar Pradesh Jal Nigam.
16. CEO-1, UP Pollution control Bord Lucknow.
17. SDO(P) Indirapuram, BSNL Ghaziabad.
18. Green Design& Engineering Services Pvt. Ltd.
19. AK Capital Services Ltd. And HDFC Bank Ltd, Merchant Bankers To The Bond Issue.

General Manag
Ghaziabad Nagar Niga

कार्यालयः नगर आयुक्त, गाजियाबाद नगर निगम

पत्रांकः 1182 /न.आ./2021-22 दिनांकः 24/11/2021

1976
26/11/21

—:कार्यालय आदेशः—

गाजियाबाद नगर निगम सीमान्तर्गत बृजविहार नाले के Waste Water Treatment and Rejuvenation of Sahibabad Drain/Brij Vihar Nala के कार्य को कराने हेतु प्रपोजल ई—निविदा के माध्यम से आमंत्रित किये गये है, जिसकी ई—निविदा की समस्त कार्यवाही एवं कार्य के निरीक्षण उपरान्त भुगतान की कार्यवाही हेतु निम्नानुसार कमेटी का गठन किया जाता हैः—

1—श्री प्रमोद कुमार	—	अपर नगर आयुक्त	—	अध्यक्ष।
2—श्री योगेश कुमार	—	महाप्रबन्धक(जल)	—	सदस्य सचिव।
3—श्री नरेन्द्र कुमार चौधरी	—	मुख्य अभियन्ता	—	सदस्य।
4—श्री राजेश कुमार गौतम	—	लेखाधिकारी	—	सदस्य।
5—श्री जे.पी. सिंह	—	सहायक लेखाधिकारी	—	सदस्य।
6—श्री योगेन्द्र सिंह	—	अधिशासी अभियन्ता(जल)	—	सदस्य।
7—श्री आश कुमार	—	सहायक अभियन्ता(जल)	—	सदस्य।
8—डा0 उमर सैफ(CLC)	—	पर्यावरण प्लानर		

(महेन्द्र सिंह तंवर)
आई0ए0एस0
नगर आयुक्त

पत्रांक व दिनांक तदैव

प्रतिलिपिः—1. समस्त कमेटी सदस्यों को उपरोक्तानुसार सूचनार्थ एवं आवश्यक कार्यवाही हेतु।
2. पत्रावली।

(महेन्द्र सिंह तंवर)
आई0ए0एस0
नगर आयुक्त

MNA Letter

Detailed Project Report for

‘Treatment and Rejuvenation of Sahibabad Drain/Brij Vihar Nala at Ghaziabad Municipal Corporation’

AGROTECH RISK PVT LTD

Table of Contents

1. General Information

We are pleased to provide the following detailed project report to Ghaziabad Municipal Corporation (GMC). This report includes detailed information on the suggested process and methods that are anticipated to be implemented during the execution of the project.

The general approach for the execution of the project consists of 6 major stages, as follows:

2. Site Stages

- Topographical Survey of the Brij Vihar Nala
- Mobilization of the equipment, Site preparation, Area Cleanup
- Mechanical Cleanup of Brij Vihar Nala Drain
- Preparation of report for Implementation of anti-flood measurements
- Installation of Wastewater and Sediment Treatment Systems
- Demobilization, Phase 1 Closing
- Operations and maintenance cycle for Brij Vihar Nala
- Details and practical results of the concerns of the project

Anticipated results from the project activities will include accomplishment of the set goals outlined in the provided tender documents, and achievement of the set goals, including but not limited to:

Reduction of the water contamination level and bringing the main stormwater drain water quality to an appropriate level.

Reduction of BOD and COD concentration in the water.

Implementation of antiflood measures that allow to reduce/mitigate damage to identified residential property surrounding the canal from overflowing during monsoon season.

Identification of the major sources of industrial pollution coming from upstream of Brij Vihar Nala drain.

3. Timelines

We envision, that the scope of work can be completed within 9 months, starting from December 2021, and finishing in August 2022.

The following project schedule has been developed to make sure the goals are met, and the major project milestones are completed within the set timeframe.

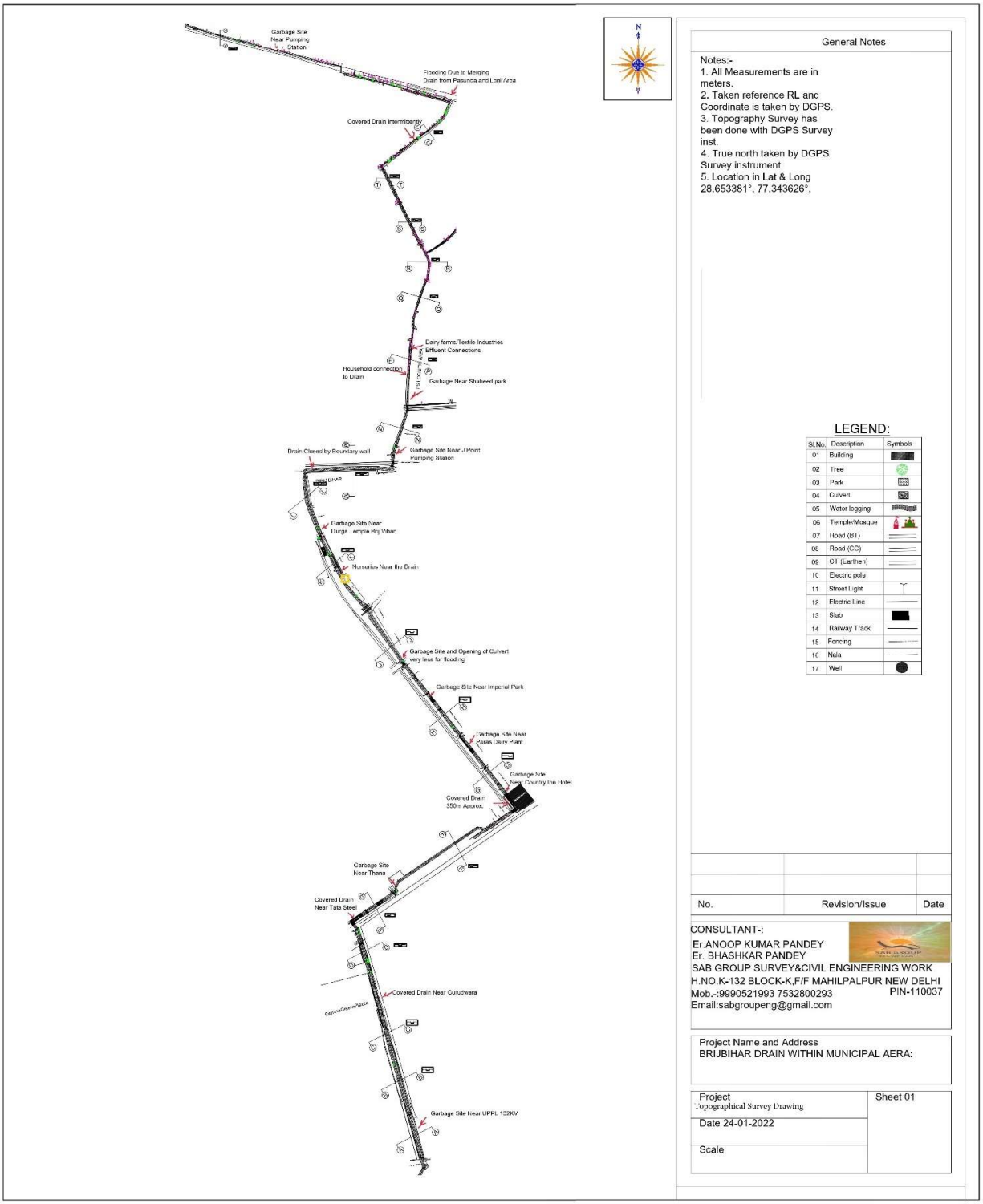
Description of work	January		February		March		April		May		June		July		August		September		October	
	2022		2022		2022		2022		2022		2022		2022		2022		2022		2022	
	01.01-15.01	15.01-31.01	1.02-14.02	15.02-28.02	1.03-15.03	16.03-31.03	1.04-15.04	16.04-30.04	1.05-15.05	16.05-31.05	1.06-15.06	16.06-30.06	1.07-15.07	16.07-31.07	1.08-15.08	16.08-31.08	1.09-15.09	16.09-30.09	1.09-15.09	16.09-31.09
Site Survey																				
Drone and Air Survey																				
Land Topographical survey																				
Review and preparation of the project map																				
Mobilization of the equipment, Site preparation, Area Cleanup																				
Equipment Mobilization																				
Preparation of site and laydown areas																				
Clearing, grubbing, disposal																				
Preparation of the laydown area for accumulated sediment																				
Testing and waste classification																				
Excavation/Desilting of Drain																				
Transportation of sludge/Silt																				
Disposal of exposed garbage																				
Bed Preparation and bank grading																				
Mechanical Cleanup of Brij Vihar Nala Drain																				
Equipment Mobilization																				
Inspection of the canal, drain points																				
Floating garbage cleanup																				
Installation of simple filtration mechanisms on the drainage points and main tributaries																				
Desludging and sediment removal of accumulated sludge and silt																				
Cleanup of the accumulated sediment via with Chain excavator/ JCB Excavator																				

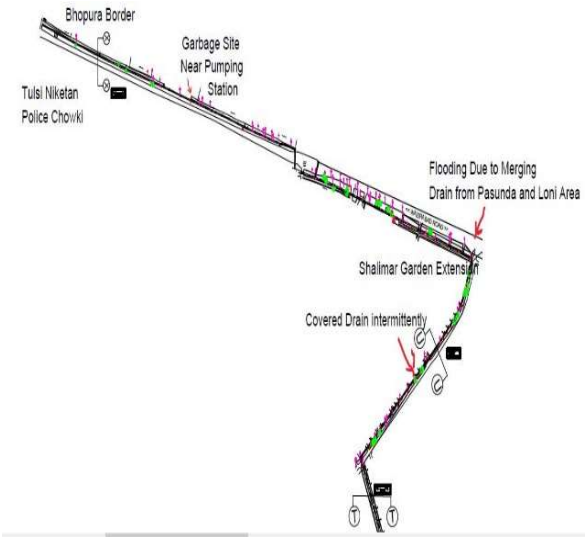
Description of work	January		February		March		April		May		June		July		August		September		October	
	2022		2022		2022		2022		2022		2022		2022		2022		2022		2022	
	01.01-15.01	15.01-31.01	1.02-14.02	15.02-28.02	1.03-15.03	16.03-31.03	1.04-15.04	16.04-30.04	1.05-15.05	16.05-31.05	1.06-15.06	16.06-30.06	1.07-15.07	16.07-31.07	1.08-15.08	16.08-31.08	1.09-15.09	16.09-30.09	1.09-15.09	16.09-31.09
Transportation and Disposal of Waste																				
Submission of report on anti-flood measurements																				
Flood Analysis																				
Submission of Report																				
Installation of Wastewater and Sediment Treatment Systems																				
System Design and Shop Assembly																				
Transportation by Agrotech and Customs Clearence by GMC																				
On-site assembly of silt and sediment treatment unit (SSTU)																				
Operation of SSTU																				
Preparation of system laydown area for WWTS																				
Supply and installation of fencing and protective																				
Equipment Mobilization, on-site assembly																				
Start of Operation and Maintenance of the WTS																				
Sampling and Testing																				
Demobilization, Project Closing																				
Site Cleanup																				
Equipment Demobilization																				
Fence tear-down																				

4. The Total Length of the Drain

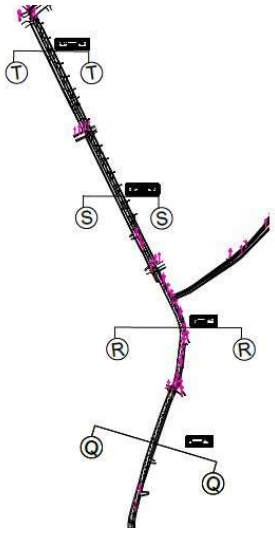
Approx. 12 Km

Brij Bihar Nala starts from Tulsi Niketan (Bhopura), which is covered with the concrete road and small tributaries flows till Shalimar Garden and then open Nala starts from (Sports junction shop, Shalimar Garden) ultimately meet into Ghazipur Drain near Ghazipur Samshan ghat.

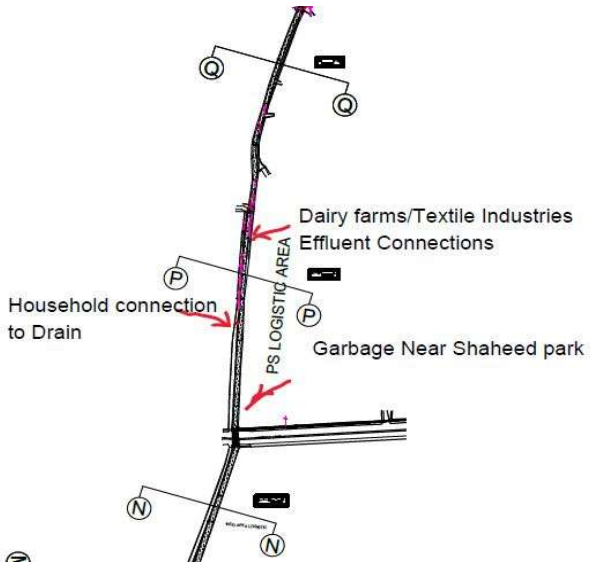



Bhopura Border
Garbage Site
Near Pumping
Station
Tulsi Niketan
Police Chowki
Flooding Due to Merging
Drain from Pasunda and Loni Area
Shalimar Garden Extension
Covered Drain intermittently

(1)



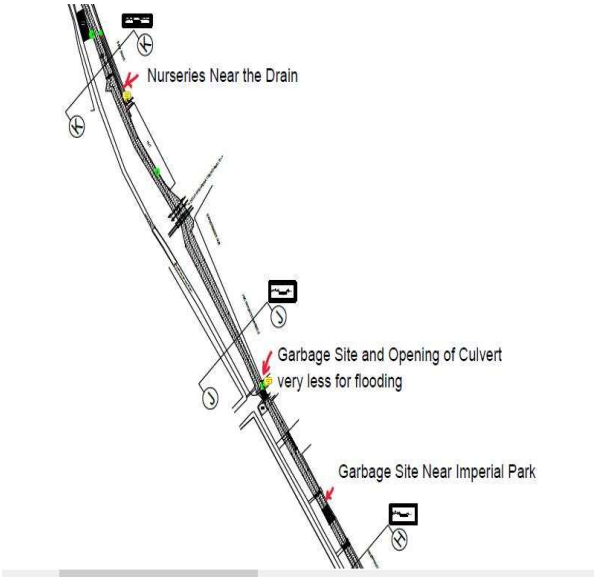
(2)


Dairy farms/Textile Industries
Effluent Connections
Household connection
to Drain
PS LOGISTIC AREA
Garbage Near Shaheed park

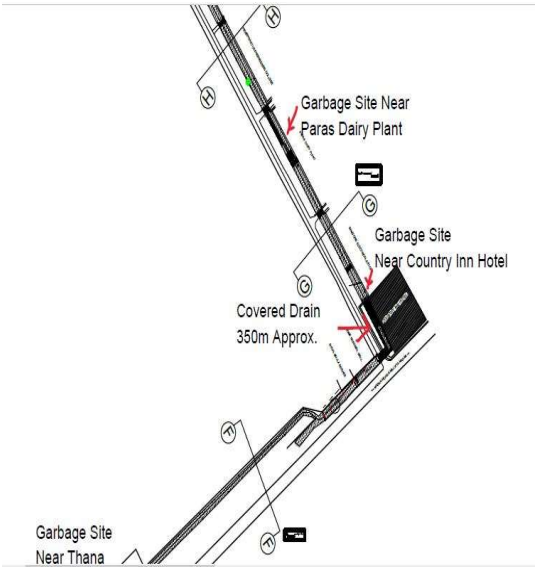
(3)


Drain Closed by Boundary wall
Garbage Site Near J Point
Pumping Station
BIBLI BIHAR
Garbage Site Near
Durga Temple Brij Vihar
Nurseries Near the Drain

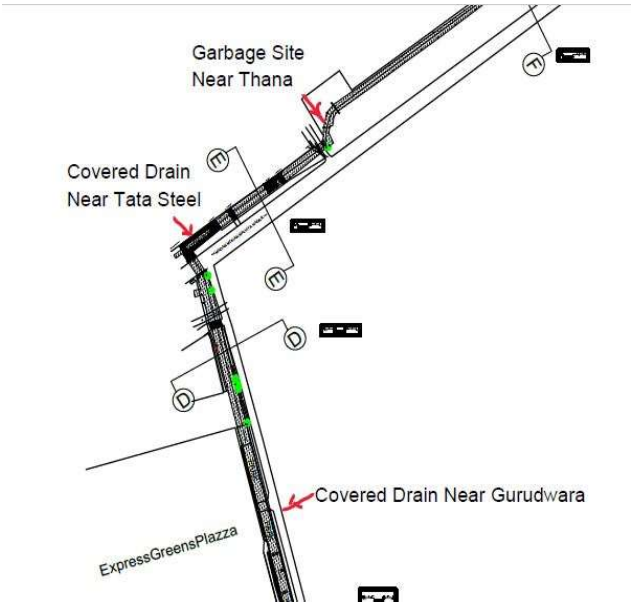
(4)


Nurseries Near the Drain
Garbage Site and Opening of Culvert
very less for flooding
Garbage Site Near Imperial Park

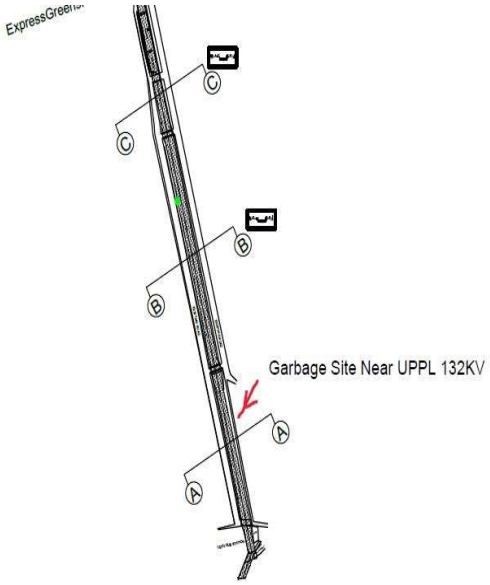
(5)


Garbage Site Near
Paras Dairy Plant
Garbage Site
Near Country Inn Hotel
Covered Drain
350m Approx.
Garbage Site
Near Thana

(6)


Garbage Site
Near Thana
Covered Drain
Near Tata Steel
Covered Drain Near Gurudwara
ExpressGreensPlazza

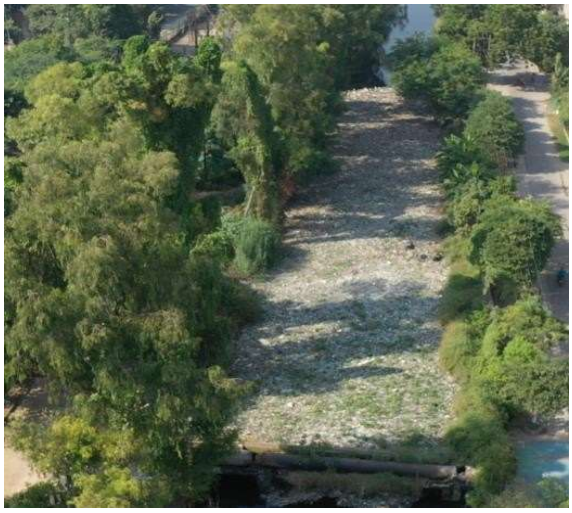
(7)


Garbage Site Near UPPL 132KV

(8)

4.1 UAV Drone Footage and our Observation

- **Sahibabad Industrial area:** Untreated effluents discharge from almost 110 Industries which includes textile 74, meat processing - 9, Metal surface – 24 & various others flow in Sahibabad drains.
- Domestic Discharge mainly comes from Colonies between Wazirabad and G.T. Road i.e., Rajender Nagar, Shalimar Garden, Janakpuri, Raj Bagh, Shahidnagar and Lajpat Nagar.
- **Ghazipur Shamshan Ghat -** The colour of drain water is black, and garbage is piled up, needs major cleaning. A huge quantity of solid waste and illegal encroachments is found at various points near the Garbage Mountain area in Ghazipur.
- **Basant Kunj area (Below Delhi – Meerut Expressway) -** A huge quantity of solid waste is kept at the road and toxic effluents are flowing in Nala from illegal settlement areas and small tributaries.
- **Near the Heritage Hotel, Madan Mohan Malviya Marg –** This is a garbage landfill area, and effluent & solid waste discharge from Sahibabad industrial flows into it.



- **Near UPPL Power station, (Illegal settlement colony) –** Since, it is unauthorized colony domestic waste from the near area, cow dung, various solid waste dumped into the water which makes water black & more toxic which also cause garbage piled up in Nala.
- **J Point (Shahid Nagar Metro station) –** A large amount of solid waste is dumped, and garbage is thrown into Nala at a higher scale. Sewer drain water consists of domestic waste & toxic effluents which flow and meet in Nala causes major concern to nearby people risking their health. Needs major cleaning, awareness, fencing across the road.
- **Shahid Nagar near Haqqani Masjid –** Domestic waste is a major concern, people throw their garbage, toxic materials, dairy discharge at a quite large scale. Sewer pipe is also broken over there by which all toxic effluents & other solid waste discharge flows & mixed into the drain.

5. Bifurcation of the Project Work Scope

The project work scope is to be divided into two phases and to include various scopes of engineering and mechanical treatment and restoration of the Brij Vihar Nala.

Conducting engineering surveys involves the study of the chemical composition of wastewater at several points along the length of the entire Brij Vihar Nala, which will allow a better way to establish the process of water purification.

The mechanical cleaning phase of the storm water drain from debris, floating garbage, and bottom sediments are instrumental in restoring geometry and the capacity volume (during monsoon floods) of the drain. The goal of this activity is to reduce COD concentration and increase concentration of oxygen in the drain and subsequently, improve the quality of water. This step is mandatory, as it allows to carry out the following biological treatment of wastewater without severe difficulties by reducing the concentrations of organic substances in the reservoir.

Implementation of decentralized wastewater treatment technology for the treatment of mixed (household and industrial) effluents directly in the storm water drain of Ghaziabad with the installation of additional units for fermentation of bacteria in order to intensify the processes of biological wastewater treatment and odour removal.

The following work will be performed to reach the set list of goals:

Phase 1 includes:

- Survey/research of the project area.
- Mechanical cleaning of the main drain from solid debris in selected critical areas.
- Installation of the wastewater treatment technology system/equipment on the Brij Vihar Nala during the dry season for odour removal.
- Implementation of anti-flood activities in identified critical areas, determined after the engineering survey in the area, to prevent backflow and overflowing of water into the identified households adjusted to the Brij Vihar Nala.

Phase 2 includes

- Identification of major pollution sources for the storm water drain (industries) upstream of Brij Vihar Nala.
- Eco friendly beautification of Brij Vihar Drain/Nala
- Operation and maintenance of the installed Wastewater Treatment equipment for 10-year term.

6. CPCB Guidelines

S.No	Parameters	Range
1	pH	6.5 - 8
2	Temperature	Presence
3	TSS	Presence
4	COD	Presence
5	BOD	Presence
6	Alkalinity	Presence
7	Hardness	Presence
8	TDS	Presence
9	Oil and Grease	Presence

7. Government approvals and correspondence

- GMC to provide all the required permits for equipment and personnel throughout the entire duration of the project execution.
- GMC to provide government permission for erection and operation of the barracks for labourer's and workers involved in the project execution.
- GMC to provide all the required permits for operation of the heavy machinery and equipment within the city limits, including those for the equipment immediate operation in Brij Vihar Nala (e.g., Chain excavator).
- GMC to provide all required on-site assistance, including but not limited to site inspector, sanitary inspector, permitting officer during the execution of the project.
- GMC to provide approval and permits for the waste disposal.
- GMC to provide approved location for the waste disposal landfill as per hazard class.
- GMC to provide permission to trim trees and suspension of electricity from certain location where our machinery cannot reach **(Areas like Brij Vihar colony, Sahibabad Industrial areas (Govind pant Ballabh Marg).**
- GMC issue Notice to Dairy farm owners & various industry (textile & others) not to discharging waste directly to Drains.
- GMC to provide NOC from pollution control board, Traffic and Police department, NGT (National Green Tribunal), Jal Nigam, for the dumping of Garbage, Sludge, and silt by dumpers.
- GMC to provide permission for cleaning in confined space which is covered by RCC & along Nurseries which is present along the Drain.
- GMC to provide approval for keep the Garbage/Sludge on the Roadside of Drain during the work time.
- GMC to provide NOC from railway department for cleaning under the Railway bridge during the work.
- GMC to provide the Dumping area nearby the Drains.
- GMC to provide Land for the installation of SSTT & WWT Technology
- GMC to provide the parallel Sewer line to divert the house connections to the Sewage pumping station. **(Areas like Bhopura Chowk, Pasunda and Loni)**
- GMC to provide permission to transport the Garbage/Sludge/Silt in day-nighttime.
- GMC to provide Electrical connections for RVT Technology
- GMC to provide Acquired land for RVT Technology in 2 Locations
- GMC to provide After completion of Project Operation and Maintenance Cost

- GMC to provide After completion of Project- Skilled, Unskilled labour, and Security Guard cost
- GMC to provide After completion of Project-Consumable's cost (Spare parts, Lubricants/ oils, Chemicals)
- GMC to provide After completion of Project- Lab setup and Operation cost (Chemicals, consumables, and Lab equipment's)
- English language shall be controlling all the correspondence and documentation in all respects and shall prevail in case of any inconsistencies with translated versions. In case of any dispute English language version shall prevail.

8. Project Activities

During the execution of this project, we anticipate that the following activities will be taking place:

8.1 General Activities

8.1.1 Excavation/ Desilting.

An appropriate mechanical excavator will be used for machine excavation. This will normally be a JCB or 360° tracked excavator with a 1.8 m to 2 m wide toothless ditching bucket. For work with restricted access or working room a mini excavator will be used.

Drain cleanup will be executed with chain excavator or manually, where canal's structure has restricted access. chain excavator is designed for shallow waters, with maximum working length of 6 meters.

Any excavation, both by machine or manually, will be undertaken with a view to avoiding damage to any civil features or structures.

8.1.2 Flagmen/spotters

Flagmen/spotters will be provided to assist drivers/operators in the safe placement and unloading of equipment. A flagman/spotter will be present at all times. Personnel assigned as flagmen/spotters will be properly trained and familiar with proper hand signaling techniques and safe equipment operating instructions. As a minimum all flagmen/spotters will be familiar with all safety checklist requirements included on the focused observation.

8.1.3 Drivers / Operators

Drivers/operators will be properly licensed in accordance with applicable State and Federal regulations. All drivers/operators will be properly trained and aware of the equipment manufacturers' safe operating procedures. Daily documented equipment inspection records are to be maintained and available for review upon request.

8.1.4 Hauling and Dumping Operation

Pre-start, start up, park and shut down procedures will be carried out in accordance with manufacturers' and/or site-specific requirements. Dump truck controls and functions, including tray, articulation, brakes and maneuverability will be checked for serviceability and any faults are rectified or reported to the superintendent on-site.

Site hazards associated with dump truck operations are to be identified and safe operating techniques are to be used to minimize risk. Dump trucks will be operated to work instructions under varied site and weather conditions in accordance with safe work practices and company operating procedures. Road/traffic conditions will be constantly monitored considering of road standards, traffic flow, distance and load, ensuring no injury to people or damage to property, equipment, loads and facilities.

8.2 Quality Assurance \ Quality Control

All materials delivered to site will be delivered to site lay down area. All material will be inspected and approved by site superintendent before installation/utilization as per quality control procedures, prior to any use.

All quality control will be executed by us and responsible officer on-site and in conjunction with prescribed GMC representative.

Daily Quality Control Report will be submitted daily as per designed forms. As a minimum, the report will include:

1. The number of workers on site each day by occupation and employer.
2. Notifications and discussions with/by CSU Quality Assurance Inspectors and other agency inspectors,
3. Quality of work placed that day, and any deviations and/or corrections required to bring the Work into conformance with the contract.

Daily reporting may not be computerized or typed.

Only legible, handwritten reports in English language on the approved form will be accepted.

8.3 Stage 1. Site Survey

Site survey will be completed for evaluation of the project area, determination of the critical areas of the drain. Part of the survey will be performed via drone and air survey, while some part of the drain will be examined physically.

The survey will allow us and GMC to select the specific areas for the project office, barracks, and equipment staging area, as well as laydown area for the waste and materials collection before it is hauled to the disposal site.

Topographic survey of the area will be carried out to provide information on the elevation levels. This information will avail by us to develop a hydro model to determine the best possible actions for anti-flood activities, such as excavation of storage ponds/lagoons, canal enhancements and else. Once the possible antiflood activities are formulated, we will meet with GMC representatives for review and approval of the proposed methods.

8.4 Stage 2. Mobilization/Demobilization of the equipment, Site preparation, Area Cleanup

The work includes mobilization and demobilization of the contractor's forces and equipment necessary for performing the work required under the contract. Mobilization shall include all activities and associated costs for transportation of contractor's personnel, equipment, and operating supplies to the site, erection of barracks, buildings, and other necessary general facilities for the contractor's operations at the site.

We will prepare the laydown area and will clear it of all grass, weeds, shrubs, debris, garbage, and waste including grubbing up all roots and cart away all vegetation and debris to indicated spoil areas. Once the clearing is completed the setting out will be carried out by the qualified laborers.

We will provide fencing of the territory to provide the restrictive access to the project office, laydown, and staging area. Fencing will include gates to allow ease of access for the heavy equipment during the execution of the project.

Excavation, trucking, hauling and disposal of the exposed waste, debris and garbage will be carried in the manner described in the text above.

Demobilization shall include all activities and costs for transportation of personnel, equipment, and supplies not required or included in the contract from the site; including disassembly, removal, and site cleanup of offices, buildings, and other facilities assembled on the site specifically for this contract.

8.5 Stage 3. Mechanical Cleanup of Brij Vihar Nala Drain

Prior to the start of the cleanup activities, we will perform additional inspection of the canal to identify areas of concern, where the civil structure may be damaged or in the critical state, as well as to identify any unauthorized connections to the drain. All the identified items will be reported to GMC to take immediate actions.

The crane truck will be used to remove and stockpile the concrete panels\slabs that cover part of the drain. Stockpile area will be fenced to avoid any unauthorized access\damaging to the panels. The workspaces of cranes are to be considered carefully prior to their operation to reduce the potential for spatial conflicts between cranes and other components, such as building structures, existing utility lines, including overhead power lines, and other pieces of equipment, and temporary facilities located within proximity, resulting in hazardous work conditions.

Installation of mesh grids and simple mechanical filtration mechanisms on the drainage points and main tributaries will be done to minimize the infiltration of the solid garbage into the drain from the local tributaries.

Debris, shrubs, vegetation will be removed from the drain, collected onshore, and later transported and recycled in the appropriate facility, and later used in agriculture or other applications.

Recyclables, Non-biodegradable waste and metal waste, and others that cannot be processed and treated with the Sludge treatment system due to the nature and the origin of the waste, will be removed by Chain excavators or manually (if waste originates in the drain) or with the regular excavators to the adjacent area. Collected materials will be transported to local landfills and dump yards for further decomposition and treatment.

Waste and materials that can be processed and treated with the rotary vortex type (RVT) reactor, such as excess-active sludge, sediment, silt, removed from the bottom of the drain, will be pumped into the sediment treatment unit. During the treatment process, samples of the treated materials will be sent for testing to be classified. We are confident that the results will show zero toxicity and DNA strains, which will allow classifying the dry matter as fertilizer.

This material will be either transported to appropriate landfills or distributed among the local agricultural facilities and centers to support local farmers and small households and communities.

To reduce the formation and accumulation of the new sediment and silt in the bottom of the drain, We evaluates the possibility to utilize cross wall technique/small check dam (Figure 1). This technique will allow efficient removal of the accumulated sediment after the completion of the drain cleanup stage, under the scope of this project and subsequent maintenance of the drain.

Figure 1. Example of check dam.

8.6 Stage 4. Implementation of anti-flood measurements

As stated above, we will carry out topographic survey of the area to evaluate the flood-plain of the Brij Vihar Nala area and to generate sufficient and efficient measures to mitigate the damage caused by flooding during the monsoon season.

We will consider several approaches, which include submit report for anti-flood management, rain harvesting management, sewer network that are connected to the drain, implementation of corrective measures to prevent water backflow during high tide of the water in the drain.

Based on our experience we have a clear understanding that due to inadequate maintenance of the canal and subsequent deposition of silt and sediment on the bottom, the original geometry and carrying capacity of the drain have been reduced. We anticipate that by cleaning of the silt, removal of the accumulated garbage and sediment from the bottom of the drain, and by the restoration of the original geometry of the canal reduction of the floodwater level by 70-80% will be achieved. With implementation of supplementary measures, we anticipate to completely mitigate the canal flooding risks during the next monsoon season.

Disclaimer: the provided values are estimated based on the past project experience and can vary depends on the structural conditions of the drain.

One of the proposed techniques that we consider for implementation is installation of rain water harvesting (RWH) systems in the local park/open spaces and installation of the bar screens for floating garbage collection, in every 3 km of the drain, presented in Figure 2.

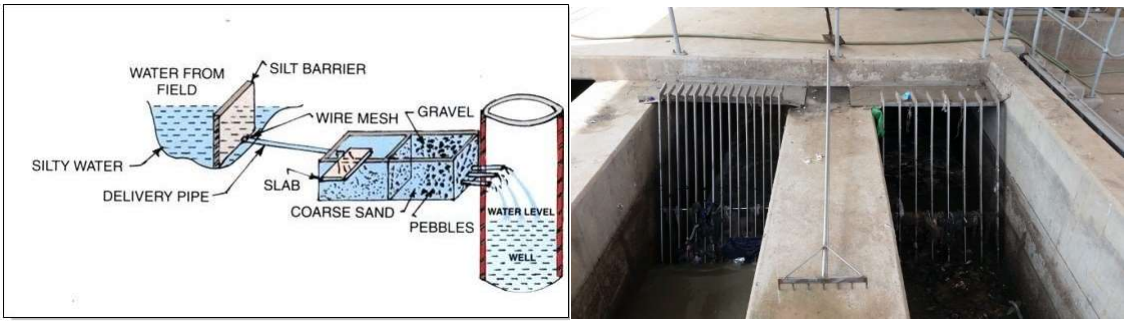


Figure 2. RWH and Bar screens.

8.7 Stage 5. Installation of Wastewater Treatment Systems

Final step of the active phase of the project will include the installation of the wastewater treatment unit. Prior to the installation of the unit on the ground, we will prepare the laydown area and will clear it of all grass, weeds, shrubs, debris, garbage, and waste including grubbing up all roots and cart away all vegetation and debris to indicated spoil areas. Once the clearing is completed the installation will be carried out by qualified labourer's.

We will provide fencing and will install video surveillance systems to ensure installed unit for Wastewater Treatment secureness, Fencing will include gates to allow ease of access for heavy equipment during the execution of the project.

We will provide wastewater treatment technicians to mobilize, start-up and operate the WWT unit. Later, we will provide sufficient training and on-going technical support to operate the system for 10-year term period.

The description of the technology used for the wastewater and sludge and sediment treatment is discussed in section SST & WWT Technology below.

8.8 Stage 6. Beautification and landscaping

We will provide beautification and landscaping work in the adjustment to the Brij Vihar Nala area. Beautification may include lawn seeding, planting trees, shrubbery, and other greenery in the selected areas of the Brij Vihar Nala. Volumes, areas, and additional measures will be mutually discussed between us and GMC during the execution of the project.

9. Operation and maintenance (O&M) of the installed Wastewater Treatment equipment for 10-year term.

Upon completion of rehabilitation of Brij Vihar Nala Drain, the separate agreement is to be mutually agreed on between us and GMC for operation and maintenance of the Wastewater Treatment system for 10-year term period. We will render operation and maintenance of the System and all necessary technical support to operate the System in the safe and efficient manner. This operation will ensure that the level of water quality in the drain remains at appropriate level, taking into account the consistency of the average level of influent wastewater. In the event of a considerable deterioration in the quality of the influent wastewater, the system will require modification and appropriate upgrade.

The O&M of the Wastewater Treatment system is in the scope of a separate agreement between GMC and us. This work is not included in the work scope of the current project and will not be covered by the assigned budget of us.

10. Resources Required

10.1 Equipment and Manpower

To accomplish this project in time and on budget, it will require the following machinery, equipment, and manpower to be involved during the work execution, presented in Table 1 and Table 2 below.

Table 1. Equipment and Tools

Description	No. of Units	Applications and functions
Excavator with Bucket	2	Loading of Excavated Materials, Excavation Works
Mini Excavator with Bucket	1	Excavation Works
Dump Trucks	8	Hauling of Excavated/Waste Materials
Wheel Front-Loader	1	Excavation, Loading of Excavated Materials
JCB Excavator	2	Excavation/Desilting Works in the Drain
Generators	2	Power Supply
Mobile Lighting Towers	As per Site Requirements	Lightings
Crane Truck	1	Lifting concrete panels, mobilization of SSTP and WWTP

Table 2. Work Force

Designation	No. of Persons
Project Manager	1

Project Hydrologist	1
Process/STP Engineer	1
Site Engineer	1
Site Supervisors	4
Foreman	3
Permit Officer	1
Safety Officer	1
Wastewater treatment operator	2
Equipment Operator/Driver	5
Flagman	2
Spotter	3
Labourer	15
Sanitation Laborer	10

10.2 Physio-chemical wastewater treatment approach

After the collection, analysis, and careful evaluation of the collected samples, and revision of the available technologies that can successfully treat the water flowing in the Drain, we will provide a wastewater treatment system that utilizes physio-chemical treatment. Such a decision is based on the fact, that the successful utilization of the bio-remediation approaches can be limited by the quality and concentration of the chemicals present in water.

The latest samples, collected from the Brij Vihar Nala, have shown extreme values of COD and BOD for the stormwater drain. Such values often indicate the presence of heavy metals, PCBs, and other toxic substances, that would negatively affect the efficiency of most bio-remediation techniques. The results from the analysis concentration of the general chemical parameters are presented in the Table 3.

Table 3. Chemical analysis of the water in Brij Vihar Nala from November 2021.

CHEMICAL PARAMETERS	Units	Sample 1	Sample 2	Sample 3	Average Value
Total Suspended Solids (TSS)	mg/L	485.00	570.00	501.00	518.67
Chemical Oxygen Demand (COD)	mg/L	1440.00	2263.80	1852.20	1852.00
Biological Oxygen Demand (BOD)	mg/L	228.00	413.30	294.40	311.90
Fluoride	mg/L	4.81	5.01	3.29	4.37
Dissolved Phosphates	mg/L	7.56	8.12	5.26	6.98

Chemical and biological treatments both remove harmful pollutants in wastewater, but each process is ideal for different contaminants. It is critical to choose the optimal treatment for the contaminants it deals with.

Chemical treatment of wastewater uses chemical reactants to break down pollutants. Wastewaters that contain toxic substances, especially toxic soluble metals, generally require chemical treatments. It is ideal for wastewaters with high chemical toxin contents, such as the wastewaters from chemical or pharmaceutical manufacturing, pulp and paper mills, laboratories, and textile manufacturers. It is also optimal for removing the heavy metals found in mining wastewater. While biological wastewater treatment is best at removing contaminants that biodegrade easily. Compounds with simple molecular structures – monomers and dimers, rather than complex polymers – are easiest for microorganisms to digest.

System designed and developed by us effectively combines the chemical and physical treatments processes, as an efficient and cost-effective solution for the treatment of highly toxic wastewater.

Research and development of the technology have shown that as a result of processing highly toxic wastewater in the Ekotor reactor, solid-phase carbon-containing products are formed, chemical transformations occur in the liquid phase, and a hydrogen-containing purely combustible gas is formed, and when a discharge occurs in water, the death of microorganisms is observed, without formation of any toxic or harmful byproducts, that can be discharged into the water.

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Website: www.glarc.in

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RESULT OF ANALYSIS

TEST REPORT

Sample / Report No.	**GLARC/WT-2111290101**	**Sample Name:** **Outlet Water**	**: Page 1 of 1**
Name and Address of Customer	**M/s. AGROTECH RISK PRIVATE LIMITED, B-2, SECTOR-7, NOIDA, Gautam Buddha Nagar, Uttar Pradesh - 201301.**		
Location	**Shaheen Bagh**	**Date of Receipt**	**: 29-11-2021**
Start Date of Analysis	29-11-2021	End Date of Analysis	: 06-12-2021
		Report Issue Date:	: 06-12-2021
Condition of sample on receipt	In Plastic sterilized Bottle	Sample Quantity	: 2.0 Ltr.
		Customer Ref. No.	: N/A
Any Other Information	OK	Sampling Method:	: N/A

S.NO.	Test Parameter	Unit of Measurements	Result	Requirement As per CPCB	Method Reference
CHEMICAL PARAMETERS					
1.	pH value (at 25°C)	-	6.79	6.5-8.9	IS: 3025 (P-11)-1983
2.	*Total Suspended Solids	mg/l	485.0	100.0 max.	IS: 3025 (P-17) -1984
3.	*Chemical Oxygen Demand (COD)	mg/l	1440.6	250.0 max.	IS: 3025(P-58)-2006
4.	*Biochemical Oxygen demand (@20°C at 5 days)	mg/l	228.99	30.0 max.	IS: 3025 (P-44) - 1993
5.	* Fluoride (as F)	mg/l	4.81	2.0 max.	By APHA
6.	* Dissolved Phosphate	mg/l	7.56	5.0 max.	By APHA
Microbiological Parameters					
1.	E. Coli	per ml	Present	--	FSSAI Lab Manual
2.	Salmonella	per ml	Present	--	FSSAI Lab Manual
3.	Pseudomonas	per ml	Present	--	FSSAI Lab Manual
4.	Coliform	per ml	Present	--	FSSAI Lab Manual

*** Parameters does not comply as per requirement of CPCB.**
Note : Sample consume in testing
CPCB : Central Pollution Control Board

****End of Report****

Authorized signatory

- The results listed refer only to tested samples and applicable parameters. Endorsement of product in neither inferred nor implied.
- Test certificate in full or part shall not be used for promotional or publicity purpose & cannot be used as an evidence in the court of law.
- The Sample of Drugs & Cosmetics will be destroyed after one year and other sample will be destroyed with in a month from the date of issuing certificate. (In case of non-perishable products only)
- Total liability of our Analytical division is limited to the invoiced amount. • Sample (s) not drawn by us unless otherwise stated. • Results given in report are related to sample tested.

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RESULT OF ANALYSIS

TEST REPORT

Sample / Report No.	**GLARC/WT-2111290103**	**Sample Name:**	**Outlet Water** : **Page 1 of 1**
Name and Address of Customer	**M/s. AGROTECH RISK PRIVATE LIMITED, B-2, SECTOR-7, NOIDA, Gautam Buddha Nagar, Uttar Pradesh - 201301.**		
Location	**Shaheed Nagar Metro Station**	**Date of Receipt**	**: 29-11-2021**
Start Date of Analysis	29-11-2021	End Date of Analysis	: 06-12-2021
Condition of sample on receipt	In Plastic sterilized Bottle	Report Issue Date:	: 06-12-2021
Any Other Information	OK	Sample Quantity	: 2.0 Ltr.
		Customer Ref. No.	: N/A
		Sampling Method:	: N/A

S.NO.	Test Parameter	Unit of Measurements	Result	Requirement As per CPCB	Method Reference
CHEMICAL PARAMETERS					
1.	pH value (at 25°C)	-	6.95	6.5-8.9	IS: 3025 (P-11)-1983
2.	*Total Suspended Solids	mg/l	501.0	100.0 max.	IS: 3025 (P-17) -1984
3.	*Chemical Oxygen Demand (COD)	mg/l	1852.2	250.0 max.	IS: 3025(P-58)-2006
4.	*Biochemical Oxygen demand (@20°C at 5 days)	mg/l	294.42	30.0 max.	IS: 3025 (P-44) - 1993
5.	* Fluoride (as F)	mg/l	3.29	2.0 max.	By APHA
6.	* Dissolved Phosphate	mg/l	5.26	5.0 max.	By APHA
Microbiological Parameters					
1.	E. Coli	per ml	Present	--	FSSAI Lab Manual
2.	Salmonella	per ml	Present	--	FSSAI Lab Manual
3.	Pseudomonas	per ml	Present	--	FSSAI Lab Manual
4.	Coliform	per ml	Present	--	FSSAI Lab Manual

*** Parameters does not comply as per requirement of CPCB.**
Note : Sample consume in testing
CPCB : Central Pollution Control Board

****End of Report****

Authorized signatory

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RESULT OF ANALYSIS

TEST REPORT

Sample / Report No.	**GLARC/WT-2111290102**	**Sample Name:** **Outlet Water**	**: Page 1 of 1**
Name and Address of Customer	**M/s. AGROTECH RISK PRIVATE LIMITED, B-2, SECTOR-7, NOIDA, Gautam Buddha Nagar, Uttar Pradesh - 201301.**		
Location	**Ghazipur**	**Date of Receipt**	**: 29-11-2021**
Start Date of Analysis	29-11-2021	End Date of Analysis	: 06-12-2021
Condition of sample on receipt	In Plastic sterilized Bottle	Report Issue Date:	: 06-12-2021
Any Other Information	OK	Sample Quantity	: 2.0 Ltr.
		Customer Ref. No.	: N/A
		Sampling Method:	: N/A

S.NO.	Test Parameter	Unit of Measurements	Result	Requirement As per CPCB	Method Reference
CHEMICAL PARAMETERS					
1.	pH value (at 25°C)	-	6.83	6.5-8.9	IS: 3025 (P-11)-1983
2.	*Total Suspended Solids	mg/l	570.0	100.0 max.	IS: 3025 (P-17) -1984
3.	*Chemical Oxygen Demand (COD)	mg/l	2263.8	250.0 max.	IS: 3025(P-58)-2006
4.	*Biochemical Oxygen demand (@20°C at 5 days)	mg/l	413.30	30.0 max.	IS: 3025 (P-44) - 1993
5.	* Fluoride (as F)	mg/l	5.01	2.0 max.	By APHA
6.	* Dissolved Phosphate	mg/l	8.12	5.0 max.	By APHA
Microbiological Parameters					
1.	E. Coli	per ml	Present	--	FSSAI Lab Manual
2.	Salmonella	per ml	Present	--	FSSAI Lab Manual
3.	Pseudomonas	per ml	Present	--	FSSAI Lab Manual
4.	Coliform	per ml	Present	--	FSSAI Lab Manual

*** Parameters does not comply as per requirement of CPCB.**
Note : Sample consume in testing
CPCB : Central Pollution Control Board

****End of Report****

Authorized signatory

- The results listed refer only to tested samples and applicable parameters. Endorsement of product in neither inferred nor implied.
- Test certificate in full or part shall not be used for promotional or publicity purpose & cannot be used as an evidence in the court of law.
- The Sample of Drugs & Cosmetics will be destroyed after one year and other sample will be destroyed with in a month from the date of issuing certificate. (In case of non-perishable products only)
- Total liability of our Analytical division is limited to the invoiced amount. • Sample (s) not drawn by us unless otherwise stated. • Results given in report are related to sample tested.

10.3 SSTT & WWT Technology

For rejuvenation Brij Nala Drain it is required to remove the accumulated silt and sediment from the bottom of it. For the treatment of silt and sludge recovered from Brij Nala Drain and for wastewater treatment operations We and our partner will be providing services for sludge treatment and wastewater treatment with their in-house designed modular systems.

The system is based on the rotary vortex type reactor (RVT), which is an apparatus in the working area of which the speed of physicochemical processes is accelerated by hundreds of thousands of times (oxidation, reduction, replacement).

Application of RVT technology for development of excess-active sludge from biological treatment stations reaches the following goals:

- The main effect is to reduce the volume of removed sludge by 3-4 times
- positive effects - fast and complete disinfection and, accordingly, a decrease in the hazard class, removal of restrictions for transportation and disposal
- deodorization (complete removal of noxious smell)
- multiple increase in sedimentation rate (important for reducing the volume of sedimentation tanks)

Use of RVT prior to sludge dewatering provides reduction in the volume of waste removed by 2-3 times. It also increases in the filtration rate and, therefore, a decrease in the duration of the working cycle, with dramatic decrease in the working pressure, which makes it possible to switch to simpler dewatering devices. Reduction of moisture content of the resulting waste up to the production of pasty masses makes it suitable for removal to MSW landfills. The modular component of the system allows it to be suitable for all types of apparatus used for dewatering in any proportions.

"Ekotor" Reactor is an electromagnetic device with a design similar to an electric motor (stator), in which the role of a rotor is played by many ferromagnetic "needles".

Under the influence of an electromagnetic field the "needles" rotate in the direction specified by the formed vectors, constantly collide, cyclically re-magnetized, change very quickly volume and linear dimensions (magnetostriction phenomenon). Magneto strictive processes, in turn become sources of generating a powerful stream of acoustic energy, the frequency of this ranges from tens of Hz to tens of MHz. Most of the energy carries ultrasound, the main source of which is the surface of moving needles. The radiated energy does not have a preferred direction, therefore there are no resonance phenomena. In this case, ultrasound serves as a source of acoustic cavitation.

Acoustic effects on a substance initiates onset of cavitation, which has a tremendous effect on the entire course of physicochemical processes in the apparatus. Cavitation can occur only in a liquid medium because it is based on the emergence and collapse of cavitation bubbles. Acoustic and hydrodynamic cavitation occurs simultaneously in one flow, while the collapse of cavitation bubbles is accompanied by release of a large amount of energy and a source of sound energy.

System Basis

Hydroacoustic cavitation is collapse of cavitation bubbles. Bubbles occur when the flow experiences a decrease in pressure, and turbulence occurs. In the working area there is also a gas phase obtained during the processing of various materials, especially when processing organic matter. Also, the needles in the working area are heated to high temperatures, the contacting liquid comes to a boiling phase.

The manifestation of cavitation is promoted by:

- a large amount of gas and nuclei of cavitation bubbles
- additional probability of bubble formation when the needles are heated
- the presence of a large number of grinding particles
- continuous change in flow rate (in microvolumes)
- rotation of the liquid phase under the influence of an electromagnetic field
- the presence of needles rotating with the liquid and producing sound waves and magneto strictive shocks
- the appearance of a temperature field around the needles (each needle separately)
- intensive mixing of the liquid phase and pressure averaging over the entire volume
- the emergence of magnetostriction and the initiation of the acoustic pressure field due to this phenomenon.

The project executive Consortium has extensive experience in the practical application of this technology.

- A complex of equipment for neutralization of agricultural waste has been developed and is being successfully operated.
- A complex for neutralization of liquid hypertoxic waste was developed and passed pilot tests at “Krasny Bor” landfill (St. Petersburg area, Russian Federation).
- A process line for complete disinfection of wastewater from water utilities has been developed.

Technology technical parameters:

- low power consumption (no more than 0.8 kW. per hour per m3.)
- small dimensions (all units have a modular design)
- high degree of automation and ease of maintenance

As a result of processing, the following are achieved:

- rupture of cell membranes
- accelerated dehydration
- complete disinfection of turbid media with any indicator of the amount of suspended particles

The modular system is designed based on the latest analytical results, and may optionally include the following components:

- Mechanical pre-cleaning module
- Ultrafiltration module
- Reverse Osmosis (RO) module
- Photocatalytic ozonation module
- Hydrodynamic destruction module

- Sedimentation module
- Vacuum destruction module
- Post adsorption module

Figure 3. Example of Mobile Reactor assembly.

Figure 4. Inline assembly of small custom-built unit.

Figure 5. RVT Reactor.

10.4 Phycoremediation Technology

Phycoremediation is defined as the use of either macro-algae or micro-algae for the removal or biotransformation of pollutants, including nutrients and xenobiotic from waste water.

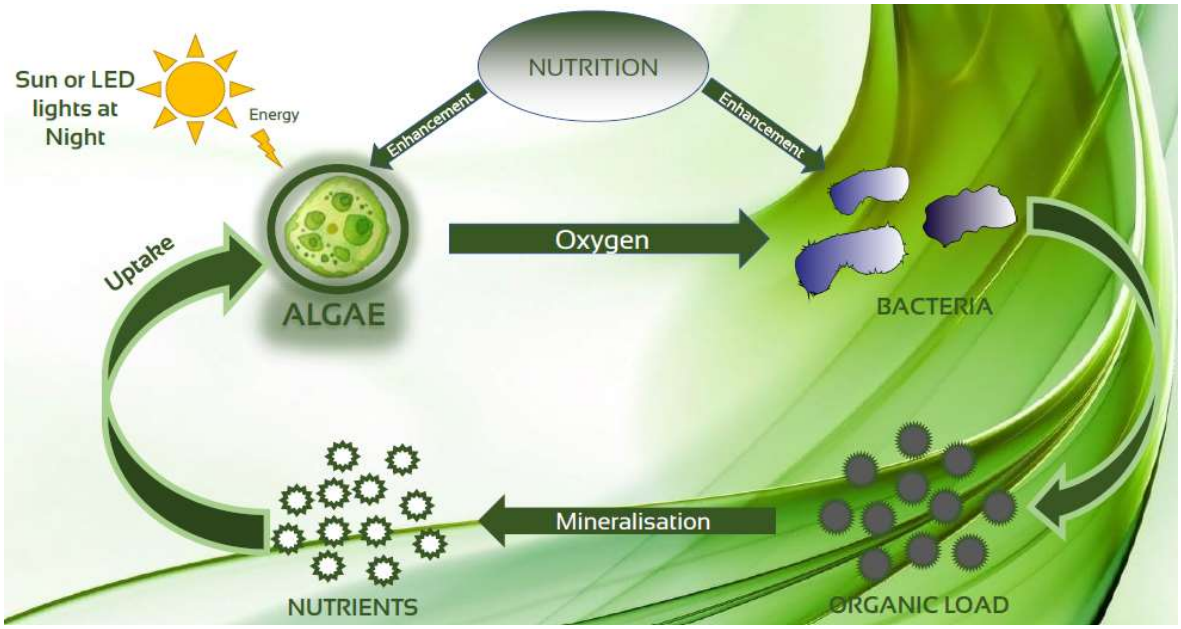
Nature has been using Algae for cleaning of water and sustaining bio-life for millions of years by creating natural food chain. Almost the entire oxygen in water be it in sea, oceans or rivers is only because of Algae.

Photosynthesis (Chlorophyll in Algae using Sun light and Carbon Dioxide) is the main action (Bio-Oxygenation) performed by Algae in water to increase DO level which takes care BOD and COD demands up to 99 % and also reduces of EC, TC and TSS up to CPCB standards without addition of any chemicals and electricity.

Apart from Bio Oxygenation, pollutants Like Nitrates, Phosphates, Sulphates, Carbonates etc. including heavy metals like Cr, Arsenic, Mercury, Fluoride etc. are absorbed by Algae. These pollutants are necessary for contributing to growth of customized Algae (for cell formation & energy required by the algal cell) Absorption of pollutants by Algae leads to cleaning of Effluents. It may be mentioned here that where TDS is high, the reduction does not take place beyond 30-40 % but all remaining TDS is bio transformed to Bio Fertilizers, a Source of Revenue.

Since Carbon-di-oxide is used during process of photosynthesis, this is highly Carbon Negative technology. Approx. 70 % of oxygen in this world is produced by Algae and rest by trees.

But without Algae the entire bio life in natural water bodies will cease to exist. An aerobic bacterium which helps cleaning water has symbiotic relationship with Algae that we use. All the Algae Consortia that we use are Non-Toxic.



11. Site Observations

11.1 Bhopura

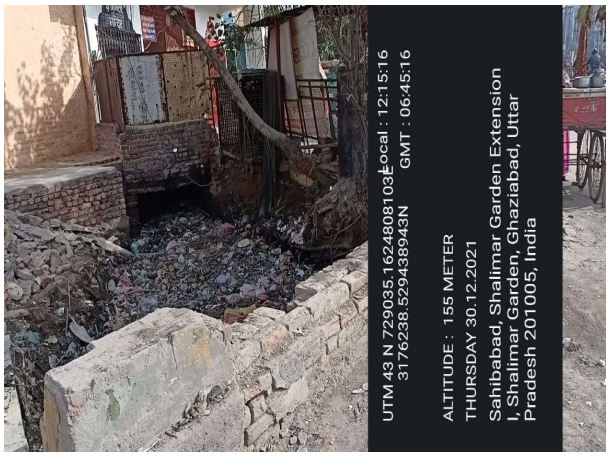
We noticed Manual Bar Screen are choked with the garbage and lift station is not service. Channel Width is 2 meters, Downstream and Upstream Drain level difference is 1.5 meter Approx. Regular pumping is required due to level difference. People are dispose of garbage into the drain.

11.2 Bhopura Chowk

In this area we found construction damage(Junction point collapse) of the drain and three areas (Loni, Pasunda and Tulasi Nikethan) drains are merging in to one drain. In this drain is one pipeline is crossing the road, intersection chamber was damaged and choked with garbage and silt.

11.3 Shalimar Garden

We noticed that drains are choked with floating garbage and silt. One drain width is 1.5m was under repair and 3 drains are merging into One drain width is 2.5 meters(shown in the below pictures). In this area people are disposing the garbage waste into the drains and drain construction work is in progress (shown in the below pictures).



11.4 From Janakpuri to Shahid Park Metro Station

We noticed that drain both sides resident colonies are there, so people are disposing the garbage waste into the drain. In this area textile fabric industries and Dairy farms were discharging the effluent and dung waste into the drain. Continuous flow of untreated wastewater from local households were being discharged into the drain. Because of this manual bar screens were choked.Width of the drain is 10 meters (shown in the pictures).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3174840.57614593N
Local : 17:05:44
GMT : 11:35:44
ALTITUDE : 153 METER
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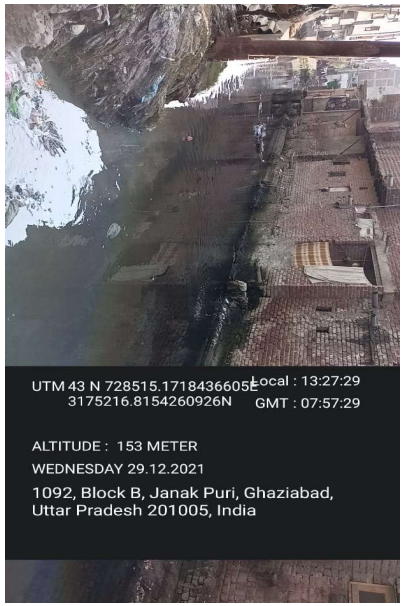
253, Ram Swaroop Colony, Janak Puri,
Ghaziabad, Uttar Pradesh 201005, India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3175216.8154260926N
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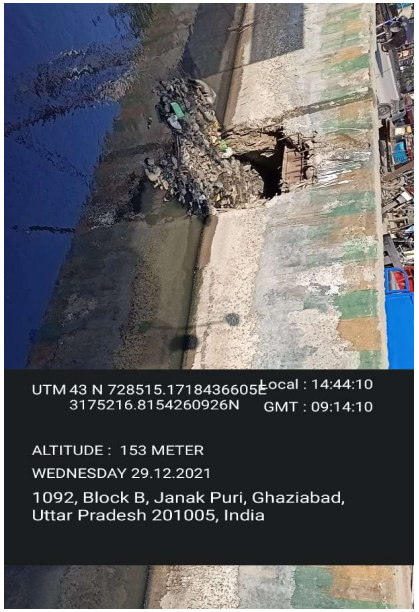
1092, Block B, Janak Puri, Ghaziabad,
Uttar Pradesh 201005, India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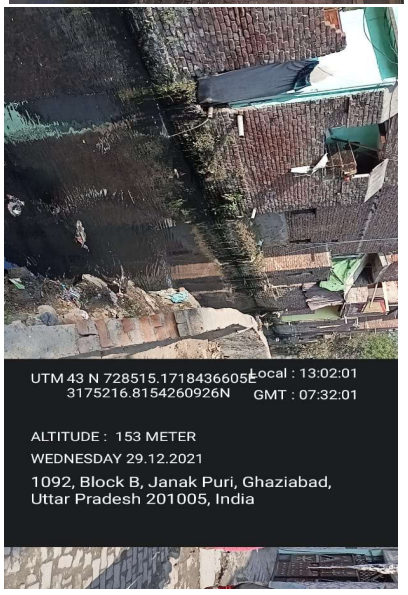
Uttar Pradesh 201005, India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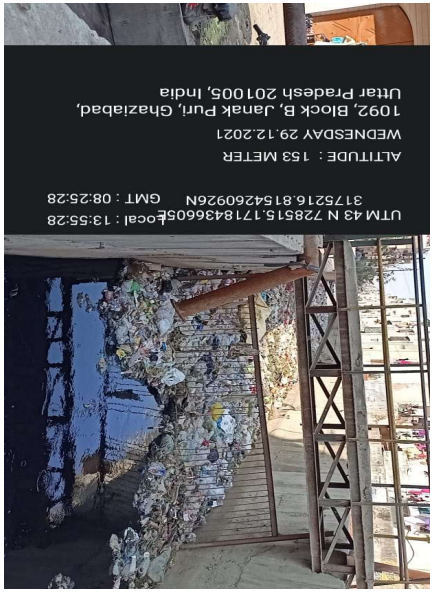
Uttar Pradesh 201005, India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1092, Block B, Janak Puri, Ghaziabad,
Uttar Pradesh 201005, India


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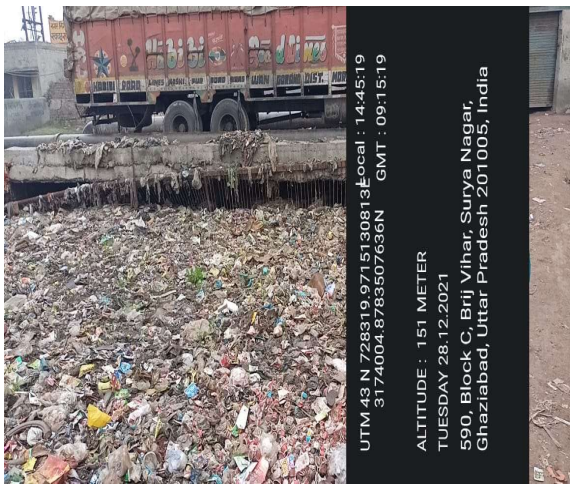
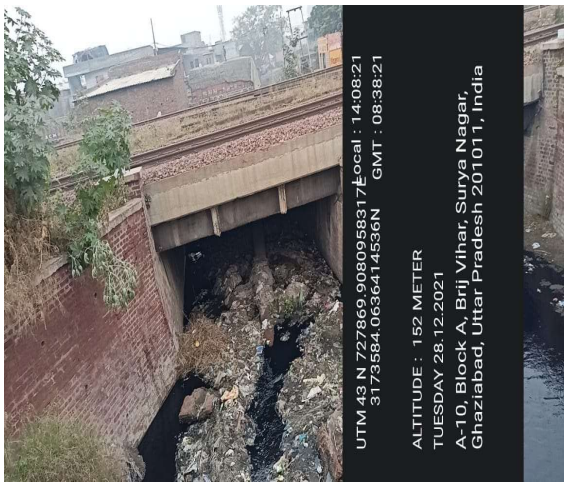
Local : 11:07:29
GMT : 05:37:29
ALTITUDE : 153 METER
WEDNESDAY 29.12.2021
88/2, Shyam Enclave, Janak Puri,
Ghaziabad, Uttar Pradesh 201005, India

11.5 Near J point Pumping station

In this location, we noticed that manual bar screens were choked with floating garbage, excess of grit, sludge. Floating garbage is coming from Janakpuri. Railway track/ bridge was crossing on the drain. Drain width is 12 meters. (Shown in the pictures).



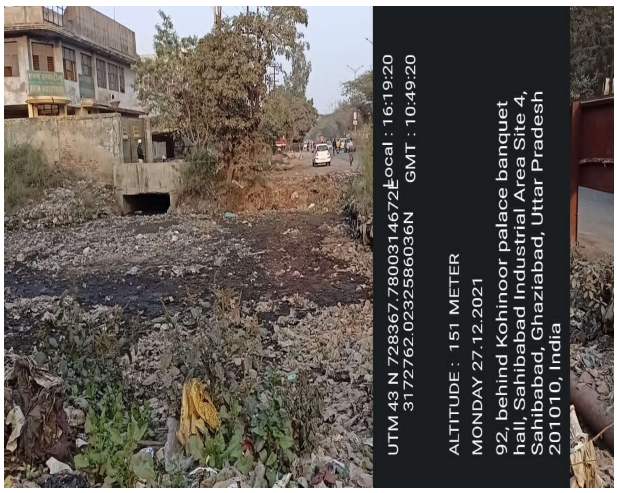


11.6 Brij Vihar colony

In this area, we noticed that floating Garbage and grit were more. People are disposing garbage waste into the drain and the drain overflows and backflow water entering into the houses during monsoon season. Width of the drain is 15 meters.

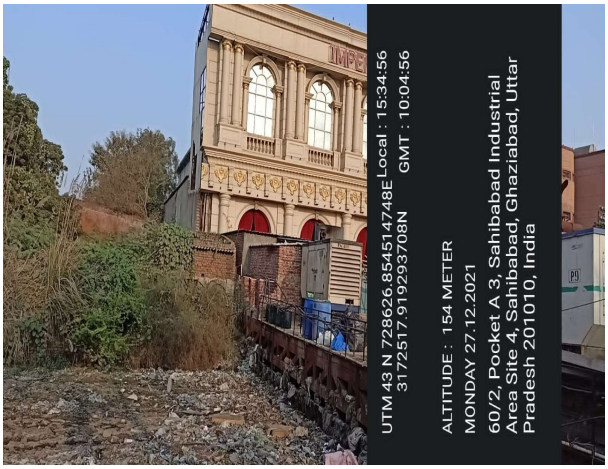
11.7 Near Link Road Police Chowki

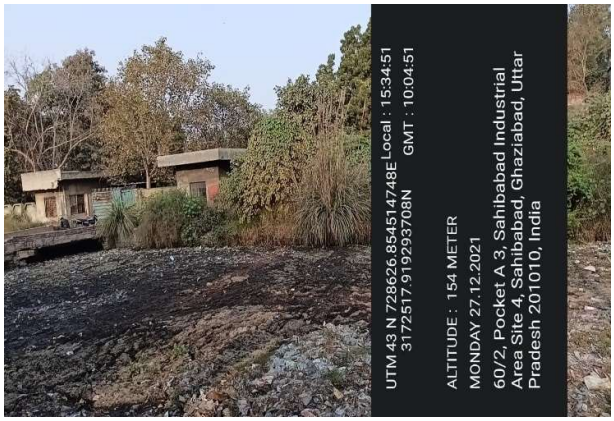
We noticed that drain line was choked with the grit and floating garbage. And some electrical cables and water pipeline were crossing the drain. Drain width is 15 meters. Culvert opening is very less for water flow, due to this drain is overflowing in monsoon season.



11.8 Imperial Part to Inderprastha Engineering college

In this location floating garbage, sludge and silt were more. Open drain width is 15 meters, and a parallel covered drain Width is 9 meters.





11.9 Near Country INN Hotel

We noticed that manual screens were installed. Width of the drain is 16 meters. In this area we found floating garbage, silt, sludge, and covered drains (from Country inn Hotel to Jain Marble Centre).

11.10 Near Chitragupta park

In this location, we noticed that water flow is more, and one drain was merging into the channel. Width of the drain is 20 meters.

11.11 Vaishali Nagar

In this location, we noticed that floating material was accumulated on surface of the sewage. Width of the drain is 18 meters.

Ashirwad green Colony – People are disposing the plant branches and waste garbage into the drain.

12. Risks and Recommended Measures

12.1 Safety

We and the subcontractors involved in the project execution are committed to conducting business in a manner that protects the safety, health and wellbeing of our workers and environment. Protection of employees from injury or occupational disease is a major continuing objective. We are committed to continuing improvement toward an incident-free workplace through effective administration, education, and training. All supervisors and workers must be dedicated to the continuous objectives of eliminating the "near misses" which will greatly reduce the risk of injuries. The Directors and Officers of this Consortium promise that every precaution reasonable in all circumstances will be taken for protection of all workers. No job is to be regarded so urgent that time cannot be taken to do it in a safe manner. We will have this commitment integrated into our business planning and operations by establishing and maintaining an effective and pro-active Environment, Health and Safety Management System (EHSMS).

We recognize the rights of workers to work in a safe & healthy environment where all employees, subcontractors, supervisors, and visitors will be held accountable for their health & safety performance.

To accomplish this goal, we shall all take responsibility for:

- Focusing our efforts on injury and illness prevention by proactively looking for ways to identify and eliminate any unsafe or unhealthy conditions that may occur in our workplaces.

- Ensuring each worker is provided training and information to equip themselves to perform their specific work tasks in the safest manner possible.
- Being aware of and complying with all applicable health, safety and environmental legislation and regulations, our own internal EHSMS program, including our Best Practices and where applicable, the client's safety program.
- Ensuring our Managers, Supervisors, Subcontractors and Workers are accountable and take responsibility for safeguarding their personal safety and wellbeing as well as that of their co-workers.
- Ensuring the machinery, equipment and tools required for use by workers are safe and that each worker works in compliance with established safe work practices and procedures for each piece of equipment.
- Assessing and managing the environmental, health and safety risks associated with all aspects of our business to protect our employees, our shareholders, clients, and the communities in which we operate.
- Consistently striving for safety excellence, including taking ownership for continually evolving and improving our EHSMS and foster a culture which recognizes that our employees are our most important resource.
- Working together to promote a culture built around worker engagement & input in the development and implementation of our EHMS in consultation with our joint health & safety committees.
- Our vision of being recognized as an industry leader is reinforced by our leadership in pro-actively promoting health, safety, and environmental stewardship throughout the organization and beyond.

12.2 Project Risks, Solutions, Recommendations

After the initial survey of the area and evaluation of the tender documentation, we will identify several project risks.

Risk 1 - Vandalism, sabotage of work, security of the work area. To mitigate the risks of vandalism and security issues on site, we and GMC need to develop an overall security plan. In collaboration with the local authorities and police, we will ensure security of the area and work in the identified risk areas. We will provide fencing and video surveillance of the wastewater and sludge treatment system.

Risk 2 - Unauthorized connections to the drain, and unauthorized settlements (encroachments) that can obstruct execution of the remediation activities. During the survey of the area, surveyors noticed numerous pipes and drain connections that lead to Brij Nala Drain (presented in (Figure 5). To minimize unauthorized disposal of toxic waste into the canal during and after remediation activities, we will officially report to GMC about all discovered unauthorized connections and drain points, that illegally dump waste to the drain. GMC authorities need to find ways to obstruct and prevent this from happening in future. With support from GMC, we will provide verbal notice to the inhabitants of the settlements about the upcoming/ongoing work, required precautions, and consequences pursuant to illegal dumping of garbage into the drain. In case of ongoing pollution, GMC will be asked to take corrective measures. Otherwise,

GMC joins us in understanding, that with continuous illegal dumping largely affects the quality of water treatment.

Risk 3 - Wear and tear of the existing civil structures. There is certain risk of collapse and destruction of the walls in some sections of the drain. During the survey of the area, surveyors noticed that in some sections of the drain the physical structure of the canal is in distressed state and can collapse during the cleanup of the drain. We will report to GMC about the condition of the structures prior to mechanical activities, and GMC will expectedly take immediate action to implement additional structural restoration measures (presented in Figure 6). This work is not included in the scope of the current project and will not be covered by the assigned budget.

Figure 6. Unauthorized connections and structural damage.

Risk 4 - House Sewer Connection to the Drain near the DLF to Brij Vihar Colony area. Continuous flow of untreated wastewater from local households are being discharged into the drain in this section of the drain. It is critical to rehabilitate Sewer Pipe along the drain in this area (presented in Figure 7). Immediate corrective measures are suggested by us. This work is not included in the scope of the current project and will not be covered by the assigned budget.

Figure 7. Untreated municipal wastewater.

Risk 5 - Bhopura location. Undersized pipeline for the current population.

It has been noted that in the Bhopura location the current wastewater\sewage line is significantly undersized and damaged (Figure 8). That leads to the continuous flooding of the untreated wastewater into the nearby households, during the monsoon season. We suggest taking immediate actions to replace the pipeline or to create the parallel drain, to reduce the overflow during the monsoon season.

Figure 8. Bhopura pipe burst location

Risk 6- Link Road Police Chowki- Road culvert height is very less to flow the water.

It has been noted that the culvert height is undersized and choked with garbage and Silt. Pipeline and Electrical cables (Figure 9) were crossing the drain near the culvert. That leads to the continuous flooding of the untreated wastewater into the nearby households, during the monsoon season. We suggest taking immediate actions to replace the pipeline and increase the height of the culvert or to create the parallel drain, to reduce the overflow during the monsoon season. This work is not included in the scope of the current project and will not be covered by the assigned budget.

Figure 9. Crossing Electrical cables and Water pipeline

Risk 7- Bhopura- It has been noted that Upstream Drain level difference is 1.5 meter down Approx. Regular pumping is required for level maintenance. we suggest that Redesign of the drain to prevent the continuous pumping. This work is not included in the scope of the current project and will not be covered by the assigned budget.

Risk 8- Janakpuri to Shahid Park Metro Station

It has been noted that drain both sides are resident colonies are there, people are disposing the garbage waste into the drain due to this manual bar screens were choked. In this area textile fabric dyes effluent and dairy farms also discharging effluents and dung waste into the drain. We suggest that to arrange wire mesh on top of the drain up to 2.5 Kms to control the household waste. And Spread awareness to surrounding residence who are throwing the garbage into the drain.

Under the current scope of work, we are not responsible for any civil, structural, or repairing work. We will provide advisory and technical consultation on the corrective measures, if required, on any identified issues related, but not limited to, to the rehabilitation project, unauthorized drain connections, and civil works that are required to be executed for the benefit of the current project. Any civil, structural, or repairing work must be completed by GMC to avoid and minimize the contamination of Brij Vihar Nala and flooding to the adjusted households.

13. Scope of Works

S.NO	AREA	GMC SCOPE	AGROTECH SCOPE
1	Bhopura to Pumping Station	Pumping station should be in running condition	Required to remove silt, floating garbage and maintaining the water quality
2	Pumping station to Bhopura Chowk	Reconstruction or replacement of the sewage pipeline	
3	Bhopura chowk to Shalimar Garden	Permission and help to remove RCC Covers then cleaning can be done.	
4	Shalimar Garden to Haqqani Masjid Road	Spread awareness to the surrounding residence who are throwing the garbage into the drain.	Required to remove silt, sludge, floating garbage and Spread awareness to the people.
5	Haqqani Masjid Road to Shaheed Nagar Metro Station	To create the parallel sewage line and issue the notice to illegal industry whose illegal connection pipes is releasing the waste effluent into the drain.	Required to remove silt, sludge, and floating garbage, spread awareness, and help identify to find industries.
6	Shaheed Nagar Metro Station to J-Point	Issue the notice for the transportation workshops who are releasing oil and grease waste into the drain.	Required to remove silt, sludge, floating garbage and maintaining the water quality
7	J-point to Brij Vihar colony	Required Permission letter or NOC from Railway department during work under the railway bridge.	
8	Brij Vihar colony to Link Road Police chowki	Required Permission letter or NOC from Railway department during work under the railway bridge and Nurseries.	
9	Link Road Police chowki	Required to increase the height of Culvert as wastewater is not able to flow under it	
10	Link Road Police chowki to country Inn Hotel Cover drain	Required permission need to be cut trees and suspension of electricity across the drain during the work time.	
11	Country inn Hotel to Chitragupta park	These are all covered drains, need discussions.	
12	Chitragupta park to Indirapuram STP (End point)	These are all covered drains, need discussions.	

14. Suggestions:

14.1 Bhopura location:

In this area we found construction damage(Junction point collapse) of the drain and three areas (Loni, Pasunda and Tulasi Nikethan) drains are merging in to one drain. This drain pipeline was crossing the road, intersection chamber was damaged and choked with garbage and silt.

Reason for Overflow/ Flood during Monsoon season:

Construction damage of the intersection Chamber.

Three areas (Loni, Pasunda and Tulasi Nikethan) drains are merging in to the Bhopura drain.

Pipe Drain diameter is small and sedimentation of silt.

Suggestions:

Action to be taken by the GMC:

- To avoid the Overflow/ Flood during Monsoon Season
- Reconstruction for intersection chamber and replace the Drain pipeline.

- Required to construct new culvert for crossing the drain and required to change the Drain pipeline.
- Any civil, structural, or repairing work is under GMC.

By AgroTech

Under our current scope to remove silt, sludge, floating garbage, maintaining slope, edge dressing, maintaining the water quality and Proper Inspection of the drains.

14.2 Near Link Road Police Chowki

Noticed that drain line was choked with excess of grit, Sludge, and floating garbage. And the height of the culvert is very less.

Reason for Overflow/ Flood during Monsoon season:

In this area, Culvert height is very less due to this in Brij Vihar Colony drain was Overflow/ flood during monsoon season.

Suggestions:

Action to be taken by the GMC:

- Increase the height of the culvert.
- Required to remove the obstacles like concrete and pipeline.
- Required permission/ Inspection from Electricity board (Electric cable crossing the Drain)

By Agrotech

Under our current scope to remove silt, sludge, floating garbage, maintaining slope, edge dressing, maintaining the water quality.

14.3 From Haqqani Masjid Road to Shahid Park Metro Station

Drain both sides residents are there, people are disposing the garbage waste into the drain. In this area textile fabric industries and dairy farms were discharging the effluent and dung waste into the drain. Because of this manual bar screens are choked.

Suggestions:

Action to be taken by the GMC:

- GMC to issue Notice for dischargeing the waste effluent from Industries into the drain (like Fabric/textile and Dairy farms)
- Spread awareness to surrounding residence who are throwing the garbage into the drain.
- In some areas, small side culverts need to be repair by GMC.

By Agrotech

Under our current scope to remove silt, sludge, floating garbage, maintaining slope, edge dressing, maintaining the water quality.

15. Financials

55

E/w.w./E.E(jal)/ Work Order

कार्यालय अधिशासी अभियन्ता(जल), गाजियाबाद नगर निगम

पत्रांकः 367 /जलकल/21-22 दिनांक 24.12.21

विषयः- WASTEWATER TREATMENT TECHNOLOGY COMPANIES FOR DECENTRALIZED SEWAGE SYSTEMS for Treatment and Rejuvenation of Sahibabad Drain/Brij Vihar Nala at Ghaziabad Nagar Nigam का कार्य।

-:कार्यादेशः-

M/S Agrotech Risk Private Limited
Trinity Tower, B-2, Sector 7
Noida Uttar Pradesh-201301

उपरोक्त कार्य विषयक दिनांक 06.12.2021 को आमंत्रित ई-निविदा में प्राप्त न्यूनतम दरों के आधार पर **WASTEWATER TREATMENT TECHNOLOGY COMPANIES FOR DECENTRALIZED SEWAGE SYSTEMS for Treatment and Rejuvenation of Sahibabad Drain/Brij Vihar** का कार्य लागत अंकन रू0 25,92,45,000/- समस्त कर सहित की प्राप्त हुई है, जिसें नगर आयुक्त महोदय नें अपने आदेश दिनांक 23.12.2021 के द्वारा स्वीकृति प्रदान कर दी गयी है।

अतः आप इस पत्र प्राप्ति के 30 दिन के अन्दर मानक स्टॉम्प पेपर पर निर्धारित जमानत धनराशि विभाग में जमा कराते हुये, अनुबन्ध की कार्यवाही कराया जाना सुनिश्चित करे। आवंटित कार्य को अवर अभियन्ता(जल)/सहायक अभियन्ता(जल)/अधिशासी अभियन्ता(जल) की देख-रेख में संलग्न डी0पी0आर0 में दिये गये मानक के अनुसार कार्य कराते हुये, अच्छी क्वालिटी के फोटाग्राफ एवं सी0डी0 तैयार कर, बिल के साथ लगाया जाना सुनिश्चित करे। यदि निर्धारित समयावधि के अन्दर अनुबन्ध की कार्यवाही नही की जाती है तो 100/- रूपये प्रतिदिन प्रतिलाख की दर से अर्थदण्ड वसूलने तथा टैन्डर नोटिस की धारा-8 के अन्तर्गत कार्यवाही की जायेगी, जिसके लिये आप स्वयं उत्तरदायी होगें।

अधिशासी अभियन्ता(जल)
गाजियाबाद नगर निगम

पत्रांक व दिनांक तदैव
प्रतिलिपिः-

निम्नलिखित को सूचनार्थ एवं आवश्यक कार्यवाही हेतु प्रेषित।

१- *मा० महापौर महोदया, गाजियाबाद को सादर सूचनार्थ प्रेषित।*
२- *नगर आयुक्त महोदय को सादर सूचनार्थ प्रेषित।*
३- *बृजविहार नाला समिति के सम्मानित सदस्यों को सादर सूचनार्थ प्रेषित।*
४- *महाप्रबन्धक(जल), जलकल विभाग नगर निगम, गाजियाबाद।*
५- *नगर स्वास्थ्य अधिकारी, गाजियाबाद नगर निगम, गाजियाबाद।*
६- *क्षेत्रीय अधिकारी, पोल्यूशन कन्ट्रोल बोर्ड, गाजियाबाद।*
७- *सहायक अभियन्ता(जल) को सूचनार्थ एवं आवश्यक कार्यवाही हेतु।*
८- *सम्बन्धित क्षेत्रीय अवर अभियन्ता(जल) को समय सीमान्तर्गत मानक के अनुसार कार्य पूर्ण कराने हेतु।*
९- *पत्रावली।*

पत्रावली

अधिशासी अभियन्ता(जल)

सहायक अभियन्ता (जल)
नगर निगम गाजियाबाद

12(02/22)

E/w.w./E.E(jal)/21-22/A.E.(Jal)

कार्यालय सहायक अभियन्ता(जल), नगर निगम, गाजियाबाद

पत्रांकः 82 /जलकल/2021-22 दिनांक- 16/02/22

विषयः- बृजविहार नाले के डी0पी0आर0 के पुनरीक्षण के सम्बन्ध में।

डा0 उमर सैफ(सी0एल0सी0),
पर्यावरण प्लानर,
गाजियाबाद नगर निगम।

जैसा कि आपको विदित ही है कि **WASTEWATER TREATMENT TECHNOLOGY COMPANIES FOR DECENTRALIZED SEWAGE SYSTEMS for Treatment and Rejuvenation of Sahibabad Drain/Brij Vihar** का कार्यादेश फर्म मैसर्स एग्रोटैक रिस्क प्रा0 लि0, नौएडा को निर्गत किया जा चुका है। उपरोक्त कार्य की कमेटी में आप नामित सदस्य है। फर्म द्वारा कार्यादेश निर्गत के उपरान्त उक्त कार्य की डी0पी0आर0 इस कार्यालय को प्रेषित की गयी है, जिसका पुनरीक्षण किया जाना है।

अतः आपसे अनुरोध है कि आप उपरोक्त कार्य की संलग्न डी0पी0आर0 का पुनरीक्षण कर, अपनी सुस्पष्ट आख्या अधोहस्ताक्षरी के कार्यालय में उपलब्ध कराया जाना सुनिश्चित करे, ताकि डी0पी0आर0 में यथा सम्भव संशोधन किया जा सके।

संलग्नक-डी0पी0आर0।

16.2.22
सहायक अभियन्ता(जल)
नगर निगम, गाजियाबाद

पत्रांक व दिनांक तदैवः-

प्रतिलिपिः-
महाप्रबन्धक(जल) महोदय को सादर सूचनार्थ प्रेषित।
2- अधिशासी अभियन्ता(जल) महोदय को सादर सूचनार्थ प्रेषित।

सहायक अभियन्ता(जल)

Analysis Report of Ghaziabad Drains

Annexure 3

S.No.	Sampling Point	Date	pH	Color	B.O.D (mg/L)	C.O.D (mg/L)	T.S.S (mg/L)	Total Coliform (MPN/100mL)
1.	Arthala Drain	14.10.21	7.66	Turbid	54.0	249.0	114.0	$28X10^4$
		20.11.21	7.36	Turbid	57.0	258.0	123.0	$25X10^4$
		17.12.21	7.40	Turbid	53.0	296.0	128.0	$17X10^4$
		01.01.22	7.54	Turbid	60.0	276.0	140.0	$26X10^4$
2.	Dasna Drain	14.10.21	7.61	Turbid	47.0	184.0	174.0	$24X10^5$
		20.11.21	7.84	Turbid	43.0	196.0	163.0	$27X10^5$
		17.12.21	7.70	Turbid	46.0	145.0	127.0	$28X10^5$
		01.01.22	7.64	Turbid	48.0	172.0	186.0	$32X10^5$
3.	Hindon Vihar Drain	14.10.21	7.93	Turbid	65.0	200.0	161.0	$11X10^6$
		20.11.21	7.91	Turbid	68.0	240.0	178.0	$39X10^5$
		17.12.21	7.86	Turbid	58.0	198.0	249.0	$13X10^6$
		01.01.22	7.77	Turbid	52.0	220.0	233.0	$17X10^6$
4.	Indrapuram Drain	14.10.21	7.43	Turbid	40.0	122.0	60.0	$15X10^5$
		20.11.21	7.52	Turbid	48.0	144.0	181.0	$21X10^5$
		17.12.21	7.34	Turbid	41.0	76.0	75.0	$22X10^5$
		01.01.22	7.56	Turbid	46.0	102.0	84.0	$27X10^5$
	Jawali Drain	20.10.21	7.55	Turbid	49.0	229.0	184.0	$26X10^5$
		17.11.21	7.50	Turbid	42.0	138.0	98.0	$21X10^4$
		27.12.21	7.32	Turbid	37.0	144.0	88.0	$38X10^4$
		01.01.22	7.44	Turbid	44.0	154.0	118.0	$33X10^4$
	Kaila Bhatta Drain	14.10.21	7.88	Turbid	56.0	233.0	153.0	$12X10^5$
		20.11.21	7.61	Greyish	61.0	246.0	166.0	$14X10^6$
		17.12.21	7.54	Blackish	54.0	222.0	172.0	$21X10^6$
		01.01.22	7.32	Turbid	48.0	212.0	182.0	$13X10^6$
	Karedha Drain	14.10.21	7.49	Blackish	77.0	336.0	200.0	$26X10^5$
		20.11.21	7.68	Turbid	83.0	318.0	221.0	$22X10^5$
		17.12.21	7.28	Turbid	78.0	192.0	143.0	$13X10^6$
		01.01.22	7.58	Turbid	64.0	245.0	220.0	$25X10^6$
	Pratap Vihar Drain	14.10.21	7.85	Turbid	53.0	179.0	181.0	$17X10^5$
		20.11.21	7.31	Turbid	57.0	186.0	191.0	$13X10^5$
		17.12.21	7.46	Turbid	52.0	251.0	267.0	$14X10^5$
		01.01.22	7.66	Turbid	46.0	242.0	220.0	$20X10^5$