

**BEFORE THE NATIONAL GREEN TRIBUNAL SOUTHERN ZONE,
CHENNAI**

ORIGINAL APPLICATION NO. 01 OF 2021 (SZ)

IN THE MATTER OF

Tribunal on its own motion-SUO MOTU Based on The
News item in The Mathrubhumi Newspaper, Edition Dated:
03.10.2020, "30 Lakh Cubic Metre of Sand can be taken from
Bharathapuzha".

...Applicant(s)

Vs.

Union of India, Rep. by its Secretary,
Ministry of Environment and Forests and Climate Change,
Indira Paryavaran Bhawan,
Jorbagh Road, New Delhi 110 003.
And 19 Others

...Respondent(s)

**STATEMENT OF FACTS THEE ON BEHALF OF THE 5TH
RESPONDENT/THE PRINCIPAL SECRETARY TO GOVT OF KERALA.
DEPARTMENT OF REVENUE AND DISASTER MANAGEMENT GOVT.
SECRETARIAT, THIRUVANANTHAPURAM IN ORIGINAL APPLICATION
NO 01 OF 2021 (SZ) BEFORE THE HON'BLE NATIONAL GREEN
TRIBUNAL, SOUTHERN ZONE, CHENNAI: INTERIM ORDER DATED
06.01.2021**

M/s. E. K. KUMARESAN

Counsel for 5th Respondent
Standing Counsel for State Government of Kerala
NGT (SZ) Chennai Bench.

**BEFORE THE NATIONAL GREEN TRIBUNAL SOUTHERN ZONE,
CHENNAI**

ORIGINAL APPLICATION NO. 01 OF 2021 (SZ)

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...Respondent(s)

**STATEMENT OF FACTS ON BEHALF OF THE 5TH RESPONDENT/THE
PRINCIPAL SECRETARY TO GOVT OF KERALA. DEPARTMENT OF
REVENUE AND DISASTER MANAGEMENT GOVT. SECRETARIAT,
THIRUVANANTHAPURAM IN ORIGINAL APPLICATION NO 01 OF 2021**

It is humbly submits as follows :-

1. It submitted that the report in Mathrubhoomi newspaper dated 3rd October, 2020 that "30 lakh cubic meters of sand can be taken from Bharathapuzha" (in vernacular) pertains to only some findings of sand audit conducted in certain stretches of Barathapuzha River. (The details of sand audit of Bharathapuzha River are annexed.) Government have approved the sand audit report in three stretches of the said river. The Government have also directed the District Collectors of Thrissur and Palakkad to take all necessary steps to strictly comply with all instructions pertaining to sand mining so that 'no unauthorized mining of sand or environmental degradation is allowed to happen'. River Sand Mining cannot commence without Environmental Clearance from the competent authority. District Survey Reports (DSRs) are necessary for seeking EC. The Hon'ble National Green Tribunal vide its order dated 14.10.2020 instructed that the DSR shall be prepared through consultants accredited by the National Accreditation Board of Education and Training/Quality Control Council of India in terms of the O.M of

MoEFCC dated 16.03.2010. Hence, DSRs will be prepared accordingly in the State. Only on obtaining ECs based on DSRs, river sand mining will be resorted to in the State. All environmental and sustainability guidelines issued by MoEFCC with regard to river sand mining will be complied by the State in the event of sand mining. As of now, there is no river sand mining approved in the State. The District Collectors have been directed to comply with all statutory requirements before river sand mining can be permitted. Hence, there is no violation of norms pertaining to river sand mining in the State as apprehended / made out in the said newspaper report.

2. It is submitted that the River sand mining in Kerala is regulated through the provisions of the Kerala Protection of River Banks and Regulation of Removal of Sand Act 2001(amended in 2013) and Rules 2002. Hon'ble Supreme Court's judgment in Deepak Kumar Vs State of Haryana in 2012 and the provisions of EIA Notification 2006 and amended notification 2016 are strictly followed in the State. Guidelines were also issued by the State Government for obtaining environmental clearance for river sand mining as per circular No. P3/248/18/RD dated 15.11.2018 in the context of the EIA notification 2006 and sustainable sand mining management guidelines of MoEFCC-2016. Sand mining is controlled, monitored and carried out solely by the Government. No portion of river in the State is given on lease for sand mining by private persons.

3. It is submitted that the River bed sand mining from rivers is not being done in the State of Kerala since 2016 for want of Environmental Clearance. Sand mining was done till 2015 based on the sand audit reports prepared based on the Kerala Protection of River Banks and Regulation of Removal of Sand Act 2001(amended in 2013) and

subsequent Environmental Clearance (EC) from SEIAA (EC No.571/SEIANK1/4230/2014 Dated. 20.04.2015 &17.12.2015).

4. It is submitted that the Haryana judgment is to be strictly followed in the State. Sand mining is also monitored by kadavu committees. A three-tier system consisting of State High Level Committee (SHLC), District Expert Committee (DEC) and Kadavu Committee (KC) is functioning to monitor the sand mining operations in the State as per The Kerala Protection of River Banks and Regulation of Removal of Sand Act, 2001. An IT enabled on-line system called 'e-Manal' (e-Sand) was also developed (by NIC, Thrissur) and used (then when sand mining was in vogue) to ensure transparency in sand mining and distribution.

5. It is submitted that as such, no mining has been permitted by the Departments concerned. However, extensive powers are given to Revenue officials and Police to seize and confiscate vehicles, tools, implements used to illegally mine and transport river sand as per the provisions of Kerala Protection of River Banks and Regulation of Removal of Sand Act, 2001. Additional penalty can also be imposed now based on NGT's orders when vehicles are seized. According to this act, all the District Collectors and all the Tahsildars have their own squads which work 24x7 in order to check and prevent illegal sand mining across the State. By virtue of the section 20 of this act, if any person is found guilty and whoever contravenes the provisions of this act will be punishable with a fine up to a maximum of Rs. 25,000/- or imprisonment for 2 years or both. Moreover, as per section 23 of this Act the Revenue and Police officials have the power to confiscate the vehicles that are used to transport sand without complying with the provisions of this Act. With the introduction of this Act, illegal sand mining in the rivers could be checked to a large extent. Sand mining

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will also be monitored by District Expert Committee, Tahsilaar and the officers entrusted. The District Collector as per the provisions of Kerala Protection of River Banks and Regulation of Removal of Sand Act 2001 and Rules 2002. Necessary safeguards recommended by SSMG-2016 and EMGSM-2020 will also be ensured for preventing illegal mining when mining permission is granted after obtaining EC,

6. It is prayed that this Hon'ble Tribunal record this memo filed by the 5th respondent herein and pass such further or other orders may deem fit and proper in this circumstances of the case and thus render justice.

Dated at Chennai on this the 15th day of April 2021



Counsel for 5th Respondent

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E-MAIL/ SPEED POST
MOST URGENT

നമ്പർ ...W4-OA..1/2021

പ്രേഷിതൻ

അഡ്വക്കേറ്റ് ജനറൽ
കേരളം

കേരളാ അഡ്വക്കേറ്റ് ജനറലിന്റെ കാരുണ്യവതം,
എറണാകുളം, കൊച്ചി-682 031

ഫോൺ { 0484 2395050
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ഫാക്സ് : 0484 2394674

E-mail : advocategeneral@kerala@gmail.com
27.03.2021

To

തീയതി

Adv. E.K. Kumaresan,
Standing Counsel, National Green Tribunal, Chennai,
M/S EKK Legal No. 6, Indian Chamber (SICCI),
Annex Building, Ground Floor, Esplanad, Chennai – 600108.

Sir,

Sub:- OA.1/2021 Suomoto case registered by Hon'ble National Green Tribunal,
South Zone on the basis of Newspaper Report dated 03.10.2020 “30 lakh
cubic metre of sand can be taken from Bharathapuzha” – reg.

Ref:- Govt. Letter No. P3/33/2021-REV dated 18.03.2021.

.....

Kind attention is invited to the reference cited. I am directed to forward herewith
a copy of the Statement of facts furnished by the Principal Secretary to Government,
Revenue (P) Department duly approved by Hon'ble Advocate General for further
necessary action.

Yours faithfully,
Sd/-
PREETHA RANI. S
Deputy Secretary,
For Advocate General.

Encl:- As above

Approved for issue,

Ms.27.03.21

Section Officer

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OA 1121, Bharatapuzha - S/P



GOVERNMENT OF KERALA

No.P3/33-2021-REV

Revenue (P) Department
Thiruvananthapuram
Dated : 18.03.2021

From
The Principal Secretary to Government.

To
The Advocate General,
Kerala,
Ernakulam.

Sir,
Sub : Revenue Department – NGT interim order dated 06.01.2021 in O.A
No.01/2021(SZ) – Sand mining in Bharatapuzha river – Forwarding of Statement
of Facts on behalf of the 5th respondent (Principal Secretary, Revenue and Disaster
Management) - reg;

Ref:- Order dated 06.01.2021 of NGT in O.A.No.01/2021(SZ) , South Zone, Chennai.

Inviting attention to the reference cited. I am to forward herewith a copy of the Statement
of Facts, for filing before the National Green Tribunal, South Zone, Chennai, on behalf 5th
respondent, ie. the (Principal Secretary, Revenue and Disaster Management, in O.A
No.1/2021(SZ).

Approved for Issue


Section Officer

Yours faithfully
Harilal G.R
Under Secretary
For the Principal Secretary to Government.

Statement of Facts filed on behalf of the 5th respondent, the Principal Secretary to Govt of Kerala, Department of Revenue and Disaster Management, Govt. Secretariat, Thiruvananthapuram in Original Application No. 01 of 2021 (SZ) before the Hon'ble National Green Tribunal, Southern Zone, Chennai: Interim Order Dated 6.1.2021.

The report in Mathrubhoomi newspaper dated 3rd October, 2020 that "30 lakh cubic meters of sand can be taken from Bharathapuzha" (in vernacular) pertains to only some findings of sand audit conducted in certain stretches of Barathapuzha River. (The details of sand audit of Bharathapuzha River are annexed.) Government have approved the sand audit report in three stretches of the said river. The Government have also directed the District Collectors of Thrissur and Palakkad to take all necessary steps to strictly comply with all instructions pertaining to sand mining so that 'no unauthorized mining of sand or environmental degradation is allowed to happen'. River Sand Mining cannot commence without Environmental Clearance from the competent authority. District Survey Reports (DSRs) are necessary for seeking EC. The Hon'ble National Green Tribunal vide its order dated 14.10.2020 instructed that the DSR shall be prepared through consultants accredited by the National Accreditation Board of Education and Training/Quality Control Council of India in terms of the O.M of MoEFCC dated 16.03.2010. Hence, DSRs will be prepared accordingly in the State. Only on obtaining ECs based on DSRs, river sand mining will be resorted to in the State. All environmental and sustainability guidelines issued by MoEFCC with regard to river sand mining will be complied by the State in the event of sand mining. As of now, there is no river sand mining approved in the State. The District Collectors have been directed to comply with all statutory requirements before river sand mining can be permitted. Hence, there is no violation of norms pertaining to river sand

mining in the State as apprehended / made out in the said newspaper report.

The detailed para-wise responses are as given below.

NGT: "The manner in which the River bed sand mining is being done in the State of Kerala and whether they are complying with the Sand Mining Policy of the Central Government and also complying with all the environmental laws including obtaining of Environmental Clearance (EC) as required under EIA Notification 2006, as amended in 2016, in view of the directions issued by Hon'ble Apex Court in Deepak Kumar's case"

Response: River sand mining in Kerala is regulated through the provisions of the Kerala Protection of River Banks and Regulation of Removal of Sand Act 2001(amended in 2013) and Rules 2002. Hon'ble Supreme Court's judgment in Deepak Kumar Vs State of Haryana in 2012 and the provisions of EIA Notification 2006 and amended notification 2016 are strictly followed in the State. Guidelines were also issued by the State Government for obtaining environmental clearance for river sand mining as per circular No. P3/248/18/RD dated 15.11.2018 in the context of the EIA notification 2006 and sustainable sand mining management, guidelines of MoEFCC-2016. Sand mining is controlled, monitored and carried out solely by the Government. No portion of river in the State is given on lease for sand mining by private persons.

River bed sand mining from rivers is not being done in the State of Kerala since 2016 for want of Environmental Clearance.

Sand mining was done till 2015 based on the sand audit reports prepared based on the Kerala Protection of River Banks and Regulation of Removal of Sand Act 2001(amended in 2013) and subsequent Environmental Clearance (EC) from SEIAA (EC No.571/SEIAA/K1/4230/2014 Dated. 20.04.2015 &17.12.2015). Whenever sand mining is resumed in the State

after getting environmental clearance (EC), the Enforcement & Monitoring Guidelines for Sand Mining (EMGSM) issued by MoEFCC in January 2020 will be strictly followed along with the State Act 2001.

NGT: "Whether the District Survey Reports are being prepared before conducting the mining and before according sanction for mining"

Response: District Survey Report for river sand mining has not been prepared in the State so far. However, sand audit reports of 26 major rivers and three tributaries were prepared in the State by Revenue Department following the provisions of Kerala Protection of River Banks and Regulation of Removal of Sand Act 2001 (amended in 2013), and Rules 2002. Para 4.1.1b of the Enforcement & Monitoring Guidelines for Sand Mining 2020 of MoEFCC (EMGSM-2020) makes a mention that the sand auditing of Kerala Rivers is a good example and has proposed sand auditing of rivers for the preparation of District Survey Report. MoEFCC vide S.O 3611(E) dated 25.07.2018 issued guidelines for the preparation of District Survey Report (DSR). DSR was to be prepared by District Environment Impact Assessment Authority with the assistance of Irrigation Department or Forest Department or Public Works Department or Ground Water Department or Remote Sensing Department or Mining and Geology Department in the District. Hon'ble National Green Tribunal vide its order dated 14.10.2020 instructed that the DSR shall be prepared through consultants accredited by the National Accreditation Board of Education and Training/Quality Control Council of India in terms of the O.M of MoEFCC dated 16.03.2010. Thus DSR can be prepared for the districts by the above said consultants using the sand audit reports and other required information as per EMGSM-2020.

NGT: "Whether any regulation or monitoring is provided regarding the quantum of sand to be mined and the manner in which it has to be done etc., including transport and disposal of the same & "Whether all necessary permission

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under the environmental laws have been obtained from them and necessary mining plan have been provided and approved by the concerned Departments etc.”

Response: Once Environment Clearance is granted, only the fixed /allocated amount of sand as per the clearance obtained will be collected by registered laborers under the supervision of the Kadavu Committees of Panchayath / Urban local bodies (authorized sand bank committees) established under the Kerala Protection of River Banks and Regulation of Removal of Sand Act 2001, and Rules 2002. Depth of mining as 3 meter or water level whichever is less as decided by Hon'ble Supreme Court in Deepak Kumar Vs State of Haryana judgment and other EC norms will be strictly followed in the State. Sand mining will also be monitored by District Expert Committee, Tahsildar and the officers entrusted by District Collector as per the provisions of Kerala Protection of River Banks and Regulation of Removal of Sand Act 2001 and Rules 2002. When mining permission is granted, necessary safeguards recommended by Sustainable Sand Mining Guidelines (SSMG)-2016 and EMGSM-2020 will also be ensured to prevent illegal or excess mining.

NGT: “To report in the light of existing Rules and Guidelines whether sand mining in river bed passing through the forest areas and eco-sensitive zones like, National Park and Sanctuary etc., is going on and the status of such cases in the State of Kerala & whether permission is being granted in those areas/ buffer areas, whether the person to whom the permission is granted is obtaining necessary permission and sanction under the concerned forest and environmental laws for this purpose”

Response: Sand mining from river bed is not being done in the State of Kerala since 2016. It will be done only after obtaining Environmental Clearance. Mine plan preparation by Recognized Qualified Person (RQP) of Mining & Geology Department is progressing in different districts. Sand mining in river beds through the forest areas and eco- sensitive Zones like, National Parks and Wild Life Sanctuaries etc., is

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not carried out in Kerala. Desilting in Pamba River as part of Disaster Management is being dealt with in OA No. 75/2020 before the Hon'ble NGT (SZ, Chennai Bench).

NGT: "Whether they (the Districts) are following a uniform method and whether they are complying with the directions issued by the Ministry of Environment, Forests and Climate Change (MoEFCC) in maintaining the sustainable sand mining policy in the State"

Response: As per section 9 (b) of the Kerala Protection of River Banks and Removal of Sand Act 2001, it is a function of the District Expert Committee (DEC) to fix the total quantity of sand that can be removed from a Kadavu or river bank giving due regard to the guidelines of expert agencies like the National Centre for Earth Science Studies (NCESS) and Centre for Water Resources Development and Management (CWRDM) or other agencies in the sector, as may be specified by the Government from time to time. As per section 29 of the Kerala Protection of River Banks and Regulation of Removal of Sand Act 2001 and Rule 30 of the Kerala Protection of River Banks and Regulation of Removal of Sand Rules 2002, sand auditing is to be carried out once in every three years. Thus Government of Kerala is conducting sand auditing of rivers as per the standard guidelines of National Centre for Earth Science Studies (NCESS) since 2012 and the same was amended in 2017 based on the Supreme Court Order and orders issued by MoEFCC. An Expert Committee is constituted for this purpose by the Institute of Land and Disaster Management (ILDM), Thiruvananthapuram.

General conditions of sand removal in section 12 of the Kerala Protection of River Banks and Removal of Sand Act, 2001 and Sustainable Sand Mining Guidelines (SSMG) 2016 of MoEFCC are to be followed while implementing the sand removal operations and its transportation. Sand is collected by registered laborers under the supervision of Kadavu committees of Panchayaths / Urban local bodies. Depth of mining as 3 meter or water level whichever is less as decided by Hon'ble Supreme Court in Deepak Kumar Vs State of

Haryana judgment is to be strictly followed in the State. Sand mining is also monitored by kadavu committees. A three-tier system consisting of State High Level Committee (SHLC), District Expert Committee (DEC) and Kadavu Committee (KC) is functioning to monitor the sand mining operations in the State as per The Kerala Protection of River Banks and Regulation of Removal of Sand Act, 2001. An IT enabled online system called 'e-Manal' (e-Sand) was also developed (by NIC, Thrissur) and used (then when sand mining was in vogue) to ensure transparency in sand mining and distribution.

NGT: "Whether any action has been taken by the authorities for conducting illegal mining in these areas, including excess mining than the permitted quantity and what are all the safeguards provided for preventing such illegal activities being done in the riverbed where mining is permitted by the Departments"

Response: As such, no mining has been permitted by the Departments concerned. However, extensive powers are given to Revenue officials and Police to seize and confiscate vehicles, tools, implements used to illegally mine and transport river sand as per the provisions of Kerala Protection of River Banks and Regulation of Removal of Sand Act, 2001. Additional penalty can also be imposed now based on NGT's orders when vehicles are seized. According to this act, all the District Collectors and all the Tahsildars have their own squads which work 24x7 in order to check and prevent illegal sand mining across the State. By virtue of the section 20 of this act, if any person is found guilty and whoever contravenes the provisions of this act will be punishable with a fine up to a maximum of Rs. 25,000/- or imprisonment for 2 years or both. Moreover, as per section 23 of this Act the Revenue and Police officials have the power to confiscate the vehicles that are used to transport sand without complying with the provisions of this Act. With the introduction of this Act, illegal sand mining in the rivers could be checked to a large extent. Sand mining will also be monitored by District Expert Committee, Tahsildar and the officers entrusted by

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the District Collector as per the provisions of Kerala Protection of River Banks and Regulation of Removal of Sand Act 2001 and Rules 2002.

Necessary safeguards recommended by SSMG-2016 and EMGSM-2020 will also be ensured for preventing illegal mining when mining permission is granted after obtaining EC.

Annexure: Sand Audit of Bharathapuzha River

Annexure: Sand Audit of Bharathapuzha River

Government have entrusted following three selected agencies with the task of conducting Sand Auditing of Bharatapuzha River flowing through Palakkad, Thrissur and Malappuram District on behalf of Dept. of Revenue as per G.O (MS) No.730/2019/RD dated 01/03/2019 based on Section 9(b) of Kerala Protection of River Banks and Regulation of Removal of Sand Act, 2001 and Rule Number 30 of River Protection Rules - 2002. Sand Audit is carried out based on the Standard Guidelines of National Centre for Earth Science Studies (NCESS), Thiruvananthapuram developed in 2012 and the same is further amended in 2017 based on the Supreme Court order and orders issued by MoEF&CC on Sustainable Sand Mining Management Guidelines, 2016. Field survey for sand audit was carried out during summer months of 2019 and the report was finalized in September 2020. The sand audit (91 km river length) was carried out in three stretches as mentioned below:

Sand Auditing of Bharatapuzha River						
Sl.No.	River	Allotted Length (km)	Agency	Sand Auditing		G.O Approving
				Starting Point	End Point	Sand Audit
1	Bharatapuzha (Stretch-1)	33 km	Dept of Geology and Environmental Science, Christ College, Irinjalakuda	Parali Bridge	Vazhalippadam Checkdam near Mannannur Railway Station	G.O (Rt) No. 1906/2020/RD dtd 25.05.2020
2	Bharatapuzha (Stretch-2)	29 km	Agriculture and Ecosystem Management Group (AGES), Thiruvananthapuram	Vazhalippadam Check dam	Thrithala Regulator Cum Bridge	G.O (Rt) No. 2882/2020/RD dtd 16.09.2020
3	Bharatapuzha (Stretch-3)	29 km	Uralungal Labour Contract Co-operative Society Limited, Vadakara, Kozhikode	Thrithala Regulator Cum Bridge	Chamravattom Regulator Cum Bridge	G.O (Rt) No. 874/2020/RD dtd 28.02.2020

Sand Audit of Bharatapuzha was monitored by Institute of Land and Disaster Management (ILDm), Thiruvananthapuram and the verification of data was done accordingly.

Bharatapuzha River Stretch-1

Sand auditing of Bharatapuzha River Stretch-1 covered 33 km from Parli Bridge to Vazhalippadam Check Dam. As part of Sand auditing, cross sections are taken at 114 locations within the 33 km river stretch in Bharatapuzha River Stretch-1 with an average interval of 289.47 m. Lakkidi Peroor, Mankara, Parali, Peringottukurissi and Vaniyamkulam panchayats and Ottappalam Municipality of Palakkad District and Panjal, Thiruvillwamala and Kolazhy Panchayats of Thrissur District are located on either banks of the river within this stretch.

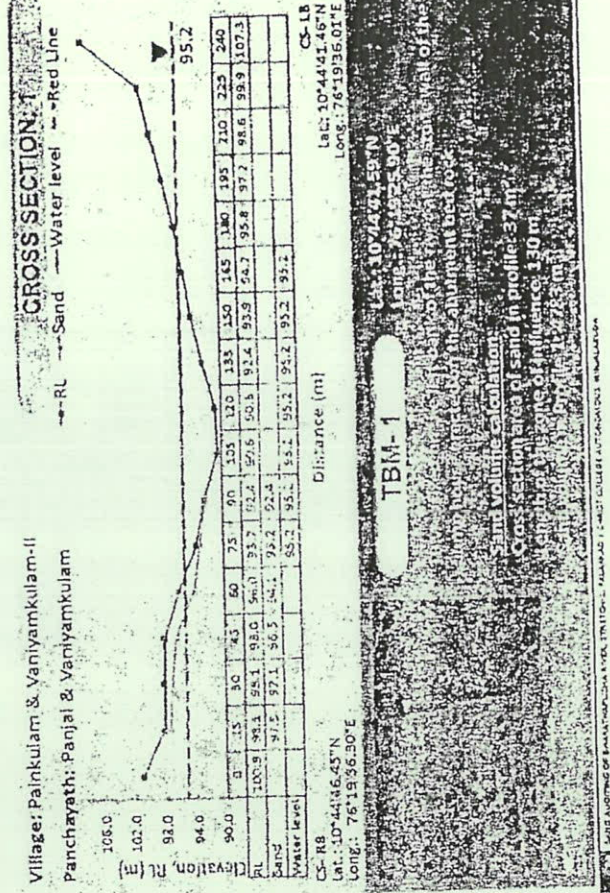
Sand Availability in Bharatapuzha Stretch-1

Sl No.	Name of Panchayat	District	Volume of Total Sand (m3)	Volume of Mineabl Sand (m3) for three years
1	Lakkidi Peroor Panchayat	Palakkad	35352	26944
2	Mankara Panchayat	Palakkad	4094	4094
3	Ottappalam Municipality	Palakkad	419118	194542
4	Parali Panchayat	Palakkad	Nil	0
5	Peringottukurissi Panchayat	Palakkad	7476	5468
6	Vaniyamkulam Panchayat	Palakkad	719193	353380
7	Panjal Panchayat	Thrissur	483477	179707

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8	Thiruvillwamala Panchayat	Thrissur	171313	104849	
9	Kolazhy Panchayat	Thrissur	622047	357611	
Total				2462070	1226595

Sample Cross Section



Bharatapuzha River Stretch-2

Sand auditing of Bharatapuzha River Stretch-2 covered 29 km from Vazhalippadam Check Dam to Thrithala Regulator Cum Bridge. As part of Sand auditing, cross-sections are taken at 161 locations within the 29 km river stretch in Bharatapuzha River Stretch-2 with an average interval of 180 m. Vaniyamkulam, Ongallur, Muthuthala, Paruthur, Thirumittacode, Thrithala, and Pattithara Panchayats, Pattambi Municipality, and Shornur Municipality of Palakkad District; and Panjal, Vallathol Nagar and Deshamangalam Panchayats of Thrissur District are the local bodies located on either bank of the river within this stretch.

Sand Availability in Bharatapuzha Stretch-2

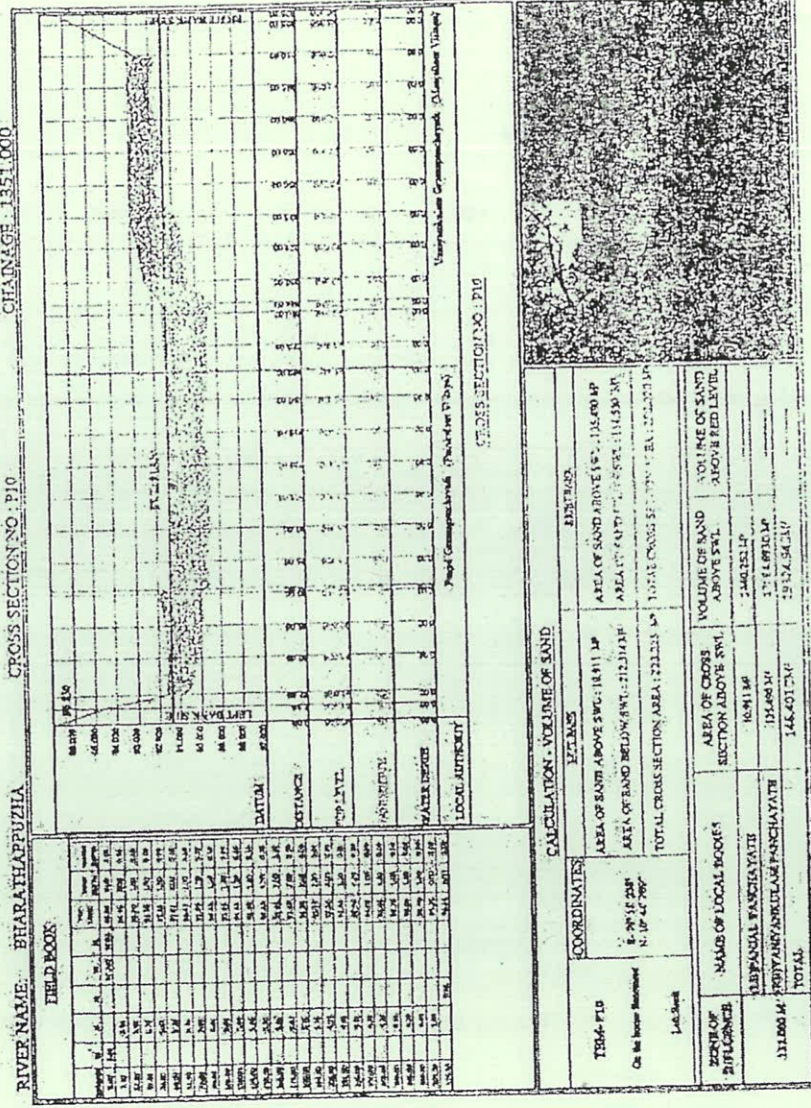
Sl No.	Name of Panchayat	District	Volume of Total Sand (m3)	Minerab Sand (m3) for three years
1	Vaniyamkulam Panchayat	Palakkad	619782.06	301781.46
2	Ongallur Panchayat	Palakkad	795033.81	357621.77
3	Muthuthala Panchayat	Palakkad	374659.09	49607
4	Paruthur Panchayat	Palakkad	180370.15	Nil
5	Thirumittacode Panchayat	Palakkad	749594.69	152144.69

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6	Thrithala Panchayat	Palakkad	194643.06	Nil
7	Pattithara Panchayat	Palakkad	71187.00	Nil
8	Pattambi Municipality	Palakkad	465627.20	250043.6
9	Shornur Municipality	Palakkad	1459295.25	678427.87
10	Panjai Panchayat	Thrissur	791759.6	341671.39
11	Vallathol Nagar Panchayat	Thrissur	755550.38	245807.6
12	Deshamangalam Panchayat	Thrissur	1687733.62	652964.23
Total			8145235.91	3030069.61

CROSS SECTION NO: P10

CHAINAGE: 1351.000



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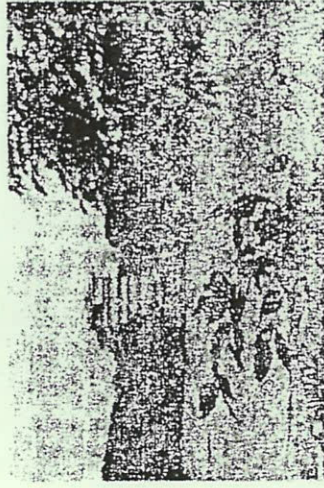
Selected Field Photographs from Bharatapuzha Stretch -2
Sand Audit Report



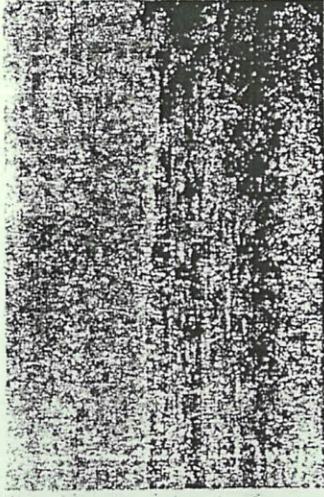
Near Pottuvayal



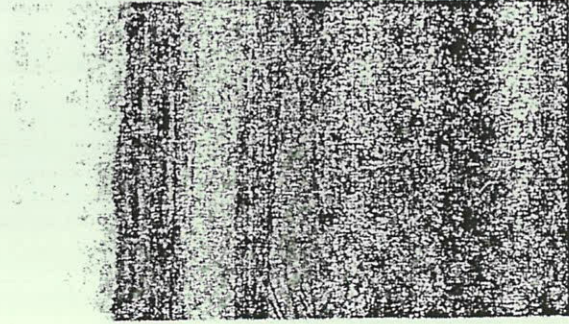
Near Chelakkudi



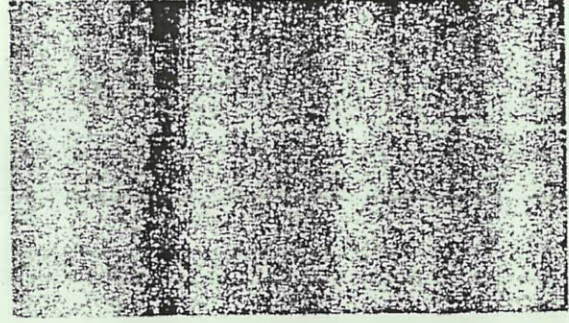
Near Pottuvayal



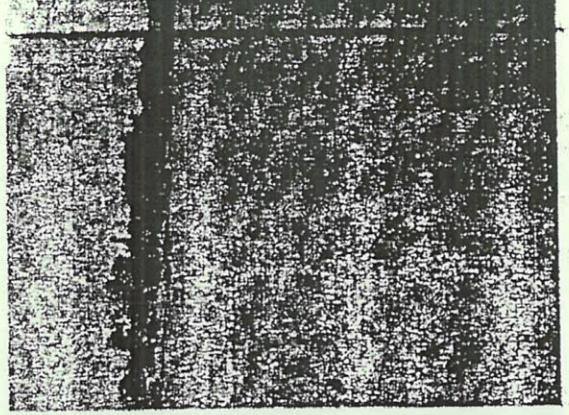
Near Chelakkudi



Near Pottuvayal



Near Chelakkudi



Near Pottuvayal

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Bharatapuzha River Stretch-3

Sand auditing of Bharatapuzha River Stretch-3 covered 29 km from Thrithala Regulator Cum Bridge to Chamravattom Regulator Cum Bridge. As part of Sand auditing, cross sections are taken at 153 locations within the 29 km river stretch in Bharatapuzha River Stretch-3 with an average interval of 189.54 m. Pattithara, Parudur, and Anakara panchayats of Palakkad District and Irimbiliyam, Kuttippuram, Thirunavaya, Triprangode, and Tavanur panchayats of Palakkad District are located on either banks of the river.

Sand Availability in Bharatapuzha River Stretch-3

Sl No.	Name of Panchayat	District	Volume of Total Sand (m3)	Volume of Mineable Sand (m3) for three years
1	Pattithara Panchayat	Palakkad	534744.72	332996.56
2	Paruthur Panchayat	Palakkad	698172.97	600110.57
3	Anakkara Panchayat	Palakkad	1623573.01	1086984.32
4	Irimbiliyam Panchayat	Malappuram	329407.89	243653.59
5	Kuttippuram Panchayat	Malappuram	2883659.94	2029799.29

- 14 -

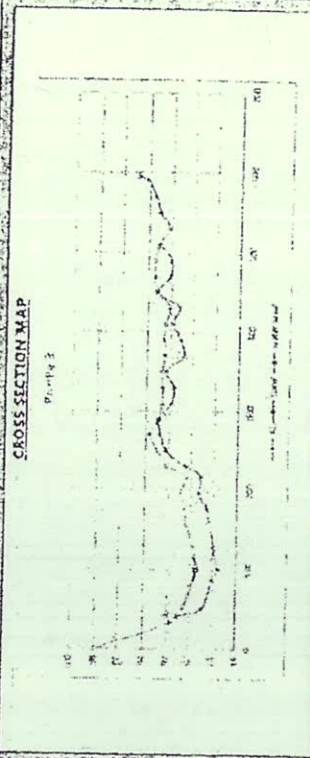
6	Thirunavaya Panchayat	Malappuram	382848.02	151915.01
7	Tripangode Panchayat	Malappuram	865722.06	20502.09
8	Tavanur Panchayat	Malappuram	3186376.26	1178870.24
Total			10504504.86	5644831.67

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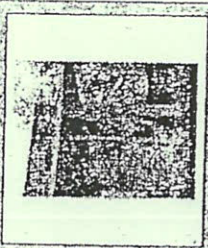
CROSS SECTION PROFILE 3
 Peradur - Pattithare Panchayat
 Chainage 365m

FIELD BOOK

Station	BM	Level	Height
0	11.10	11.10	
10	11.10	11.10	
20	11.10	11.10	
30	11.10	11.10	
40	11.10	11.10	
50	11.10	11.10	
60	11.10	11.10	
70	11.10	11.10	
80	11.10	11.10	
90	11.10	11.10	
100	11.10	11.10	
110	11.10	11.10	
120	11.10	11.10	
130	11.10	11.10	
140	11.10	11.10	
150	11.10	11.10	
160	11.10	11.10	
170	11.10	11.10	
180	11.10	11.10	
190	11.10	11.10	
200	11.10	11.10	
210	11.10	11.10	
220	11.10	11.10	
230	11.10	11.10	
240	11.10	11.10	
250	11.10	11.10	
260	11.10	11.10	
270	11.10	11.10	
280	11.10	11.10	
290	11.10	11.10	
300	11.10	11.10	
310	11.10	11.10	
320	11.10	11.10	
330	11.10	11.10	
340	11.10	11.10	
350	11.10	11.10	
360	11.10	11.10	
370	11.10	11.10	
380	11.10	11.10	
390	11.10	11.10	
400	11.10	11.10	
410	11.10	11.10	
420	11.10	11.10	
430	11.10	11.10	
440	11.10	11.10	
450	11.10	11.10	
460	11.10	11.10	
470	11.10	11.10	
480	11.10	11.10	
490	11.10	11.10	
500	11.10	11.10	
510	11.10	11.10	
520	11.10	11.10	
530	11.10	11.10	
540	11.10	11.10	
550	11.10	11.10	
560	11.10	11.10	
570	11.10	11.10	
580	11.10	11.10	
590	11.10	11.10	
600	11.10	11.10	



IDENTIFICATION OF TBM
TBM-2
 TBM-2 is fixed on right side corner of the pump house,
 KSEB 116539-006691



SAND VOLUME ESTIMATION

Cross section area of Sand in Profile = 560.72608 sq. m
 Width of the Zone of Influence = 162.242 m
 Sand Volume in the Profile 3 = 90973.32067 cu. m

MINEABLE SAND

R.L. of TBM = 96.17 m
 R.L. of SWL = 89.645 m
 SWL is 6.525 m below the R.L. of TBM.
 Mineable sand volume = 56776.55545 sq. m

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Selected field photographs from Bharatapuzha Stretch-3
Sand Audit Report

FIELD PHOTOS

