(P)

PB AT NEW DELHI

O.A. NO. 225 OF 2022

IN THE MATTER OF:

Nitin Dhiman ...APPLICANT

VERSUS

State Of Punjab ...RESPONDENTS

INDEX

FILED BY:

LUDHIANA DATED: ...5.2023

Respondent No 7
Mail : punjabdyers@gmail.com
Ph No 93578-50500

(2)

BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL
PB AT NEW DELHI

O.A. NO. 225 OF 2022

IN THE MATTER OF:

Nitin Dhiman ...APPLICANT

VERSUS

State Of Punjab ...RESPONDENTS

STATUS REPORT/RESPONSE OF THE RESPONDENT NO 7, PUNJAB DYERS ASSOCIATION (MANAGING 50 MLD CAPACITY CETP AT LUDHIANA) , IN THE MATTER OF OA 225/2022

MOST RESPECTFULLY SHOWETH:

1. That certain matter with which applicant herein is concerned is pending before this Hon'ble Tribunal in the matter of OAS 225/2022. The Hon'ble Tribunal was pleased to observe following in the order dated 10.10.2022 before seeking report from various authorities on the subject matter

> "1. The grievances in the present letter petition sent by Mr. Nitin Dhiman resident of 1203, Princeton Tower, Omaxe, Pakhowal Road, Ludhiana are that around 400 dyeing units are operating in Ludhiana district. The above said units are consuming about 3 crore liters ground water for washing and dyeing daily and discharging approximately 300 MLD chemical mixed untreated water directly in Buddha Nullah through local Municipal Sewerage which finally goes to River Satluj thereby causing dangerous diseases like cancer and skin problems. Ludhiana dyeing industry allegedly installed 3 CETP plants with

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the capacity of 105 MLD in different locations. MOEF & CC had issued the environment clearance for setting up of one CETP on the basis of Zero Liquid Discharge (ZLD) technology but said CETP has been installed without ZLD Technology. Other two CETPs are under construction for more than one decade. Around 125 dyeing units are situated in scattered area which do not have CETP."

2. That upon hearing the IA no 20/2023, Hon'ble Tribunal was pleased to implead Punjab Dyers Association, Tajpur Road , Ludhiana , who are managing 50 mld CETP at Ludhiana, as Respondent No 7 in the matter of OA 225/2022 vide order dated 24.1.2023.

3. That the applicant herein a company registered under sec 25 of Companies Act. It is specifically formed to construct and operate/ manage 50 mld CETP for its member dyeing units located at Tajpur Road Industrial Area and Focal Point Industrial Area, Ludhiana. The SPV of the Respondent has been formed as per guidelines of Punjab Pollution Control Board dated 12.7.2022 as further amended vide order dated 20.12.2019 . The officers of Board and other Govt organisations are accordingly the members of SPV as per the guidelines.

4. That as directed by Hon'ble Tribunal during the hearing on 20.4.2023, a chart of all member units showing their name, discharge and quantity of chemicals used etc is enclosed

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herewith as **Annexure R7- 1.** As per information available with the Respondent, none of our member units is found connected to municipal sewer ever since the CETP has been commissioned on 5.6.2022. All member units are connected to 50 mld CETP through sewer net work constructed by the Respondent at its own cost. It is pertinent to mention here that out of 112 member units, only 107 units are operational out of which only 22 units use salt as they are engaged in cotton dyeing. Units engaged in Polyester dyeing do not use any salt.

5. That it is pertinent to submit here that the 50 mld CETP have been constructed under the Govt of India (MoEFCC) scheme for assistance for construction of CETPs after getting Environmental Clearance from MoEFCC under EIA notification of 2006 issued by the ministry under provisions of EP Act 1986. The sanction of the MoEFCC permits use of CETP effluent for irrigation purpose. Accordingly CETP effluent is being discharged in to Buddha Nala for its use for agricultural purpose for which State Govt is yet to implement its scheme for use of water for irrigation. 50 mld CETP have 106 member dyeing units presently. The Respondent has laid carrier line from CETP outlet to Buddha Nala with due permission from all concerned authorities. A copy of Environmental Clearance is enclosed here with as **Annexure R7- 2**

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6. That the 50 mld CETP is presently being operated with due consent of Punjab Pollution Control Board and the effluent from CETP is meeting standards prescribed by MoEFCC in Environmental Protection Rules under EP Act 1986. A copy each of consent under Water Prevention & Control of Pollution Act 1974 issued by State Board, copy of CETP effluent Standards notified under EP Act 1986 and a copy of latest CETP effluent test report is enclosed herewith as **Annexure R7-3**, **Annexure R7-4** and **Annexure R7-5** respectively. The consent order permits discharge of CETP effluent in to Buddha Nala. As per latest test report BOD and COD in the effluent is found to be 21 mg/l and 96 mg/l respectively. TDS in the effluent is found to be 2075 mg/l.

7. That it is pertinent to submit here that TDS of dyeing units engaged in cotton dyeing is usually found exceeding prescribed limit for TDS (FTDS) under EP Act 1886. One of the principle reason for same is reduction in water consumption by replacement of wrench machines with new high tech machines as per instructions of State Pollution Control Board. The water consumption thus reduced to less than one third , leading to higher concentration of pollutants in the effluent from such respective units. The situation has further aggravated since PPCB has not prescribed any inlet standards for CETP ie effluent standards for pre treated waste water reaching CETP from member units as per MoEFCC notification dated 1.1.2016 whose copy is already enclosed as Annexure R7-3. However,

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since only 22 of the 107 member units are using salt in their dyeing operation, the concentration of TDS gets reduced at CETP inlet due to dilution effect. Additionally, some experiments are currently underway at some dyeing units at Ludhiana including one of one member unit to use some specialised chemicals that could reduce salt consumption during cotton dyeing by up to 50 % as claimed by manufacturers of specialised chemicals. Once the experiments succeed, member units shall be in a position to adopt such option too to reduce TDS load.

8. That it may also not be out of place to mention that about 250 mld treated sewage from Two STPs, namely Baloke and Jamalpur is discharged in to Buddha Nallah. Apart from it, about 260 mld untreated sewage from 5 pumping stations is being directly pumped in to Buddha Nallah. Waste water from dairy complex at U/S and D/S end of Buddha Nallah and electroplating industries treated effluent is also discharged in to buddha Nallah. A copy of the report of PPCB dated 4.5.2020 is enclosed herewith as **Annexure R7-6 .** It is further evident from this Annexure that contrary to misconception that industries are responsible for polluting Buddha Nallah, it is possible to broadly demonstrate that Buddha Nallah pollution gets reduced by discharge of treated industrial effluent. Monitoring carried out during covid times when all industries were shut down, show that COD concentration increased by 25 % while BOD concentration increased by about 20 %. Presently about 70 mld treated CETP effluent from about 200 industries is discharged in to Buddha Nallah. Other scattered dyeing industries, not connected to CETPs, discharge their effluent in to municipal

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STPs through municipal sewer system after treatment up to prescribed industry specific standards with BOD< 30 mg/l.

9. That The Govt of Punjab has prepared a project of use of treated water at CETP and STPs of Ludhiana irrigation of agricultural land falling between Buddha Nala at Satluj River at Ludhiana. The same is relied by MoEFCC while granting EC for the CETP for dyeing units at Ludhiana. A copy of salient features of the State Govt project for use of treated waste water for irrigation purpose at Ludhiana through Buddha Nala is enclosed as **Annexure R7-7** .

Respondent No 7

LUDHIANA
DATED: .5.2023

(8)

BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL
PB AT NEW DELHI

O.A. NO. 225 OF 2022

IN THE MATTER OF:

Nitin Dhiman ...APPLICANT

VERSUS

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AFFIDAVIT

I, Vivek Kumar Jindal, a Director of Punjab Dyers Association , do hereby solemnly affirm and declare as under: -

1. That I am presently a director of Punjab Dyers Association, a Company registered under company Act having Registered office at Kaka Road, Opp. Central Jail, Tajpur Road LUDHIANA PUNJAB, and duly authorized by the Company to file accompanying application.
2. That I am fully conversant with case as derived from office record and competent to swear to this affidavit.
3. That I have read the accompanying report and have understood the contents thereof. The facts stated there in are true and correct to the best of my knowledge and nothing has been concealed there from.
4. That the Annexures are true copy of the originals.

NOTARY PUBLIC GOVT. OF INDIA LUDHIANA (PB.) REGD. No. 4525 2265 19/5/2023

DEPONENT

VERIFICATION:

Verified at ..... on this day of May 2023, I the above named deponent, do hereby verify that the contents of the above affidavit are true and correct. No part of it is false and nothing material has been concealed there from.

0084206585 80 Identified deponent/executant signatory and he/she has signed/marked his/her RTI/LTI in my presence.

Signature Attested NOTARY PUBLIC Ludhiana Distt (Pb.)

DEPONENT

19 MAY 2023

ANNEXURE R7-1

PDA TAJPUR ROAD-50 MLD CETP-REPORT

SR. NO.	PARTY'S NAME	PROPOSED DISCHARGE	PPCB CONSENT	CAPITAL INVESTMENT (IN LAKHS)	RAW MATERIAL CONSUMPTION AS PER CONSENT	STATUS WITH CETP	REMARKS
1	A.D. Dyeing & Finishing Mills	323	323	130.26	DYES & CHEMICALS 125 KGS/DAY	CONNECTED	
2	A.K. Dyeing	694	360	686.75	DYES & CHEMICALS 170 KGS/DAY	CONNECTED	
3	A.K. Dyeing House	522	522	54.30	DYES & CHEMICALS 240 KGS/DAY	CONNECTED	
4	Aarti Sientific Dyers	870	348			YET NOT STARTED	
5	AASHISH Dyeing	150	150	87.71	DYES & CHEMICALS 27 KGS/DAY	CONNECTED	
6	Abhay Processors	413	413	69.93	DYES & CHEMICALS 160 KGS/DAY	CONNECTED	
7	Abhinandan Knit P. Ltd.	435	0	147.00		YET NOT STARTED	
8	Adarsh Processors	150	150	70.00	DYES & CHEMICALS 90 KGS/DAY	CONNECTED	
9	AK Fabrics & Processors	348	348	348.60	DYES & CHEMICALS 280 KGS/DAY	CONNECTED	
10	Aman Processors	150	150	31.07	DYES & CHEMICALS 127 KGS/DAY	CONNECTED	
11	Arora Brothers Creations	200	105	125.00	DYES & CHEMICALS 140 KGS/DAY	CONNECTED	
12	B.L. Processors	100	100	81.50	DYES & CHEMICALS 135 KGS/DAY	CONNECTED	
13	Bajrangbali Dyeing	93	93	32.50	DYES & CHEMICALS 90 KGS/DAY	CONNECTED	
14	Balak International	696	625	422.00	DYES & CHEMICALS 275 KGS/DAY	CONNECTED	
15	Balarama tex Pvt. Ltd.	300	300	42.50	DYES & CHEMICALS 220 KGS/DAY	CONNECTED	
16	Bawa Jeans Care Co.	165	85.7	32.50	DYES & CHEMICALS 130 KGS/DAY	CONNECTED	
17	Beas Scientific Dyers	300	300	98.70	DYES & CHEMICALS 150 KGS/DAY	CONNECTED	
18	Berry Scientific Dyers	348	348	247.00	DYES & CHEMICALS 180 KGS/DAY	CONNECTED	
19	C.K. Processors	783	783	141.77	DYES & CHEMICALS 260 KGS/DAY	CONNECTED	
20	Deepak Dyeing House	400	400	28.32	DYES & CHEMICALS 245 KGS/DAY	CONNECTED	
21	Elegent Processros	226	90	16.50		YET NOT STARTED	
22	Famina Fabrics	478	280	457.90	DYES & CHEMICALS 200 KGS/DAY	CONNECTED	
23	Fashion Fast	200	127.7	49.50	DYES & CHEMICALS 80 KGS/DAY	CONNECTED	
24	Flora Dyeing House	339	339	84.60	DYES & CHEMICALS 170 KGS/DAY	CONNECTED	
25	Friends Finishers	200	200	12.50	DYES & CHEMICALS 120 KGS/DAY	CONNECTED	
26	G.K. Finishing	100	100	9.50	DYES & CHEMICALS 70 KGS/DAY	CONNECTED	
27	G.P. Dyeing	400	393.6	19.28	DYES & CHEMICALS 235 KGS/DAY	CONNECTED	

28	G.R. Wollen Mills	317	317	42.56	DYES & CHEMICALS 190 KGS/DAY	CONNECTED	
29	Ganga Dyeing & Procesors	400	400	62.50	DYES & CHEMICALS 200 KGS/DAY	CONNECTED	
30	Golden Processors	1455	880	467.00	DYES & CHEMICALS 300 KGS/DAY	CONNECTED	
31	Gopalji Garments P. Ltd.	383	383	57.63	DYES & CHEMICALS 90 KGS/DAY	CONNECTED	
32	Gupta Shivam Dyeing Processor	522	412.8	43.92	DYES & CHEMICALS 130 KGS/DAY	CONNECTED	
33	Gupta Shivam Processors	150	150	24.50	DYES & CHEMICALS 60 KGS/DAY	CONNECTED	
34	Gurmehar International Mulitra	20	11.2	12.50	DYES & CHEMICALS 32KGS/DAY	CONNECTED	
35	H.M. International	50	50	48.56	DYES & CHEMICALS 180 KGS/DAY	CONNECTED	
36	Handa Processors	435	430.4	48.70	DYES & CHEMICALS 190 KGS/DAY	CONNECTED	
37	Hindustan Fashions	200	200	24.50	DYES & CHEMICALS 197 KGS/DAY	CONNECTED	
38	Hindustan Finishers	261	261	28.60	DYES & CHEMICALS 140 KGS/DAY	CONNECTED	
39	Hinglaj Processors	609	572.8	95.02	DYES & CHEMICALS 200 KGS/DAY	CONNECTED	
40	Jai Ganesh Processors	873	873	185.72	DYES & CHEMICALS 240 KGS/DAY	CONNECTED	
41	Jai Maa Dyeing & Finishing Mill	150	150	9.95	DYES & CHEMICALS 100 KGS/DAY	CONNECTED	
42	Jai Shree Radhey Industries	520	520	23.78	DYES & CHEMICALS 225 KGS/DAY	CONNECTED	
43	Jasbir Dyeing	434	434	12.95	DYES & CHEMICALS 200 KGS/DAY	CONNECTED	
44	Jindal Finishing Works	735	85.4	72.50	DYES & CHEMICALS 225 KGS/DAY	CONNECTED	
45	Jiwan Risham Processors	100	69.9	15.75	DYES & CHEMICALS 60 KGS/DAY	CONNECTED	
46	K.B. Dyeing	190	190	20.36	DYES & CHEMICALS 80 KGS/DAY	CONNECTED	
47	Kairavi Processors	200	200	18.72	DYES & CHEMICALS 142 KGS/DAY	CONNECTED	
48	Kay Raj Poddar & Co.	261	261	102.00	DYES & CHEMICALS 50 KGS/DAY	CONNECTED	
49	Khanna Industries	870	870	802.50	DYES & CHEMICALS 225 KGS/DAY	CONNECTED	
50	Khanna Processors	520	520	213.00	DYES & CHEMICALS 240 KGS/DAY	CONNECTED	
51	Komal Dyers	1378	606	270.00	DYES & CHEMICALS 223 KGS/DAY	CONNECTED	
52	Kotton Dyeing House	500	470	174.62	DYES & CHEMICALS 225 KGS/DAY	CONNECTED	
53	Krishna Industries	643	300	175.69	DYES & CHEMICALS 225 KGS/DAY	CONNECTED	
54	Krishna Processsors	522	636	351.37	DYES & CHEMICALS 290 KGS/DAY	CONNECTED	
55	Lotus Clothing Co.	752	360	138.04	DYES & CHEMICALS 242 KGS/DAY	CONNECTED	
56	Lovely Industries P. Ltd.	1214	1188	175.85	DYES & CHEMICALS 275 KGS/DAY	CONNECTED	
57	M.R. Dyeing & Finishing Mills	868	410.4	147.62	DYES & CHEMICALS 240 KGS/DAY	CONNECTED	
58	Madan Dyeing & Finishing Facto	348	139	42.50		YET NOT STARTED	

59	Madhok Scientific Dyers	450	450	89.90	DYES & CHEMICALS 225 KGS/DAY	CONNECTED	
60	Mahabir Dyeing House	435	435	165.73	DYES & CHEMICALS 275 KGS/DAY	CONNECTED	
61	Mahadev Washing	100	80	134.61	DYES & CHEMICALS 150 KGS/DAY	CONNECTED	
62	Maharaja Dyeing & Finishing M	1475	320	57.03	DYES & CHEMICALS 240 KGS/DAY	CONNECTED	
63	Mahavir Dyeing & Finishing Ind	1435	1435	88.86	DYES & CHEMICALS 250 KGS/DAY	CONNECTED	
64	Master Art Processors	100	100	12.30	DYES & CHEMICALS 70 KGS/DAY	CONNECTED	
65	Media Impex Pvt. Ltd.	608	608	488.00	DYES & CHEMICALS 225 KGS/DAY	CONNECTED	
66	Megha Processors	300	300	48.55	DYES & CHEMICALS 210 KGS/DAY	CONNECTED	
67	Mohinder Dyeing & Finishing H	434	434	302.00	DYES & CHEMICALS 290 KGS/DAY	CONNECTED	
68	M-Tech Processors	500	500	147.00	DYES & CHEMICALS 215 KGS/DAY	CONNECTED	
69	Muskan Processors	409	409	286.66	DYES & CHEMICALS 225 KGS/DAY	CONNECTED	
70	N.K. Washing	150	140	36.11	DYES & CHEMICALS 225 KGS/DAY	CONNECTED	
71	N.V. Processors	415	415	36.42	DYES & CHEMICALS 225 KGS/DAY	CONNECTED	
72	New Amba Dyeing	822	822	98.00	DYES & CHEMICALS 190 KGS/DAY	CONNECTED	
73	New Ashok Dyeing Factory	200	200	44.83	DYES & CHEMICALS 145 KGS/DAY	CONNECTED	
74	New Bombay Dyeing & Bleachi	180	180	185.00	DYES & CHEMICALS 125 KGS/DAY	CONNECTED	
75	Onkar Industries	150	150	167.17	DYES & CHEMICALS 115 KGS/DAY	CONNECTED	
76	Paras Knits	255	255	32.50	DYES & CHEMICALS 96 KGS/DAY	CONNECTED	
77	Parmod Dyeing	100	100	41.70	DYES & CHEMICALS 75 KGS/DAY	CONNECTED	
78	Ponahari Dyeing	399	399	42.50	DYES & CHEMICALS 170 KGS/DAY	CONNECTED	
79	Prabhat Dyeing& Finishing Ind.	347	347	65.46	DYES & CHEMICALS 150 KGS/DAY	CONNECTED	
80	Puran Bahadur,Hari Om Proces	50	50	35.45	DYES & CHEMICALS 40 KGS/DAY	CONNECTED	
81	R.K. Finishing & Processing	200	200	36.72	DYES & CHEMICALS 90 KGS/DAY	CONNECTED	
82	R.K. Washing	200	200	279.41	DYES & CHEMICALS 140 KGS/DAY	CONNECTED	
83	R.R. FABRICS	199	199	175.50	DYES & CHEMICALS 220 KGS/DAY	CONNECTED	
84	R.S. Dyeing	169	169	74.57	DYES & CHEMICALS 80 KGS/DAY	CONNECTED	
85	Rama Krishna Dyeing	1305	1305	976.88	DYES & CHEMICALS 450 KGS/DAY	CONNECTED	
86	Rasila Processors	200	140	19.88	DYES & CHEMICALS 60 KGS/DAY	CONNECTED	
87	Royal Coating	391	391	192.48	DYES & CHEMICALS 185 KGS/DAY	CONNECTED	
88	Royal Processors	100	100	8.25	DYES & CHEMICALS 40 KGS/DAY	CONNECTED	
89	S.K. Dyeing & Finishing	607	607	142.00	DYES & CHEMICALS 300 KGS/DAY	CONNECTED	

90	S.K. Industries	149	149	16.52	DYES & CHEMICALS 60 KGS/DAY	CONNECTED	
91	Jai shre Ram Enterprises	143	143	22.23	DYES & CHEMICALS 50 KGS/DAY	CONNECTED	
92	Saral Dyers	780	750	70.00	DYES & CHEMICALS 325 KGS/DAY	CONNECTED	
93	Sat Sahib Dyeing	300	220	53.24	DYES & CHEMICALS 210 KGS/DAY	CONNECTED	
94	Sehyog Enterprises	996	835.1	175.00	DYES & CHEMICALS 275 KGS/DAY	CONNECTED	
95	Shiv Shakti Dyeing	777	480	189.79	DYES & CHEMICALS 180 KGS/DAY	CONNECTED	
96	Shoshi Exports	150	150	32.50	DYES & CHEMICALS 210 KGS/DAY	CONNECTED	
97	Shree Balaji Processors	2329	750.4	929.00	DYES & CHEMICALS 275 KGS/DAY	CONNECTED	
98	Shree Lakshmi Industries	783	680	950.00	DYES & CHEMICALS 280 KGS/DAY	CONNECTED	
99	Shri Krishna Industries(Prem In	118	118	243.23	DYES & CHEMICALS 160 KGS/DAY	CONNECTED	
100	Styllia Garments	100	100	42.50	DYES & CHEMICALS 80 KGS/DAY	CONNECTED	
101	Sunrise Dyers & Processors Pvt.	696	610.4	1285.28	DYES & CHEMICALS 225 KGS/DAY	CONNECTED	
102	Techno Knit Craft	867	520	254.72	DYES & CHEMICALS 208 KGS/DAY	CONNECTED	
103	Vidhata Processors	94	94	34.36	DYES & CHEMICALS 50 KGS/DAY	CONNECTED	
104	Vohra Dyeing Factory	347	260	37.55	DYES & CHEMICALS 125 KGS/DAY	CONNECTED	
105	Webson Hosiery Factory-1	652	560	146.06	DYES & CHEMICALS 200 KGS/DAY	CONNECTED	
106	Wooco Dyers	216	216	17.21	DYES & CHEMICALS 82 KGS/DAY	CONNECTED	
107	Yogi Dyeing	716	716	236.53	DYES & CHEMICALS 290 KGS/DAY	CONNECTED	
108	Yogita Collection	868	868	185.00	DYES & CHEMICALS 250 KGS/DAY	CONNECTED	
109	Narang Son International	299	299	50.00	DYES & CHEMICALS 60KGS/DAY	CONNECTED	
110	S.J. Washing	50	20	12.72		YET NOT STARTED	
112	Webson Hosiery Factory-2	653	560	199.65	DYES & CHEMICALS 250 KGS/DAY	CONNECTED	
		50031	40323.8	17130.66			

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ANNEXURE-R7.2

F.No.10-92/2010-IA.III
Government of India
Ministry of Environment & Forests
(IA-III Division)

Paryavaran Bhawan,
CGO Complex, Lodhi Road,
New Delhi - 110 003,

Dated: 3rd May, 2013

To
The Secretary,
M/s. Punjab Dyers Association,
Nav Ratan Complex, New Chawla Furniture,
Link Road, Cheema Chowk,
Ludhiana – 141 008, Punjab

Subject: Environmental Clearance for the construction of Common Effluent Treatment Plant (CETP) at Village Jamalpur Awana, Panchayat Jamalpur Awana, Taluk Ludhiana East, Ludhiana District, Punjab by M/s. Punjab Dyers Association -Reg.

This has reference to your letter no. Nil dated 04.10.2012 seeking Environmental Clearance under the Environment Impact Assessment Notification, 2006. The proposal has been appraised as per prescribed procedure in the light of provisions under the Environment Impact Assessment Notification, 2006 on the basis of the mandatory documents enclosed with the application viz., the Form-I, EIA, EMP, and the additional clarifications furnished in response to the observations of the Expert Appraisal Committee constituted by the competent authority in its meetings held on 15th -17th December, 2011,10th – 11st May, 2012, 8th -9th November, 2012 and 18th -19th February, 2013.

2. It is interalia, noted that the proposal involves development of Common Effluent Treatment Plant (CETP) on a plot area of 32 acres at Jamalpur, Awana, Ludhiana. There are 241 dying units in 5 industrial clusters. The effluent from the industrial units will be collected through the pipeline. The treated wastewater will be used for irrigation in an area of 80,000 acres. The capacity of CETP proposed is 117 MLD. The total cost of the project is Rs. 255.85 Crores.

3. This is a Category 'B' project and since there was no SEIAA, Punjab, the project was considered by the EAC in its meeting held on 18th –20th Jan, 2011 and finalized the additional TOR, including conduct of Public Hearing. After the reconstitution of SEIAA the project was returned to SEIAA. The SEIAA has appraised the project exempting the Public Hearing and recommended for the issue of Environmental Clearance stating that the project is located within declared industrial area. As Ludhiana has been declared as one of the critically polluted areas hence, the General condition applies to the project since it is within 10 km from Ludhiana. The project has been transferred to Ministry.

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4. The Expert Appraisal Committee, after due consideration of the relevant documents submitted by the project proponent and additional clarifications furnished in response to its observations, have recommended for the grant of Environmental Clearance for the project. Accordingly, the Ministry hereby accords necessary Environmental Clearance for the above project as per the provisions of Environment Impact Assessment Notification, 2006 and its subsequent amendments, subject to strict compliance of the terms and conditions as follows:

5. **SPECIFIC CONDITIONS:**

(i) Consent order shall be obtained from Pollution Control Board. The PCB shall ensure the treatability of Boron, Sodium Absorption Ration (SAR) and phenolic Compounds to meet the standards for agriculture use.

(ii) There shall be no discharge into Budha nallah.

(iii) The farmers shall be made aware that the water supplied to them is treated effluent.

(iv) The project proponent shall set up separate environmental management cell for effective implementation of the stipulated environmental safeguards under the supervision of a Senior Executive.

(v) The funds earmarked for environment management plan shall be included in the budget and this shall not be diverted for any other purposes.

(vi) Project proponent should develop green belt all along the periphery of the site with plant species that are significant and used for the pollution abatement.

(vii) All the recommendation of the EMP shall be complied with letter and spirit. All the mitigation measures submitted in the EIA report shall be prepared in a matrix format and the compliance for each mitigation plan shall be submitted to MoEF along with half yearly compliance report to MoEF-RO.

6. **GENERAL CONDITIONS:**

(i) The project proponent will set up separate environmental management cell for effective implementation of the stipulated environmental safeguards under the supervision of a Senior Executive.

(ii) Full support shall be extended to the officers of this Ministry/ Regional Office at Chandigarh by the project proponent during inspection of the project for monitoring purposes by furnishing full details and action plan including action taken reports in respect of mitigation measures and other environmental protection activities.

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(iii) A six-Monthly monitoring report shall need to be submitted by the project proponents to the Regional Office of this Ministry at Chandigarh regarding the implementation of the stipulated conditions.

(iv) Ministry of Environment & Forests or any other competent authority may stipulate any additional conditions or modify the existing ones, if necessary in the interest of environment and the same shall be complied with.

(v) The Ministry reserves the right to revoke this clearance if any of the conditions stipulated are not complied with the satisfaction of the Ministry.

(vi) In the event of a change in project profile or change in the implementation agency, a fresh reference shall be made to the Ministry of Environment and Forests.

(vii) The project proponents shall inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities and the date of start of land development work.

(viii) A copy of the clearance letter shall be marked to concerned Panchayat/local NGO, if any, from whom any suggestion/ representation has been made received while processing the proposal.

(ix) Safety provision such as bus bays, service roads intersection improvement etc., will be carried out by the project proponent. The project proponent shall provide adequate facilities as per IRC norms/guidelines.

(x) State Pollution Control Board shall display a copy of the clearance letter at the Regional Office, District Industries Center and Collector's Office/Tehsildar's office for 30 days.

7. These stipulations would be enforced among others under the provisions of Water (Prevention and Control of Pollution) Act 1974, the Air (Prevention and Control of Pollution) Act 1981, the Environment (Protection) Act, 1986, the Public Liability (Insurance) Act, 1991 and EIA Notification 2006, including the amendments and rules made thereafter.

8. All other statutory clearances such as the approvals for storage of diesel from Chief Controller of Explosives, Fire Department, Civil Aviation Department, Forest Conservation Act, 1980 and Wildlife (Protection) Act, 1972 etc. shall be obtained, as applicable by project proponents from the respective competent authorities.

9. The project proponent shall advertise in at least two local Newspapers widely circulated in the region, one of which shall be in the vernacular language

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informing that the project has been accorded Environmental Clearance and copies of clearance letters are available with the State Pollution Control Board and may also be seen on the website of the Ministry of Environment and Forests at http://www.envfor.nic.in. The advertisement should be made within 10 days from the date of receipt of the Clearance letter and a copy of the same should be forwarded to the Regional office of this Ministry at Chandigarh.

10. This Clearance is subject to final order of the Hon'ble Supreme Court of India in the matter of Goa Foundation Vs. Union of India in Writ Petition (Civil) No.460 of 2004 as may be applicable to this project.

11. Any appeal against this clearance shall lie with the National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.

12. Status of compliance to the various stipulated environmental conditions and environmental safeguards will be uploaded by the project proponent in its website.

13. The project proponent shall also submit six monthly reports on the status of compliance of the stipulated EC conditions including results of monitored data (both in hard copies as well as by e-mail) to the respective Regional Office of MoEF, the respective Zonal Office of CPCB and the SPCB.

14. The environmental statement for each financial year ending 31st March in Form-V as is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of EC conditions and shall also be sent to the respective Regional Offices of MoEF by e-mail.

(Lalit Kapur)
Director (IA-III)

Copy to:

1. The Secretary, Department of Environment, Government of Punjab, Chandigarh.
2. The Chairman, Central Pollution Control Board, Parivesh Bhawan, CBD-cum-Office Complex, East Arjun Nagar, Delhi – 110 032
3. The Member Secretary, Punjab Pollution Control Board, Vatavaran Bhavan, Nabha road, Patiala-147001, Punjab.
4. The CCF, Regional Office, Ministry of Environment & Forests (NZ), Bays No. 24-25, Sector-31-A, Dakshin Marg, Chandigarh-160030.
5. IA – Division, Monitoring Cell, MoEF, New Delhi – 110003.
6. Guard file

(Lalit Kapur)
Director (IA-III)

ANNEXURE R7-3

(17)

PUNJAB POLLUTION CONTROL BOARD

Zonal Office-II, E-648-B, Backside CICU Office, Phase-5, Focal Point, Ludhiana

Website:- www.ppcb.gov.in

Office Dispatch No : **Registered/Speed Post** **Date:**

Industry Registration ID: *R14LDH3985785* **Application No :** *18475759*

To,

Vivek Kumar Jindal
Regd.off: Shree Balaji Processrs, Tajpur Road, Opp. Central Jail
Ludhiana,Punjab-141010

Subject: **Grant of 'Consent to Operate'an outlet u/s 25/26 of Water (Prevention & Control of Pollution) Act, 1974 for discharge of effluent.**

With reference to your application for obtaining 'Consent to Operate' an outlet for discharge of the effluent u/s 25/26 of Water (Prevention & Control of Pollution) Act, 1974, you are, hereby, authorized to operate an industrial unit fordischarge of the effluent(s) arising out of your premises subject to the Terms and Conditions as mentioned in this Certificate.

1. Particulars of Consent to Operate under Water Act, 1974 granted to the industry

Consent to Operate Certificate No.	*CTOW/Fresh/LDH3/2022/18475759*
Date of issue :	*23/08/2022*
Date of expiry :	*22/08/2023*
Certificate Type :	*Fresh*

2. Particulars of the Industry

Name & Designation of the Applicant	*Vivek Kuamr Jindal , (Director)*
Address of Industrial premises	*Punjab Dyers Assiocation,* *Regd Off: Shree Balaji Processors, Tajpur Road, Opp. Central Jail, Ludhiana,* *Ludhiana West,Ludhiana Iii-141007*
Capital Investment of the Industry	*5552.0 lakhs*
Category of Industry	*Red*
Type of Industry	*Common effluent treatment plant.*
Scale of the Industry	*Large*
Office District	*Ludhiana Iii*
Consent Fee Details	Rs. 4,20,000/- vide UTR. no. HDFCR52022041861938892dated 18.04.2022
Raw Materials(Name with quantity per day)	*It is CETP of capacity 50 MLD for dyeing industries located at Tajpur Road, Ludhiana.*
Products (Name with quantity per day)	*It is CETP of capacity 50 MLD for dyeing industries located at Tajpur Road, Ludhiana.*
By-Products, if any,(Name with quantity per day)	-
Details of the machinary and processes	*As per application no.18475759*

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Details of the Effluent Treatment Plant	*Common Effluent Treatment Plant (CETP) of capacity 50 MLD for the treatment of waste water from the cluster of textiles dyeing industries located at Tajpur Road in Ludhiana @ 50 MLD and domestic effluent @ 5 KLD.*
Mode of Disposal	*Treated trade effluent into Budha Nallah (Temporary permission)*
Standards to be achieved under Water(Prevention & Control of Pollution) Act, 1974	*As prescribed by CPCB/MoEF&CC/PPCB (as applicable) and as amended from time to time.*

Satyajeet Attri

23/08/2022

(Satyajeet Singh Attri)
Environmental Engineer
For & on behalf
of
(Punjab Pollution Control Board)

Endst. No.: **Dated:**

A copy of the above is forwarded to the following for information and necessary action please:
The Environmental Engineer, Punjab Pollution Control Board, Regional Office-3, Ludhiana. He is requested to ensure the compliance of conditions of consent granted to the SPV under the Water Act, 1974.

Satyajeet Attri

23/08/2022

(Satyajeet Singh Attri)
Environmental Engineer
For & on behalf
of
(Punjab Pollution Control Board)

(19)

TERMS AND CONDITIONS

A. GENERAL CONDITIONS

1. This consent is not valid for getting power load from the Punjab State Power Corporation Limited or for getting loan from the financial institutions.
2. The industry shall apply for renewal/further extension in validity of consent atleast two months before expiry of the consent.
3. The industry shall ensure that the effluent discharging through the authorized outlet shall confirm to the prescribed standards as applicable from time to time.
4. The industry shall plant minimum of three suitable varieties of trees at the density of not less than 1000 trees per hectare all along the boundary of the industrial premises.
5. The achievement of the adequacy and efficiency of the effluent treatment plant/pollution control devices/re-circulation system installed shall be the entire responsibility of the industry.
6. The industry shall ensure that the Hazardous Wastes generated from the premises are handled as per the provisions of the Hazardous Wastes(Management, Handling and Trans boundary Movement) Rules, 2008 as amended time to time , without any adverse effect on the environment, in any manner
7. The responsibility to monitor the effluent discharged from the authorized outlet and to maintain a record of the same rests with the industry. The Board shall only test check the accuracy of these reports for which the industry shall deposit the samples collection and testing fee with the Board as and when required.
8. The industry shall submit balance sheet of every financial year to the concerned Regional Office by 30th June of every year.
9. The industry shall submit a yearly certificate to the effect that no addition/up-gradation/ modification/ modernization has been carried out during the previous year otherwise the industry shall apply for the varied consent.
10. During the period beginning from the date of issuance and the date of expiration of this consent, the applicant shall not discharge floating solids or visible foam.
11. Any amendments/revisions made by the Board in the tolerance limits for discharges shall be applicable to the industry from the date of such amendments/revisions.
12. The industry shall not change or alter the manufacturing process(es) so as to change the quality and/or quantity of the effluents generated without the written permission of the Board.
13. Any upset conditions in the plant/plants of the factory, which is likely to result in increased effluent and/or result in violation of the standards lay down by the Board shall be reported to the Environmental Engineer, Punjab Pollution Control Board of concerned Regional Office immediately failing which any stoppage and upset conditions that come to the notice of the Board/its officers, will be deemed to be intentional violation of the conditions of consent.
14. The industry shall provide terminal manhole(s) at the end of each collection system and a manhole upstream of final outlet (s) out of the premises of the industry for measurement of flow and for taking samples.
15. The industry shall for the purpose of measuring and recording the quantity of water consumed and effluent discharged, affix meters of such standards and at such places as approved by the Environmental Engineer, Punjab Pollution Control Board of the concerned Regional Office.
16. The industry shall maintain record regarding the operation of effluent treatment plant i.e. record of quantity of chemicals and energy utilized for treatment and sludge generated from treatment so as to satisfy the Board regarding regular and proper operation of pollution control equipment.
17. The industry shall provide online monitoring equipmentï¿½s for the parameters as decided by concerned Regional Office with the effluent treatment plant/air pollution control devices installed, if applicable.
18. The pollution control devices shall be interlocked with the manufacturing process of the industry.
19. The authorized outlet and mode of disposal shall not be changed without the prior written permission of the Board.
20. The industry shall comply with the conditions imposed by the SEIAA / MOEF in the environmental clearance granted to it as required under EIA notification dated14/9/06, if applicable.
21. The industry shall obtain and submit Insurance cover as required under the Public Liability Insurance Act, 1991.
22. The industry shall not use any unauthorized out-let(s) for discharging effluents from its premises. All unauthorized outlets, if any, shall be connected to the authorized outlet within one month from the date of issue of this consent.

(20)

23. The industry shall make necessary arrangements for the monitoring of effluent being discharged by the industry and shall monitor its effluents:-

    (i) Once in Year for Small Scale Industries.

    (ii) Four in a Year for Large/Medium Scale Industries.

    (iii) The industry will submit monthly reading/ data of the separate energy meter installed for running of effluent treatment plant/re-circulation system to the concerned Regional Office of the Board by the 5th of the following month.

24. The industry shall provide electromagnetic flow meters at the source of water supply, at inlet/outlet of effluent treatment plant within one month and shall maintain the record of the daily reading and submit the same to the concerned Regional Office by the 5th of the following month.

25. The Board reserves the right to revoke this consent at any time in case the industry is found violating any of the conditions of this consent and/or the provisions of Water (Prevention & Control of Pollution) Act, 1974 as amended from time to time.

26. The issuance of this consent does not convey any property right in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Central, State or Local Laws or Regulations.

27. The consent does not authorize or approve the construction of any physical structures or facilities for undertaking of any work in any natural watercourse.

28. Nothing in this consent shall be deemed to neither preclude the institution of any legal action nor relieve the applicant from any responsibilities, liabilities or penalties to which the applicant is or may be subjected under this or any other Act.

29. The industry shall make necessary and adequate arrangements to hold back the effluent in case of failure of septic tank.

30. The diversion or bye pass of any discharge from facilities utilized by the applicant to maintain compliance with the terms and conditions of this consent is prohibited except.

    (i) Where unavoidable to prevent loss of life or some property damage or

    (ii) Where excessive storm drainage or run off would damage facilities necessary for compliance with terms and conditions of this consent. The applicant shall immediately notify the consent issuing authority in writing of each such diversion or bye-pass.

31. The industry shall ensure that no water pollution problem is created in the area due to discharge of effluents from its industrial premises.

32. The industry shall comply with the code of practice as notified by the Government/ Board for the type of industries where the siting guidelines/ code of practice have been notified.

33. Solids, sludge, filter backwash or other pollutant removed from or resulting from treatment or control of waste waters shall be disposed off in such a manner to prevent any pollutants from such materials from entering into natural water.

34. The industry shall re-circulate the entire cooling water and shall also re-circulate/reuse to the maximum extent the treated effluent in processes

35. The industry shall make necessary and adequate arrangements to hold back the effluent in case of failure of re-circulation system/ effluent treatment plant.

36. The industry shall make proper disposal of the effluent so as to ensure that no stagnation occurs inside and outside the industrial premises during rainy season and no demand period.

37. Where excessive storm water drainage or run off, would damage facilities necessary for compliance with terms and conditions of this consent, the applicant shall immediately notify the consent issuing authority in writing of each such diversion or bye-pass.

38. The industry shall submit a detailed plan showing therein the distribution system for conveying waste-water for application on land for irrigation along with the crop pattern for the year.

39. The industry shall ensure that the effluent discharged by it is toxicity free.

40. The industry shall not irrigate the vegetable crops with the treated effluents which are used/ consumed as raw.

41. Drains causing oil & grease contamination shall will be segregated. Oil & grease trap shall be provided to recover oil & grease from the effluent.

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42. The industry shall establish sufficient number of piezometer wells in consultation with the concerned Regional Office, of the Board to monitor the impact on the Ground Water Quantity due to the industrial operations, and the monitoring shall be submitted to the Environmental Engineer of the concerned Regional Office by the 5th of every month.

43. The industry shall ensure that its production capacity & quantity of trade effluent do not exceed the quantity mentioned in the consent and shall not carry out any expansion without the prior permission/NOC of the Board.

B. SPECIAL CONDITIONS

1. The SPV shall install and connect the flow meters at individual outlets of industries into conveyance system and flow meter at inlet / outlet of CETP with the web based server by 25.08.2022.
2. The SPV shall complete the construction work of hazardous waste storage room at site by 25.08.2022.
3. The SPV shall submit the feasibility report to reuse treated effluent onto land for irrigation by 25.08.2022.
4. The SPV shall ensure that there is no overflow from the manholes in the conveyance system of CETP 50 MLD at any locations.
5. The SPV shall construct a proper outlet before discharge into Budha Nallah, from where effluent sample can be collected, within 10 days and also install one set of additional OCEMS at the said location, within one month.
6. The SPV shall stabilize the CETP so as to achieve the prescribed standard at the final outlet by 30.09.2022 failing which the Board shall be constraint to refuse consent to operate the outlet & issue closure directions to the member industries & impose Environmental Compensation without any further notice.
7. The SPV shall submit the feasibility report for discharge of treated effluent onto land for irrigation by 25.08.2022.

PUNJAB

Satyajeet Attri

23/08/2022

(Satyajeet Singh Attri)
Environmental Engineer
For & on behalf
of
(Punjab Pollution Control Board)

(227)

ANNEXURE-R7 4

Required following Standards for 50 MLD CETP of Punjab Dyers Association after Final Treatment

Sr No	Effluent Parameter	Charactertics of untreated effluent	Standards as per CPCB notification vide GSR. 35 (E) Dt. 10.10.16	Stringent standards as per PPCB	Standards to be achieved by the CETP after final treatment	Unit
1.	PH	7.12	6.5-8.5	6.5-8.5	6.5-8.5	Number
2.	BOD @20°C	236	≤30	≤10	≤10	Mg/L
3.	COD	590	≤250	≤50	≤50	Mg/l
4.	Total Suspended Solids (TSS)	135	≤100	≤20	≤20	Mg/l
5.	Amonical Nitrogen	12	≤50	Not Prescribed	≤50	Mg/l
6.	Total dissolved solids (TDS)	1950	≤2100	≤2100	≤2100	Mg/l
7.	Oil & Grease	23	≤10	Nil	Nil	Mg/l
8.	Colour	850	≤150	Not Prescribed	150	Co.Pt
9.	Sulphide as 's'	≤2.00	≤2.00	≤0.01	≤0.01	Mg/l
10.	Phenolic compounds as C_6H_5OH	0.8	1.00	NIL	NIL	Mg/l
11.	Total Chromium as	≤0.5	≤2.00	NIL	Nil	Mg/l
12.	RSC	≤1.4	Not Prescribed	≤03	03	Meq/l
13.	Sodium Absorption ration (SAR)	≤6.8	≤26	≤07	07	Mg/l
14	Bio Assay	----	Not Prescribed	90%survival of fish after 96 hours of 100% effluent	90%survival of fish after 96 hours of 100% effluent	

ANNEXURE-R7.5

(23)

AEE-1 /PDA/Letter to PDA

Punjab Pollution Control Board

Regional Office-III

Savitri Complex-1, (Dada Motors), Third Floor, Dholewal Chowk, G.T. Road, Ludhiana

ppcbro3@yahoo.com

No: R.O./LDH-III/ 1406 **Regd** **Date** 09/05/2023

To

The Chairman,
Punjab Dyers Association, (CETP 50 MLD),
Regd. Office: M/s Shree Balaji Processors,
Tajpur Road, Ludhiana.

Sub: **Analysis reports of the effluent samples collected from the CETP 50 MLD in the month of Feb, 2023 & April, 2023:**

In regard to above, please find enclosed herewith the analysis reports of the effluent samples collected from the inlet as well as final outlet of CETP 50 MLD collected on 15.11.2022, 14.02.2023, 02.03.2023 & 18.04.2023. Further, the analysis report for the month of Dec, 2022 and Jan, 2023 has been already sent to you vide this office letter no. 670 dated 15.02.2023 (Copy enclosed). As per the analysis reports CETP is not meeting with the prescribed effluent standards. It is further informed that Board reserve the right to take action against the SPV for not achieving the prescribed effluent standards. The analysis charges of above said sampling of Rs. 1,35,379/- as per detail given below:

Month	Analysis Charges
Nov, 2022	23246.00
Feb, 2023	23246.00
March, 2023 (Component wise sampling)	65523.00
April, 2023	23364.00
Total	**135379.00**

You are also requested to deposit the analysis charges of above said sampling of Rs. 1,35,379/- through cheque/ DD in the favour of Environmental Engineer, PPCB, Ludhiana.

This is for your information.

DA/- As above.

09/05/23

Environmental Engineer

(24)

Punjab Pollution Control Board

Zonal Laboratory, E-648-B, 2nd Floor,
Phase-5, Focal Point, Ludhiana.

Ph: 0161-2676150

E-mail: ppcbzldh@gmail.com

Water Analysis Report

1. Laboratory Sample no.: E 231/Zonal Lab/2022
2. Name of Industry : M/s CETP 50 MLD, Tajpur Road, Ludhiana.
3. Name of Sample Collecting Officer : Er. Jaspal Singh, AEE,
4. Type of Sample : Grab
5. Date of Sample Collection: 15.11.2022
6. Date of Receiving: 15.11.2022
7. Method Followed 3025/ methods of APHA

Results:

Sr. No.	Parameters	Inlet	Outlet of CETP	Aeration (SBR-1)
1.	pH	7.5	7.6	-
2.	Total Suspended Solids (mg/l)	126	37	-
3.	Total Dissolved Solids (mg/l)	2287	2371	-
4.	Chemical Oxygen Demand (mg/l)	672	144	-
5.	Bio-chemical Oxygen Demand (mg/l)	210	27	-
6.	Oil & Grease (mg/l)	11.6	4.8	-
7.	Sulphide (mg/l)	2.2	BDL	-
8.	Phenolic Compound (mg/l)	0.7	BDL	-
9.	Ammonical Nitrogen (mg/l)	6.4	7.8	-
10.	Total Chromium (mg/l)	BDL	BDL	-
11.	Sodium Absorption Ratio (SAR)	22.32	22.75	-
12.	Residual Sodium Carbonate (RSC) meq/l	0.92	-1.32	-
13.	Bio-assay	-	90% survival of fish in 100% effluent in 96 Hrs.	-
14.	Mixed Liquid Suspended Solids (mg/l)	-	-	8170

Remarks

1. **BDL means Below Method Detection Limit.**
2. **No specific standards are prescribed as per EPA, However if any stringent/other standards have been imposed by the board, the same shall prevail.**

22-11-22

Scientfic Assistant,
Zonal Lab, Ludhiana

Ends. No. 1542 **Dated** 22/11/2022

A copy of the above is forwarded to the following for information and necessary action please along with data sheet:-

1. The Chief Environmental Engineer, Punjab Pollution Control Board, Ludhiana.
2. The Senior Environmental Engineer, Punjab Pollution Control Board, Zonal Office-2, Ludhiana.
3. The Environmental Engineer, Punjab Pollution Control Board, Regional Office-3, Ludhiana

Assistant Scientfic Officer,
In-charge Zonal Lab, Ludhiana
22/11/22

Submitted to ...

(25)

Punjab Pollution Control Board

Zonal Laboratory, E-648-B, 2nd Floor,
Phase-5, Focal Point, Ludhiana.
Ph. 0161-2674...
E-mail: ...@gmail.com

Water Analysis Report

1. Laboratory Sample no.: E 271/Zonal Lab/2022
2. Name of Industry : M/s CETP 50MLD, Tajpur road, Ludhiana.
3. Name of Sample Collecting Officer : Er. Sandeep Kumar, EE, Er. Jaspal Singh, AEE, Mr. Dalvir Singh, ASO.
4. Type of Sample : Grab
5. Date of Sample Collection : 16.12.2022
6. Date of Receiving: 16.12.2022
7. Method Followed IS 3025/ methods of APHA

ਪ੍ਰਸ਼ਾਸਨਿਕ ਸਹਾਇਕ ਕਲਰਕ/ਡੀ.ਈ.ਓ/ਸਹਾ ਵਾਤਾ ਵਿਭਾਗ-I
ਨਵੀਂ ਡਾਕ ਨੰ. ਵਾਤਾ ਵਿਭਾਗ
ਵਾਤਾ ਵਿਭਾਗ 30/12
ਡਾਇਰੀ ਨੰ 3936 ਮਿਤੀ 30/12/22.

Results:

Sr. No.	Parameters	Inlet	Outlet	From Final Houdie just before discharge to Budha nallah	Aeration Tank
1.	pH	7.9	7.5	7.7	-
2.	Total Suspended Solids (mg/l)	164	33	144	-
3.	Total Dissolved Solids (mg/l)	2372	2017	2078	-
4.	Chemical Oxygen Demand (mg/l)	624	84	152	-
5.	Bio-chemical Oxygen Demand (mg/l)	200	15	36	-
6.	Oil & Grease (mg/l)	7.9	BDL	-	-
7.	Sulphide (mg/l)	8.6	BDL	-	-
8.	Phenolic Compound (mg/l)	2.8	BDL	-	-
9.	Ammonical Nitrogen (mg/l)	1.7	1.6	-	-
10.	Total Chromium (mg/l)	BDL	BDL	-	-
11.	Sodium Absorption Ratio	31.18	28.17	-	-
12.	Color	-	70	-	-
13.	Residual Sodium Carbonate meq/l	3.96	1.0	-	-
14.	Bioassay	-	100% Survival of Fish in 100% effluent after 96hrs.	-	-
15.	Mixed Liquide Suspended Solids (mg/l)	-	-	-	5950

Remarks:- BDL means Below Method Detection Limit.

22-12-22

Scientfic Assistant,
Zonal Lab, Ludhiana

Ends. No. 3217-19 **Dated** 23/12/2022

A copy of the above is forwarded to the following for information and necessary action please along with data sheet:-

1. The Chief Environmental Engineer, Punjab Pollution Control Board, Ludhiana.
2. The Senior Environmental Engineer, Punjab Pollution Control Board, Zonal Office-2, Ludhiana.
3. The Environmental Engineer, Punjab Pollution Control Board, Regional Office-3, Ludhiana.

Assistant Scientfic Officer,
In-charge Zonal Lab, Ludhiana
23/12/22

: of Industry

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Punjab Pollution Control Board

Zonal Laboratory, E-648-B, 2nd Floor,
Phase-5, Focal Point, Ludhiana.

Ph. 0161-2676350 E-mail: zlabppcbldh@gmail.com

Analysis changes
Send copy to SPV for inf. 10.

Water Analysis Report

1. Laboratory Sample no.: E 296/Zonal Lab/2023
2. Name of Industry : M/s CETP 50 MLD, Tajpur road, Ludhiana
3. Name of Sample Collecting Officer : Er. Jaspal Singh, AEE
4. Type of Sample : Grab
5. Date of Sample Collection : 16.01.2023
6. Date of Receiving: 17.01.2023
7. Method Followed IS 3025/ methods of APHA

ਨਵੀ ਡਾਕ ਜੂ. ਵਾਤਾ ਇੰਜੀ 30/1
ਵਾਤਾ ਇੰਜੀ
ਡਾਇਰੀ ਨੰ ...535 ਮਿਤੀ........31/1/23

Results:

Sr. No.	Parameters	Inlet	Outlet	Aeration tank
1.	pH	8.0	7.5	-
2.	Total Suspended Solids (mg/l)	140	34	-
3.	Total Dissolved Solids (mg/l)	3119	3281	-
4.	Chemical Oxygen Demand (mg/l)	580	116	-
5.	Bio-chemical Oxygen Demand (mg/l)	170	17	-
6.	Oil & Grease (mg/l)	11.4	BDL	-
7.	Sulphide (mg/l)	5.8	BDL	-
8.	Phenolic Compound (mg/l)	3.5	BDL	-
9.	Ammonical Nitrogen (mg/l)	5.7	1.2	-
10.	Total Chromium (mg/l)	BDL	BDL	-
11.	Sodium Absorption Ratio (SAR)	23.86	28.07	-
12.	Residual Sodium Carbonate (RSC) meq/l	4.28	2.52	-
13.	Bio-assay (mg/l)	-	100 % survival of fish in 100% effluent in 96 Hrs.	-
14.	Mixed Liquid Suspened Solids (mg/l)	-	-	5650

Remarks

1. **BDL means Below Method Detection Limit.**
2. **No specific standards are prescribed as per EPA, However if any stringent/other standards have been imposed by the board, the same shall prevail.**

Scientfic Officer,
Zonal Lab, Ludhiana

Ends. No. 2560-62 **Dated** 25/01/2023

A copy of the above is forwarded to the following for information and necessary action please along with data sheet:-

1. The Chief Environmental Engineer, Punjab Pollution Control Board, Ludhiana.
2. The Senior Environmental Engineer, Punjab Pollution Control Board, Zonal Office-2, Ludhiana.
3. The Environmental Engineer, Punjab Pollution Control Board, Regional Office-3, Ludhiana

25-1-23

Scientfic Assistant,
Zonal Lab, Ludhiana

(27)

Punjab Pollution Control Board

Zonal Laboratory, E-648-B, 2nd Floor,
Phase-5, Focal Point, Ludhiana.

Ph: 0161-2676319

Water Analysis Report

1. Laboratory Sample no.: E/323/Zonal Lab/2023
2. Name of Industry : M/s CETP - 50 MLD, Tajpur Road, Ludhiana
3. Name of Sample Collecting Officer : Er. Jaspal Singh, AEE
4. Type of Sample : Grab
5. Date of Sample Collection : 14.02.2023
6. Date of Receiving: 15.02.2023
7. Method Followed IS 3025/ methods of APHA

Results:

Sr. No.	Parameters	Inlet	Outlet	Aeration Tank
1.	pH	8.1	8.0	-
2.	Total Suspended Solids (mg/l)	85	22	-
3.	Total Dissolved Solids (mg/l)	4389	2372	-
4.	Chemical Oxygen Demand (mg/l)	456	104	-
5.	Bio-chemical Oxygen Demand (mg/l)	123	17	-
6.	Oil & Grease (mg/l)	10.2	BDL	-
7.	Sulphide (mg/l)	9.6	BDL	-
8.	Phenolic Compound (mg/l)	BDL	BDL	-
9.	Ammonical Nitrogen (mg/l)	6.2	1.8	-
10.	Total Chromium (mg/l)	BDL	BDL	-
11.	Sodium Absorption Ratio (SAR)	25.7	19.0	-
12.	Residual Sodium Carbonate (RSC) meq/l	8.1	2.3	-
13.	Bio-assay	-	100% survival of fish in 100% effluent in 96 Hrs.	-
14.	Mixed Liquid Suspended Solids (mg/l)	-	-	5436

Remarks :- 1. BDL means Below Method Detection Limit.
2. No specific standards are prescribed as per EPA, However if any stringent/other standards have been imposed by the board, the same shall prevail

28/2/23
Scientific Assistant,
Zonal Lab, Ludhiana

Dated 01-03-2023

Ends. No. 2772-79

A copy of the above is forwarded to the following for information and necessary action please along with data sheet:-

1. The Chief Environmental Engineer, Punjab Pollution Control Board, Ludhiana.
2. The Senior Environmental Engineer, Punjab Pollution Control Board, Zonal Office-2, Ludhiana.
3. The Environmental Engineer, Punjab Pollution Control Board, Regional Office-3, Ludhiana.

Assistant Scientific Officer,
Zonal Lab, Ludhiana
28/2/23

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Punjab Pollution Control Board

Zonal Laboratory, E-648-B, 2nd Floor,
Phase-5, Focal Point, Ludhiana.

① Ask [illegible] to deposit analysis charges. ② Send action to the [illegible] of the Board. ③ Send copy to SPV for their [illegible]

I
15/03

Water Analysis Report

1. Laboratory Sample no.: E/331/Zonal Lab/2022
2. Name of Industry: M/s CETP 50MLD, Tajpur Road, Ludhiana
3. Name of Sample Collecting Officer: Er. Jaspal Singh, AEE
4. Type of Sample: Grab
5. Date of Sample Collection: 02.03.2023
6. Date of Receiving: 02.03.2023
7. Method Followed: IS 3025/ methods of APHA

736 15/3/23

Results:

Sr. No.	Parameters	Results							
		from Inlet Chamber of CETP	Outlet Of Flash Mixer After Chemical Dosing	Outlet of Clarifier -1	Outlet of Clarifier-2	Outlet of SBR-2 During-Decanting	From SBR-1 tank	Final Outlet of Chlorine Contact Tank	Final Outlet Main hole before Discharge into Budha Nallah
1.	pH	7.7	8.6	7.7	8.0	8.0	-	8.0	7.9
2.	Total Suspended Solids (mg/l)	148	2995	34	32	12	-	16	18
3.	Total Dissolved Solids (mg/l)	3310	3515	3585	3512	3428	-	3354	3389
4	Chemical Oxygen Demand (mg/l)	585	240	178	164	78	-	80	86
5.	Bio-chemical Oxygen Demand (mg/l)	200	140	44	40	10	-	10	11
6.	Oil & Grease (mg/l)	13.4	8.4	7.6	7.2	BDL	-	BDL	BDL
7.	Sulphide (mg/l)	6.4	2.4	1.8	1.2	BDL	-	BDL	BDL
8	Phenolic Compound (mg/l)	7.2	1.3	BDL	BDL	BDL	-	BDL	BDL
9.	Ammonical Nitrogen (mg/l)	BDL	BDL	BDL	BDL	BDL		BDL	BDL
10.	Total Chromium (mg/l)	BDL	BDL	BDL	BDL	BDL		BDL	BDL
11.	Sodium Absorption Ratio (SAR)	32.3	52.3	32.1	31.1	35.6	-	35.1	31.8
12.	Residual Sodium Carbonate (meq/l)	6.7	5.8	2.6	2.9	3.9		4.0	[illegible]
13.	Color (P.C.U.)	-				-	-	20	25
14.	Bioassay							100% survival of fish in 100% effluent in 96 Hrs.	100% survival of fish in 100% effluent in 96 Hrs.
15.	MLSS (mg/l)						3720		
16.	MLVSS (mg/l)						2670		

Remarks:-

1. **BDL means Below Method Detection Limit.**
2. ***No specific standards are prescribed as per EPA, However if any stringent/other standards have been imposed by the board, the same shall prevail.***
3. **Color parameter anylysed by Head Office, Water Laboratory, Patiala.**

Scientfic Assistant,
Zonal Lab, Ludhiana

Ends. No. 2838-40

Dated 14/3/2023

A copy of the above is forwarded to the following for information and necessary action please along with data sheet:-

1. The Chief Environmental Engineer, Punjab Pollution Control Board, Ludhiana.
2. The Senior Environmental Engineer, Punjab Pollution Control Board, Zonal Office-2, Ludhiana.
3. The Environmental Engineer, Punjab Pollution Control Board, Regional Office-3, Ludhiana

Assistant Scientific Officer,
Zonal Lab, Ludhiana
14/3/2022

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E-2023

PUNJAB POLLUTION CONTROL BOARD VATAVARAN BHAVAN,
NABHA ROAD, PATIALA
WATER ANALYSIS REPORT

1. Laboratory Sample No.	E-2845-2847//H.O.Lab. Monitoring/2023
2.ULR No.	ULR-TC704518000000006308
3. Name of Industry	M/s CETP 50 MLD, Tajpur Road, Ludhiana
4. Name of Sample collecting Officer	Er. Jaspal Singh AEE
5. Designation of the officer authorizing Test	Environmental Engineer, Regional Office-I, Ludhiana
6. Type of Sample	Grab
7. Date &Time of Sample collection	18.04.2023
8. Date &Time of Sample receipt in Lab.	19.04.2023
9. Period of Analysis	19.04.2023 to 02.05.2023
10. Test Methods	As per relevant parts of IS:3025/IS:1622 & Methods of APHA

Results

Sr. No.	Parameters	Inlet of ETP	Outlet of ETP	SBR III (Aeration Tank)
1.	pH	7.6	8.0	-
2.	Color (P.C.U)	110	20	-
3	Total Suspended Solids mg/l	217	72	-
4	Total Dissolved Solids mg/l	3186	2075	-
5	Bio-chemical Oxygen Demand mg/l	141	21	-
6	Chemical Oxygen Demand mg/l	458	96	-
7	Ammonical Nitrogen mg/l	9.8	4.6	-
8	Sulphide mg/l	8.2	BDL	-
9	Phenolic Compound mg/l	BDL	BDL	-
10	Total Chrome mg/l	BDL	BDL	-
11	Oil & Grease mg/l	9.3	BDL	-
12	SAR	6.3	3.7	-
13	RSC	0.12	0.08	-
14	MLSS	-	-	1720
15	MLVSS	-	-	1210
16	Bio-Assay mg/l	-	60% survival of Fish in 100% effluent after 96 hours	-

Remarks: : No Specific Standard Prescribed as per E.P.A. However, if any stringent/other standards have been imposed by the Board, the same shall prevail
No: BDL means Below Method Detection Limit.

---End of Report---

Scientific Officer
3/5/23

Endst. No: 10515-17 Dt. 04-05-23

A copy of the above is forwarded to the:-

1. The Chief Environmental Engineer (Water), Punjab Pollution Control Board, Ludhiana.
2. The Senior Environmental Engineer, Punjab Pollution Control Board, Zonal Office-Ludhiana
3. The Environmental Engineer, Punjab Pollution Control Board, Regional Office-III, Ludhiana.

Asst. Scientific Officer

ANNEXURE R7-6

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Punjab Pollution Control Board

Regional Office-III

Savitri Complex-1, (Dada Motors), Third Floor, Dholewal Chowk, G.T. Road, Ludhiana
ppcbro3@yahoo.com

No./ R.O/LDH-III/ SPL-6 (Due to curfew, through email only) Date 04.05.2020

To

The Senior Environmental Engineer,
Punjab Pollution Control Board,
Zonal Office-II, Ludhiana.

Sub: Quality of Budha Nallah and non-utilization of the designed capacities of the Sewage Treatment Plants installed at Ludhiana.

The Ludhiana City is an industrial town and has mainly two types of effluent i.e. domestic/ commercial effluent and industrial effluent. The domestic and industrial effluents of the city are discharged into sewerage system laid by Municipal Corporation, Ludhiana. In addition, two dairy complexes located at Tajpur Road and at Haibowal discharge their effluent directly into Buddha Nallah. A major part of the effluent of the city is discharged into Buddha Nallah leading to River Sutlej near village Walipur and other part is discharged directly into River Sutlej near village Kasabaad from the outlet of STPs at Bhattian.

In the year 2019, the effluent of the city was assessed as under:

4. Discharge from Budha Nallah into river Satluj = About 600 MLD
5. Discharge from outlet of STPs at Bhattian into river Satluj = About 161 MLD
6. Total Discharge of the city into river Satluj = About 761 MLD

Now, due to COVID-19 situation, the Govt. of Punjab has imposed curfew/ lockdown from 23rd March, 2020 and the industries & the commercial establishments are closed from the same day. Presently the source of effluent generation in the city, during this period, is domestic only. Effluent samples from the outlets of all the STPs & from the outfall of Buddha Nallah into River Sutlej were collected on 03.04.2020 and results of the same are received through email from Zonal Lab. To assess the change in the water quality at the above outlets, the analysis results for the month of April, 2020 have been compared with the average results of the months of Jan, 2020 to March, 2020 and are as under:-

STP Balloke, 152 MLD

Sr. no.	Parameters	Jan, 2020	Feb, 2020	March, 2020	Average results of these three months	April, 2020	Permissible limits
1.	pH	7.4	7.26	7.2	7.3	6.5	6.5-9.0
2.	Bio-Chemical Oxygen Demand mg/l	30	40	48	39.33	42	<30 mg/l
3.	Chemical Oxygen Demand mg/l	152	200	240	197.33	184	--
4.	Total Suspended Solid mg/l	56	120	128	101.33	65	<100 mg/l
5.	Fecal Coliform MPN/100 ml	<1.8	1200	2100	1650.00	1700	<1000

STP Balloke, 105 MLD

Sr. no.	Parameters	Jan, 2020	Feb, 2020	March, 2020	Average results of these three months	April, 2020	Permissible limits
1.	pH	7.8	7.63	7.6	7.7	7.3	6.5-9.0
2.	Bio-Chemical Oxygen Demand mg/l	25	18	22	21.67	26	<30 mg/l

3.	Chemical Oxygen Demand mg/l	96	122	120	112.67	140	--
4.	Total Suspended Solid mg/l	78	104	110	97.33	42	<100 mg/l
5.	Fecal Coliform MPN/100 ml	830	930	820	860.00	930	<1000

STP Jamalpur, 48 MLD

Sr. no.	Parameters	Jan, 2020	Feb, 2020	March, 2020	Average results of these three months	April, 2020	Permissible limits
1.	pH	7.82	7.7	7.9	7.8	7.3	6.5-9.0
2.	Bio-Chemical Oxygen Demand mg/l	320	210	170	233.33	195	<30 mg/l
3.	Chemical Oxygen Demand mg/l	922	620	546	696.00	560	--
4.	Total Suspended Solid mg/l	336	312	208	285.33	384	<100 mg/l
5.	Fecal Coliform MPN/100 ml	120000	700000	150000	323333.33	430000	<1000

STP Bhattian, 111 MLD

Sr. no.	Parameters	Jan, 2020	Feb, 2020	March, 2020	Average results of these three months	April, 2020	Permissible limits
1.	pH	7.6	6.9	7.5	7.3	6.9	6.5-9.0
2.	Bio-Chemical Oxygen Demand mg/l	50	55	105	70.00	40	<30 mg/l
3.	Chemical Oxygen Demand mg/l	224	230	360	271.33	180	--
4.	Total Suspended Solid mg/l	188	90	156	144.67	85	<100 mg/l
5.	Fecal Coliform MPN/100 ml	3500000	12000	70000	1194000.00	4900	<1000

STP Bhattian, 50 MLD

Sr. no.	Parameters	Jan, 2020	Feb, 2020	March, 2020	Average results of these three months	April, 2020	Permissible limits
1.	pH	8	8.4	7.7	8.0	7.3	6.5-9.0
2.	Bio-Chemical Oxygen Demand mg/l	6	40	20	22.00	16	<30 mg/l
3.	Chemical Oxygen Demand mg/l	44	148	88	93.33	80	--
4.	Total Suspended Solid mg/l	20	34	32	28.67	42	<100 mg/l
5.	Fecal Coliform MPN/100 ml	45	600	2100	915.00	410	<1000

Budha Nallah at Walipur

Point of Sample Collection	Month of sampling	pH	COD mg/l	BOD mg/l	T. Coli (MPN/ 100 ml)	F. Coli (MPN/100 ml)
Point source Budhha Nallah at Walipur	Jan 2020	7.3	500	170	9400000	3300000
	Feb 2020	6.6	500	180	11000000	2100000
	Mar 2020	7.6	344	120	3200000	1700000
	Average results of these three months	7.2	448	157	7866667	2366667
	April 2020	7.3	608	190	1,20,00,000	38,00,000

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Month of sampling	Na mg/l	Fe mg/l	Zn mg/l	Mn mg/l	T.Cr. mg/l	H.Cr. mg/l	Ni mg/l	Cd mg/l	Pb mg/l
Jan 2020	160	18.6	1.53	0.29	0.24	BDL	0.39	BDL	BDL
Feb 2020	129	9.82	0.94	0.15	BDL	BDL	BDL	BDL	BDL
Mar 2020	366	10.8	0.63	0.17	BDL	BDL	BDL	BDL	BDL
Average results of these three months	**218.33**	**13.07**	**1.03**	**0.20**	**0.08**	**BDL**	**0.13**	**BDL**	**BDL**
April 2020	71	6.7	0.75	0.19	BDL	BDL	0.06	BDL	BDL

Flow of Budha Nallah (as per data of Deptt of Water Resources)

Sr. no.	Parameters	Jan, 2020	Feb, 2020	Mar, 2020	Average results of these three months	April, 2020
1.	Average per day Flow (MLD)	586	575	576	579	469.75

The BOD is taken as a main parameter for classification of Rivers and drains. Walipur is the final confluence point of the Buddha Nallah with river Satluj, the quality of which is being monitored by the Board on monthly Basis. So as to assess the pollution level, pollution load is required to be assessed in terms of BOD. The flow data of Budha Nallah is taken from the drainage department. The BOD load calculated is as under:-

Sr. no.	Parameters	Average result of (Jan 20, Feb 20 & March 2020	April, 2020
1	Flow (MLD)	579	469.75
2	BOD at Walipur (mg/l)	157	190
Total BOD Load (kg/day)		**90903**	**89252.5**

From the above, it is concluded that during the month of April, 2020 the:

1. Discharge of the city has reduced to about 19% due to closure of the industrial and commercial activities.
2. Level of BOD has increased in the Budha Nallah by about 21%.
3. BOD load in the Budha Nalih has decreased by about 2% due to less quantity of flow in it.
4. Due to less quantity of flow in it, the flow in Budha Nallah looks better.

It is further intimated that the following sewage treatment plants are installed at Ludhiana:

Sr No.	Location	Capacity in MLD	Operational Status
1	Jamalpur	48	Non operational
2	Bhattian	111	Operational
3		50	Operational
4	Balloke	152	Operational
5		105	Operational

Thus, the operational capacity of STPs at Ludhiana is 418 MLD.

As per the data available from the Department of Water Resources and Municipal Corporation Ludhiana, for the month of April, 20200, it has been found that:

Discharge of effluent of the city into river Satluj through Budha Nallah	About 470 MLD
Discharge of effluent of the city into river Satluj through outlets of STPs at Bhattian STP	About 141 MLD
Total Discharge of the city	About 611 MLD

Record of the effluent treated at the various STPs at Ludhiana reveals as under:

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Present working STPs	Cap MLD	Utilised cap MLD	Unutilised Capacity MLD
48 MLD Jamalpur	48	0	48
111 MLD Bhattian	111	90.9	20.57
50 MLD Bhattian	50	50.2	-0.08
152 MLD Balloke	152	107.45	43.81
105 MLD Balloke	105	103.37	2.19
Total	**466**	**351.92**	**114.49**

This data shows that In the month of April, 2020 the whole effluent generation in the city is domestic only. Out of 611 MLD of total effluent generated in this month, about 352 MLD of effluent has been treated and about 259 MLD was discharged untreated. Out of this untreated 259 MLD, about 66 MLD is due to non utilization of the full capacities of the STPS while about 193 MLD is due to gap in the treatment capacities of the STPs.

Keeping in view of the above it is recommended that the matter may be taken up with the Municipal Corporation Ludhiana to utilize the full capacities of the existing STPs.

4/5/20

Environmental Engineer

ANNEXURE R.7-7

Punjab Dyers Association

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ਪੰਜਾਬ ਪ੍ਰਦੂਸ਼ਣ ਰੋਕਥਾਮ ਬੋਰਡ

PUNJAB POLLUTION CONTROL BOARD

Zonal Office-II, 3rd Floor, Savitri Complex-I, Dholewal Chowk, G.T. Road, Ludhiana.
Ph. 0161-2533350 E-Mail: seezo2ldhppcb@yahoo.com

No. 7083 Date 03/9/12

To

The General Secretary,
Punjab Dyers Association,
24, Navrattan Complex,
Cheema Chowk,
Ludhiana.

Sub: **100% Treatment of Wastewater at Ludhiana *(Project estimate for the domestic sewer of Ludhiana City after treatment at sewage treatment plant through Budha Nallah and by constructing net work of distributing / water courses).***

It is intimated that the Government of Punjab, Dept. of Science, Technology & Environment, Chandigarh has forwarded a scheme on the subject cited matter as prepared by Department of Irrigation, Punjab.

A copy of the said report is enclosed for your record and further necessary action in the matter relating to Environmental Clearance of the proposed CETP.

DA/As above

3/9/12

Environmental Engineer
Senior Environmental Engineer

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PART-1 (PAGE NO.1 TO 170)

GOVT. OF PUNJAB

DEPARTMENT OF IRRIGATION

PROJECT ESTIMATE

FOR

THE DOMESTIC SEWERAGE OF LUDHIANA CITY AFTER TREATEMENT AT S.T.P. THROUGH BUDHA NALLA AND BY CONSTRUCTING NET WORK OF DISTRIBUTORY/WATER COURSES.

Estimated Cost

137.67 Crores

MAY.2012

Chief Engineer/ Canals
Irrigation Works/Punjab
Chandigarh

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PROJECT ESTIMATE FOR THE DOMESTIC SEWERAGE OF LUDHIANA CITY AFTER TREATMENT AT STP THROUGH BUDHA NALLAHA AND BY CONSTRUCTING NET WORK OF DISTRIBUTARY/WATER COURSE.

INDEX PART- I

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		proposed STP disty		
8		**Drawings.**		
		X-Sections for Earth work	143-156	78-80
		A.P.M. Outlets Drawing	157	
		Head Regulator Drawing	158	~~77~~
		Fall cum bridge Drawing	159	
		V. R. Bridges Drawing	160-161	143
		Type Design Quarter Drawing	162	
		Boundary Pillar drawing	163	
		L-Section	164-166	81-82
		Type design of unlined disty	167	
9		**PLANS**		
		Layout plan for New proposed STP disty	168	~~99~~, 115, 131 77
		Index Plan	169-170	~~99~~ ~~115~~ 99

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CHECK LIST FOR PREPARATION FOR DETAILED PROJECT REPORT TO BE SUBMITTED FOR LOANS UNDER RIDF

1	**IRRIGATION PROJECTS**	
i	**Name of Project**	PROJECT ESTIMATE FOR THE DOMESTIC SEWERAGE OF LUDHIANA CITY AFTER TREATMENT AT STP , THROUGH BUDHA NALLAHA AND BY CONSTRUCTING NET WORK OF DISTRIBUTORY/WATER COURSE.
ii	**Districts covered**	Ludhiana, Moga
iii	**Project Outlay (Rs.Crore)**	Rs.137.67 Crores

S.No.	Item	Remarks	Furnished (Yes /No)
1	**Genral**		
i	Whether the project is prioritized by the State Govt.	The Govt. of Punjab has decided to prevent the direct discharge of polluted water of Sewerage System and Industrial discharge into the Rivers passing through the Territory of State.	No
ii	Whether the project submitted through the Nodal Dept.	Through PID	No.
iii	Whether the project included in the State Plan	It is proposed to be funded by the Nabard.	No
2	**Clarence from (Wherever applicable)**		
i	Ministry of welfare (involving rehabilitation & resettlement)	No rehabilitation & resettlement is involved	No
ii	Administrative Approval	Yes, required	No
iii	Technical Sanction	Yes, Required	No
iv	Land Acquistion-Extent,status and time frame	Land required= 82.23 Acre approximately, Land Acquisition process will be started after Technical and financial sanction of the project. This disty. is proposed to be constructed primarily on the surplus abandoned land	Yes (Calculations for land require attached)

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		of the Grey Canal System and Budha Nalla along its present alignment. If the land is further required for the smooth running of the channel and to straighten up its alignment at later stage. the same will be assessed and acquired after wards.	
3	**General Profile**		
i	Objectives of the Project	To prevent the direct discharge of polluted water of Sewerage System and Industrial discharge of Ludhiana city into the River Sutlej. The present condition of Budha Nalla is causing acute health problems to the people of Ludhiana city & these districts. Beside this, the water habitation of River Sutlej is being affected to the large extent due to this highly polluted water. Even the density of trees is decreasing alongside the the Budha Nalla due to this highly polluted water. **All these factories have necessitated to treat the highly polluted water of Budha Nalla and utilize this for irrigation purposes for approximately 13543 Ha CCA and to increase the production of State.**	Yes
ii	Salient features of Project Area	• Land Classification:- Based on soil survey- sandy clay. • Topographical features:-Low lying belt in between Budha Nalla and River Sutlej. , • Drainage:- Good , • Soil Characteristics:- Sandy Clay.	Yes
4	**Agro-economic survey**		
i	Demographic and social characteristics	• Population:- Low density • Farm size:- Average • Land use:- Agriculture but not utilized to its full potential due to lack of irrigation facilities. • Land holding pattern/farm size distribution:- Average Size Land holding.	No
ii	Cropping Pattern	Existing and proposed cropping pattern and yields-as per detailed attached in T-9 & T-8	Yes

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iii	Agricultural support services	Extension services and supply of inputs, marketing, credit arrangement:- Poor	No
5	**Technical Aspects**		
i	Surface Water Projects		
a	Location and suitability of the project area	This project proposal falling in District Ludhiana and Moga in the low lying belt running parallel to the left side of the River Sutlej. There is lack of irrigation facility for the said area at present as the area does not fall within the irrigation 'Chakk' area of Sirhind canal system.	Yes
b	Source of water	The sewage /effluent of Ludhiana city and Industry after treatment by 4 No. STP /CETP	Yes
c	Catchment Area	152.60 Sq. Miles as per information collected from Drainage Department..	No
d	Rainfall	Data Attached	Yes
e	Hydrology	As per hydrological studies of the three Rivers (Sutlej , Ravi , Beas) conducted prior to the construction of Ropar Head Works, based on the flow series of 1921-60, the average flow in the rivers has been assessed as 34 MAF, which comprises 14 MAF, 13 MAF , 7 MAF for river Sutlej , beas and Ravi respectively.	Yes
f	Design of dam, weir, barrage etc.	N.A.	No
g	Design of main canal ,branch canals, distributaries	Typical drawing attached	Yes
h	Any other relevant detail	Attached at suitable places.	Yes
i	Status of land acquisition	Land required= 82.23 Acre approximately, Land Acquisition process will be started after Technical and financial sanction of the project. This disty. is proposed to be constructed mainly on the surplus abandoned land of the Grey Canal System and Budha Nalla along its present alignment. If the land is further required for the smooth running of the channel and to straighten up its alignment at later stage. the same will be assessed and acquired after wards.	No
j	Submergence area	N.A.	No

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	under reservoir and canals/distribution system.		
ii	**Ground water porjects**		
a	Location	N.A.	
b	Geological formation	N.A.	
c	Hydrogeolgy	N.A.	
d	Ground Water avilability	N.A.	
e	Design of wells	N.A.	
f	Specification of Pumping machinaery	N.A.	
g	Available discharge from the	N.A.	
h	Srtructures	N.A.	
i	I command area of structures any other relevant detail.	N.A.	
6	**Financial Aspects**		
i	Schedule of rates adopted (Whether updated to current costs)	The analysis of rates of various items have been prepared and attached. Rates provided are as per common schedule of rates 2010 plus sanctioned zonal premium operative w.e.f. 5.12.2011.	Yes
ii	If, not whether cost proposed will be sufficient to create the assets.	N.A.	No
iii	**Cost Estimate**		
a	Item-wise cost of project	As per detailed attached	Yes
b	Item wise expenditure incurred	Nil	No
c	Item wise cost of balance works	This is a new project and execution of work for this project will be started after receipt of funds.	No
d	Item wise RIDF loan	95% of the project cost	No
e	Item wise State Govt. Contribution year wise phasing of RIDF loan and	Three year phasing schedule.	Yes
f	State Govt.Contribution	5% of the project cost	No
g	Bar/PERT/CPM charts.	N.A.	No

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h	Specific justification for high cost of development	The sewage /effluent of Ludhiana city and Industry after treatment by STP /CETP will be utilized for irrigation purpose. To construct the New Disty in the existing abandoned land of the Gray Canal system of the Budha Nalla parallel to River Sutlej in the low lying area. Huge Number of pucca structures e.g bridges, syphon crossing, aqueducts ,escapes, Cross regulator, heavy earth work filling to construct the proposed disty and paralle drains are required to be constructed. Hence high cost involved.	Yes
7	**Benefits and justification**		
	Overall impact of the project need to be assessed and detailed	The project provided to prevent the direct discharge of polluted water of Sewerage System and Industrial discharge into the River Sutlej. At present, the highly polluted water containing many harmful contents due to direct discharge of Sewerage of Ludhiana city and Industrial discharge of dying industry passing through Buddha Nalla is being discharge into River Sutlej at the out skirts of Ludhiana city. Due to usage of River Sutlej water for drinking purposes in the Eastern & Southern part of Punjab including District Bathinda, Ferozepur, Faridkot, Mukatsar Sahib etc., and the present condition of Budha Nalla is causing acute health problems to the people of these districts. Beside this the water habitation of River Sutlej is being affected to the large extent due to this highly polluted water. Even the density of trees is decreasing alongside the the Budha Nalla due to this highly polluted water. All these factors have necessitated the treatment of this highly polluted water of Budha Nalla and utilize this for	Yes

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		irrigation purposes for approximately 13543 Ha CCA and to increase the agricultural production of Punjab State. After the completion the project SOCIO-ECOLOGICAL AND ENVIRONMENTAL condition of the people of the State living long side the proposed disty. and Budha Nalla will be improved considerably besides the increase in production of the agricultural land thus improving the financial position of the small farmers of the area.	
8	**Operation and Maintenance**		
	Arrangements for O/M inc.involverment of water user's Association/User Groups,Water charges.	After the construction of disty the operation and maintenance cost to be borne by the PID. Water Charges will be applicable as per Government Policy from time to time.	No
9	**Infrastructure Facilities**		
i	Organizational structure of the implementing Dept.	Attached (Annexure B)	Yes
ii	Capacity and preparedness of the implementing Dept. and status of implementation of earlier sanctioned projects.	The Punjab Irrigation Department is fully equipped with necessary establishment and infrastructure for implementation of the said project.	No
iii	Quality control infrastructure and mechanism	Attached (Annexure C)	Yes
iv	Availability of labour	The work will be executed on the contract basis as per departmental norms and the required labour will be arranged by the contractor. However, the labour is easily available in the said region.	No
v	Budget provision		
a	For contribution to State share	As per State Government Policy	No
b	For subsequent O&M	As per State Government Policy	No
c	For repayment of loans-Principal and interest.	As per State Government Policy	No
10	**Project Risks**		

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i	Land acquisition	No problem anticipated at present.	No
ii	Rehabilitation and resettlement	Not required.	No
iii	Forest clearance	Will be obtained, if required at the time of execution.	No
iv	Railway/road crossings	Not involved.	No
v	Construction hazards	No problem anticipated	No
vi	Any other risk.	No.	No
11	**Convergence with any other programme.**	No.	No

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PROJECT ESTIMATE FOR THE DOMESTIC SEWERAGE OF LUHDIANA CITY AFTER TREATMENT AT STP THROUGH BUDHA NALLAHA AND BY CONSTRUCTING NET WORK OF DISTRIBUTORY/WATER COURSE.

SALIENT FEATURES

1	Total Cost of the Project	=	Rs. 137.67 Crores
2	Location of the Project Area	=	In the Districts Ludhiana , Moga and Ferozepur
3	Name of the Village Benifited	=	Walipur Kalan, Banjawal, Ghamneweal,Talwandi Nauabad, walipur Khurd, Allwal, Bhundri, Gorsian Kadar Bakhsh Talwara, Shekh Kutab, Bhani Ariyan , Salempura, Sidhwan Bet, Shafipura,Madepura, Abupura, Perjian, Kaniyan , Flusani, Gidder Wirdi, Kekar Partti, Mund Tihera, Munnaberpura, Terf Kotli , Patti, Multani, Shahbazur Kanian Kalan, Chak Kanian Kalan, Kanian Khurd, Chak Fatehpur, Fatehpur, Kanian , Jindra, Thoothgarh , Doburji, Badduwal, Dhamkot.
4	Total Length of Proposed Disty.	=	53.54 KMs.
5	GA to be covered	=	38472 Acres /15755 Ha.
6	CCA to be covered		33454 Acres/ 13544 Ha.
6	Type of Canal	=	Unlined
7	Benefited Area	=	30109 Acres./12190 Ha
8	Benefit Cost Ratio (B.C.Ratio)	=	1.52:1

Sub Divisional officer
Sidhwan Canal Sub Division
Ludhiana.

Sub Divisional officer
Zira Canal Sub Division
Zira

Sub Divisional officer
Moga Canal Sub Division
Moga.

Executive Engineer
Sidhwan Canal Division
Ludhiana.

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PROJECT ESTIMATE FOR THE DOMESTIC SEWERAGE OF LUHDIANA CITY AFTER TREATMENT AT STP THROUGH BUDHA NALLAHA AND BY CONSTRUCTING NET WORK OF DISTRIBUTORY/WATER COURSE.

BENEFIT COST RATIO

1	Name of Scheme	=	PROJECT ESTIMATE FOR THE DOMESTIC SEWERAGE OF LUHDIANA CITY AFTER TREATMENT AT STP THROUGH BUDHA NALLAHA AND BY CONSTRUCTING NET WORK OF DISTRIBUTORY/WATER COURSE.
2	Length of Scheme	=	53.54 Kms
3	Total cost of Project	=	137.67 Crore
4	G.A.	=	15755 Ha
5	CCA	=	13544 Ha
6	Existing Irrigation	=	1354 Ha
	BENEFITTED AREA		
	Additional irrigation potential created (13544-1354) = 12190	=	12190 Ha
	Total	=	12190 Ha

INCOME FOR 100 HA.

Before Project

Value of production (In Lacs)		Cost of Cultivation (In Lacs	Benefit (In Lacs	See Table T-13	
139.67		50.57	89.1		

After Project

Value of production (In Lacs)		Cost of Cultivation (In Lacs	Benefit (In Lacs	See Table T-13	
154.29		50.57	103.72		

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Increase in income per 100 Ha

TOTAL INCOME

1.Income in benefit of crops

103.72-89.10=14.62/100 Ha

121.90 x 14.62 = 1782.18

MAINTENANCE COST

	Saving in annual Maintenance cost after Lining			Nil
	As per previous studies @ 39.23% of unlined expenditure			Nil
	Total Benefit per Ha			Rs. 1782.18 Lacs
	EXPENDITURE			
1	PROJECT COST			13767 Lacs
2	Annual interest @ 6.5%			894.86
3	Depreciation charges @2%			275.34
	TOTAL			1170.2
	Economics of the project/benefits cost ratio 1782.18/1170.20			1.52:1
	Required benefit cost ratio			1.5:1

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PROJECT ESTIMATE FOR THE DOMESTIC SEWERAGE OF LUDHIANA CITY AFTER TREATMENT AT STP THROUGH BUDHA NALLAH AND BY CONSTRUCTING NET WORK OF DISTRIBUTORY/WATER COURSE.

MAIN ABSTRACT OF COST

Part-I

	DIRECT CHARGES	AMOUNT IN RS.LACS
A	A-Preliminary	43.00
B	Land	2878.03
C	Works	19.95
D	Regulator	633.40
E	Falls	19.25
F	Cross Drainage Works	1767.00
G	Bridges	942.00
H	Escapes	402.88
I	Navigation works	0.00
K	Building	51.92
L-1	Earth Work	66.50
L-2	Lining	0.00
M	Plantation	0.00
N	Tanks & Reservoirs	0.00
O	Misc.	18.76
P	Maintenance	105.06
Q	Special T& P	1.58
R	Communication	0.00
S	Power Plant & Electrical System	0.00
T	Water supply works	0.00
U	Distributaries, Minors & Sub Minors	0.00
V	Water Courses and field channels	0.00
W	Drainage	0.00
X	Environment & Ecology	0.00
Y	Losses & Stock and Unforeseen	26.26
	Total Direct Charges	6975.59
	Indirect Charges.	207.83
	Total	7183.42
	Say	137.67 Cr.

Executive Engineer
Sidhwan Canal Division
Ludhiana.

Superintending Engineer
Sirhind Canal Cirlce
Ludhiana.

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CHAPTER 1
INTRODUCTION

P&A-1

i. GENERAL INTRODUCTION

The State of Punjab has sub-tropical climate and is located in the North western Part of India between 29-32 N and 32-31 N latitude and between 73-52' E and 76-55' E Longitude. It is bounded by Jammu & Kashmir in the North, Himachal Pradesh in the north-east, Haryana in the south and Rajasthan in south west and has a long border with Pakistan in the west.

The Punjab State economy is agriculture based with 70% of its population depending upon farming or agriculture based industries. The Irrigation water is the most important input for agriculture sector and in addition to this the improved varieties of seeds and adequate amount of fertilizer for further boosting agriculture production. Since both surface and ground water sources have been fully utilized, Govt. of Punjab recognized that increase of production would depend entirely upon improved efficiency of water use. It is pertinently brought out that Punjab having a geographical area of only 1.5% of the country, contributes more than 50% of the food stock of the central pool owing to untiring efforts of hard working farming community of the state and making the best use of available land and water resources of the state.

The growth in the agriculture sector remained in the vicinity of 2% for the last many years against an overall growth rate of about 8%.The wheat-paddy cropping pattern which is highly water intensive, thrive to a large extent on under ground water resources on account of inadequate availability of surface waters. The ever decreasing levels of water table require pumping of water from comparatively deeper aquifers which require greater consumption of fuel/electricity which is not abundantly available. The sluggish growth rate in agriculture is attributed mainly to increasing cost of agricultural inputs which is putting a tremendous strain on the socio-economic condition of the farmers. Agriculture production is directly linked to availability of water for irrigation and upkeep of its infrastructure. Punjab is the major contributor of wheat and rice to the national kitty and faced with a huge resource-crunch, finds it difficult to fund the schemes.

Punjab is an agrarian economy and most of the people are dependent on agriculture as their source of income. The state has been able to meet substantial food requirement of the country with unprecedented agriculture growth after the green revolution. The total cultivable area of Punjab is 42.90 lac hectare out of which 30.88 lac hectare has been brought under canal command. As such canal network of the state is of prime importance to sustain the agriculture.

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Owing to the consecutive lowering of the ground water table with passing time the dependence on canal water for agrarian needs has substantially increased. So, the canal system needs extension, improvement & up-gradation. If it is achieved it will help to reduce the pressure on ground water and increase optimal utilization of surface water. The underground water in south western Punjab is alkaline and is not fit for irrigation and drinking purpose. This cause extra stress on demand of canal water.

ii. INTRODUCTION OF PROPOSED DISTRIBUTARY (LUDHIANA CITY STP)

After studying the topography of the area it is found that only the belt of the area falling between the Budha Nalla and the River Sutlej can be irrigated with the treated water of STPs/CETPs, by constructing and open channel connected with the network of water courses at suitable points. Under this scheme, sewage of Ludhiana city and highly polluted water discharge from the industry in general and dying industry in particular will be utilized for irrigation after treatment by STP/CETP plants at Balloke, Jamall pur, Tajpur and Bahadar ke villages . This proposed distributary will be construed by utilizing Govt. land lying surplus due to abandoning of Grey Canal System for the last more than 50 years. At present the capacity of Balloke STP is 152 MLD, which is proposed to be increased by 105 MLD, the total capacity of this STP will be 257MLD (102.80 Cs.), similarly the capacity of Jamallpur STP will be increased from 48 MLD (19.20 Cs.) to 96 MLD ie 40 Cs. Apart from that 112 MLD and 38 MLD discharge of CETP Tajpur and Bhaderke respectably will be treated . The discharge of all STP's & CETP's will be 503 MLD (201 Cs.). The proposed Distributary has been designed for 220 Cs. discharge, keeping in view the present discharge of existing Budha Nallaha at R.D 150000 feet which is off take of the proposed distributary. The total length of proposed Disty. is 175600 feet Approx. out falling into 6-R Disty. at R.D. 2300 feet . The capacity statement has been prepared accordingly. At present the effluent water of STP is directly being discharged through Budha Nallaha into River Sutlej. After construction of proposed distributary, 33454 acres G.A/C.C.A. of 35 nos villages falling under Ludhiana and Moga Distt. will be irrigated .The water allowance has been proposed @ 5.5 Cs per thousand acres. However, during periods of lean/no demand or during flood season the treated effluent will be directly discharged into the river Sutlej. It is pertinent to brought out here that the water for irrigation will be supplied through the treatment plants under the control of Sewerage Board/ Municipal Corporation and the acceptability of the water by the farmers will entirely depend upon the treatment of water as per norms set by the Pollution Control Department/ any other relevant

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department for the same. Therefore if the farmers refuse to consume the said water, the onus of this will be entirely of the department responsible for carrying out operation/supervision of the treatment plants. This scheme will be published under the IMO Para No. 4.2 and implemented under the Canal & Drainage Act 8 of 1873.

iii. EFFECTS OF PROPOSED DISTRIBUTARY.

At present, the highly polluted water containing many harmful contents due to direct discharge of Sewerage of Ludhiana city and Industrial discharge of dying factories carried by Buddha Nalla is being discharge into River Sutlej at the out skirts of Ludhiana city. Due to usage of River Sutlej water for drinking purposes in the Southern part of Punjab including District Bathinda, Ferozepur, Faridkot, Mukatsar etc., This present condition of Budha Nalla is causing acute health problems to the people of Ludhiana city & these districts. Beside this the water habitation of River Sutlej is being affected severly due to this highly polluted water. Even the density of trees is decreasing alongside the the Budha Nalla due to this highly polluted water. All these factories have necessitated the treatment of the highly polluted water of Budha Nalla and utilize this for irrigation purposes

iv. SUB HEAD WISE PROVISIONS MADE IN THE PROJECT ESTIMATE ARE DISCUSSED BELOW :-

A-Preliminary

A provision of Rs. 43.50 Lac has been made under this sub-head for the work of leveling, survey, observing X-Sections etc.

B-Land

A provision of 19.28 Acre for Disty, 22.95 acre land for drain, 40 Acre land for compensation for disputed to be required has beem made in the estimate . A total provision of Rs..2878.03 Lac has been made under sub head..

C-Works

Construction of 57 Nos. outlets /Tail Cluster has been made in this project. A provison of Rs. 19.95 Lac has been made under this Sub Head.

D-Regulator

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A provison of Head Regulator and Cross Regulator At RD 0 of New proposed Disty and Budha Nalla , in take structure at RD 2300 of 6-R Disty and tail RD 175600 of proposed disty has been made in the estimate . A total provision of Rs.633.40 Lac has been made under this sub-head.

E-Fall

A provision of Construction of 1 No. fall at RD 132200 of proposed disty . A provision of Rs.19.25 Lac has been made under this sub-head.

F-Cross Drainage Works

A provision of construction of 11 Nos Syphon crossing , 3 Nos Syphon aqueduct crossing and 1 No. Syphon crossing cum Bridge has also been made in the Project Estimate. A total provision of Rs.1767.00 Lac has been made in this sub head.

G-Bridges

A provision of construction of 47 Nos. bridges has been made in the Project Estimate. A total provision of Rs.942.40 Lac has been made in this sub head.

H-Escape

A provision of 1 No Escape cum regulator at RD 11000 of proposed disty.has been made in the project estimat. A total provision of 502.88 Lacs has been made under sub head..

I-Navigation Works

No provision has been made under this sub-head.

K-Building

A provision of construction of 6 Residential required for employees has been made in the project estimate. A total provision of Rs. 51.92 Lac has been made in this sub head.

L-(i) Earth Work

Provision of Rs.6650 Lac has been made under this sub head.

L-(ii) Lining

No provision has been made under this sub-head.

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M-Plantation

No provision has been made under this sub-head.

N-Tanks & Reservoir

No provision has been made under this sub-head.

O-Miscellaneous

A Provision of running of vehcial, Distance marks and Boundry pills, Sign Boards/Indification boards, inaugural ceremonies, technical reords, photographs and inaugural ceremonies etc. has been made in the project estimate A total provision of Rs. 18.76 Lac has been made under this sub head.

P-Maintenance

A Provision of Rs.105.06 Lac has been made under this sub head.

Q-Special T & P

A Provision of Rs.1.58 Lac has been made under this sub head for purchase of. computers, Fax machines, photostat machines etc.

R-Communication

No provision has been made under this sub-head.

S-Power Plant & Electrical System

No provision has been made under this sub-head.

T - Water Supply Works

No provision has been made under this sub-head.

U - Disty, Minor & Sub Minors

No provision has been made under this sub-head.

V - Water Course & Field Channel

No provision has been made under this sub-head.

W - Drainage

No provision has been made under this sub-head.

X-environment and ecology

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No provision has been made under this sub-head.

Y - Losses Stock & Unforeseen

Provision of Rs. 26.26 Lac has been made under this Sub head.

Indirect & Escalation Charges

A provision of Rs.207.82 Lac under the sub head has been made.

The analysis of rates of various items have been prepared and attached. Rates provided are as per common schedule of rates 2010 plus sanctioned zonal premium operative w.e.f. 5.12.2011.

The total cost of this Project Estimate has been worked out to be Rs 137.67 Crores.

Sub Divisional officer
Sidhwan Canal Sub
Division
Ludhiana.

Sub Divisional officer
Moga Canal Sub
Division
Moga

Sub Divisional officer
Zira Canal Sub
Division
Zira.

Executive Engineer
Sidhwan Canal Division
Ludhiana.

Superintending Engineer
Sirhind Canal Circle
Ludhiana.

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CHAPTER 2

THE PROJECT AREA

2.1 GENERAL

The project of unlined proposed distributary R.D. 0 to R.D. 175600 is a new peroject. The water allowance of the area falling under this distributary is 5.5 Cusecs per thousand Acres at outlet head. The water used for this project is a treated effluent from 4 No. STP's/CETP's of Ludhiana area.

2.2 TOPOGRAPHY AND SOILS

This project proposal falls in District Ludhiana and Moga in the low lying belt running parallel to the the River Sutlej on its left side. The topography of the area is gently graded having low lying area patches at several places.
The soil in the project area is generally sandy having contents of silt and loam. The soil in general has good drainage characteristics.

2.3 CLIMATE AND RAINFALL

The climate of this area i.e.(of District Ludhiana, Moga and Ferozepur) is of sub-tropical monsoon type having wet hot summers and cold dry winters. Temperature in the area can rise as high as 47^0 C in summer months and as low as 5^0 C in the winters. About 85% rain fall occur during Kharif season. Mean Rainfall, Mean wind speed, Mean Temperature and mean Relative Humidity are given in table T-2

This area is quite suitable for irrigation but due to lack of good irrigation facility the yield per acre is very low. The proposed canal will help in enhancement of yield capacity per acre substantially.

2.4 EXISTING CROPPING PATTERN

There are two crop seasons in Punjab, Kharif season from April to October and Rabi seasons from November to March. Paddy, maize, pulses etc. are grown during Kharif seasons. Wheat rape seed and mustard are the main crop of rabi season. However fodder crops such as jowar during kharif and barseem during rabi season are also grown. Paddy-wheat is the main crop rotation of this area. The existing cropping pattern is given in Table-3.

2.5 HYDROLOGY

As per hydrological studies of the three Rivers (Sutlej , Ravi , Beas) conducted prior to the construction of Ropar Head Works, based on the flow series of 1921-60, the average flow in the rivers has been assessed as 34 MAF, which comprises 14

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MAF, 13 MAF , 7 MAF for river Sutlej , beas and Ravi respectively.

2.6 SOCIO- ECOLOGICAL AND ENVIRONMENTAL ASPECTS.

At present, the highly polluted water containing may harmful contents due to direct discharge of Sewerage of Ludhiana city and Industrial discharge of dying industry carried through Buddha Nalla is being discharged into River Sutlej at the out skirts of Ludhiana city. Due to usage of River Sutlej water for drinking purposes in the Southern part of Punjab including Distict Bathinda, Ferozepur, Faridkot, Mukatsar etc., This present condition of Budha Nalla is causing acute health problems to the people of Ludhiana city & these districts. Besides this the water habitation of River Sutlej is being affected severly due to this highly polluted water. Even the density of trees is decreasing alongside the Budha Nalla due to this highly polluted water. All these factors have necessitated the treatment of highly polluted water of Budha Nalla and utilize this for irrigation purposes.

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CHAPTER 3

THE PROJECT

3.1 PROJECT OBJECTIVES

The pressure of increasing population has led to the necessity of finding all possible means of increasing the production of food grain. Improved and extensive irrigation facilities are therefore required to meet with the growing demand of irrigators and good crops for increasing production.

The project has been drawn up with the following objectives:-

1. To reduce the pressure on underground water table.
2. To utilize the treated effluent for irrigation purpose.
3. To prevent the direct discharge of polluted effluent of Ludhiana city into the River Sutlej.
4. To increase the production of agriculture in the state.
5. To improve the socio- ecological and environmental condition.

3.2 SURVEYS AND INVESTIGATION

Hydraulic surveys of the proposed new channel shall be undertaken for its proper designing. Full data in regard to the existing structures, foundations and soils shall be observed for detailed designing of works.

3.3 EARTHWORK

The quantities of earthwork of proposed disty. have been estimated from R.D. 0 to 175600 feet, abstract of quantities is as under:-

Sr. No.	Item of Work	Unit	Quantity
1	Earthwork	1000cum	2876.87
2	Compaction of Earthwork	1000cum	1716.52
3	Dressing of Earthwork	1000 sqm	806.42

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3.4 DESIGN AND CONSTRUCTION METHOD

The proposed channel shall be constructed as unlined as per methodology adopted for unlined section.

Complete hydraulic survey of the new proposed unlined distributary shall be under taken and Longitudinal Section prepared after double leveling. Cross sections shall be observed at suitable intervals to work out the details of earthwork and L-section shall be prepared after thorough consideration in respect of economy and operational efficiency of every defined reach after proper techno-economic survey. The average lead of 5.0 Km for earthwork have been taken for preparing analysis of rates. Detail estimate shall be prepared for this distributary before the starting of work. This is necessary to have proper control over the execution and expenditure.

DESIGN PARAMETER

This disty. proposed to be constructed as un- lined in the first phase, which will be lined subsequently at later stage. The design section of the unlined disty. is proposed by keeping the berm 2xD, where D is Full Supply Depth of the Distributary (Typical drawing attached), by keeping in view the topography of the field. The banks have been proposed as per C.D.O instructions and site requirements. The value of regeosity coefficient 'N' is 0.0225 for unlined channel. The design calculations for sections of disty. are enclosed. The parallel drains on right/ left side from R.D 10000 feet to 110000 feet and from R.D 140000 feet to R.D 160000 feet respectively have been proposed to maintain the existing drainage system . The alignment of proposed disty. is running parallel to the River Sutlej on its left side, hence siphon crossings have been proposed at suitable interval to safe guard the nearby area and disty. from flood water. The alignment of proposed channel is kept as already existing alignment of old disty. & old Budha Nalah to minimize the requirement of new land acquisition. .

3.5 CONSTRUCTION METHOD

This unlined channel is proposed to be constructed in the land of existing old Budha Nala and old Grey Canal System. As the proposed distributary is a new channel so the work for execution shall be carried out continuously from the start of work.The work will be executed by the 3 No's Sub-Divisions of the Sidhwan Canal Division. The quality of work shall be cross checked by the CTE Patiala and other research wings of the department. The pucca structures shall be constructed after the drawing/ design is approved by the competent authority.

The earthwork shall be executed through labour intensive method. The compaction of earthwork, which is of paramount importance for safety of the channel, shall be got done using a sheep footed rollers. Special compactors driven by compressed air

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may also be used to compact the earth in pockets or where sheep footed roller can not work. A dry bulk density of 90% of the maximum dry density of the natural soil shall be attained in each layer of compacted earth (The maximum dry density of soil generally ranges between 1.6-2.7 g/cm^3 for soil and checked at site after compaction of each layer.

The earthwork and structures shall be undertaken through labour intensive method. Machines shall however be used for compaction of earthwork, concrete mixing, dewatering and for transportation of men and material. The work shall be got done through contractor employed through competitive bidding as per departmental codal rules.

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CHAPTER 4

COST ESTIMATE

4.1 GENERAL

Cost estimate are in general based on the prevailing Common Schedule of Rates 2010 with Latest prevailing Sanctioned Premium 6/12/2011. The total cost of the project works out to Rs. 137.67 Croroes

4.2 ESTIMATE OF QUANTITIES

The project includes about 53.54 KM length of proposed unlined channel. The quantity of earthwork has been worked out from typical cross-section observed for different reaches at suitable interval.

4.3 RATES

The project cost has been computed as per prevailing rates as per Common Schedule of Rates 2010 with Latest prevailing Sanctioned Premium 5/12/2011. The labour and carriage rates applied are as provided in the departmental schedule of rates + SP (6/12/2011). The rates for most of pucca works has been taken as per estimate of similar type of structures. For the new structures for which similar type estimates are not available, the provision for these are taken on lump sum basis. However, the detailed estimate shall be prepared after proper design and drawing approved by the competent authority before the time of execution.

4.4 COSTS

The costs are worked out at the prevailing rates in 6/12/2011. the total cost of the project works out to be 137.67 Crores. Analyses of rates for various items of work have also been attached as annexures. Detail abstract of cost is depicted in Annexure A-1.

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CHAPTER 5

ORGANIZATIONAL SETUP AND NEEDS

The present Sidhwan Canal Division comprising of 3 Sub Divisions is under Sirhind Canal Circle, Ludhiana which is further under the Chief Engineer/Canals, Irrigation works Punjab, Chandigarh. One No. Asstt. Research officer (Together with supporting staff) will attached with the Division for maintaining the quality check. The chart showing the organizational setup is attached.

5.1 IMPLEMENTATION OF THE WORKS SCHEDULE

As the proposed distributary is a new channel so the work for execution shall be carried out continuously from the start of work. The work will be executed by the 3 No's Sub-Divisions of the Sidhwan Canal Division, Ludhiana. The works shall be executed by equally distributing among the 3 No. sub Divisions names Sidhwan Canal Sub Division, Ludhiana, Moga Canal Sub Division Moga and Zira Canal Sub Division, Zira. The Superintending Engineer, Sirhind Canal Circle, Ludhiana & Executive Engineer, Sidhwan Canal Division Ludhiana shall ensure proper control both over quality and quantity and proper implementation of work schedule. In addition to this an independent research cell comprising of 1 No. ARO (Together with supporting staff) will conduct field tests by setting up their own testing laboratory at site.

The initial work like Surveying preparation of estimate and L-Section, Tendering and getting sanctions from the competent authority etc. shall be completed much prior to the actual execution of the work.

5.2 PROCUREMENT OF MATERIAL AND EQUIPMENT

The key material for the said project such as earth, cement, sand, steel, bricks etc. shall procured by the contractor themselves. However proper checks for maintaining the quality of the material shall be applied by the deputed departmental representatives.

5.3 EXECUTION OF CIVIL WORKS

The civil works such as earthwork and pucca structures would be carried out through labour intensive method. The work will be carried out continuously from the start of work throughout the year except for minor interruption during monsson.

The works shall be got executed at competitive rates received against e- tendering bids from registered agencies.

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5.4 OPERATION AND MAINTENANCE

The operation and maintenance of this channel will be carried out by the Punjab Irrigation Department. As far as works under the project are involved, their maintenance during construction period will adequately be provided as per norms.

5.5 MONITORING AND EVALUATION

Monitoring and evaluation of irrigation projects completed/ under execution is presently being done by 2 directorates of monitoring and evaluation under chief engineer. Each directorate is headed by on Superintending Engineer who is assisted by executive engineers and assistant engineers.

5.6 QUALITY CONTROL MECHANISM

The quality of the work executed at site is continuously monitored and checked by the J.E. incharge of the site who will be present at site daily. He also records the measurements in Measurement books at site. The measurement book is regularly checked by the Sub Divisional officer In charge and Executive Engineer as per codal rules.

Proper quality control setup already exists in the department and is shown at Annexure 7. In addition to this an independent research cell comprising of 1 No. ARO (Together with supporting staff) will conduct field tests by setting up their own testing laboratory at site.

An independent agency working under the Administrative control of Chief Technical Examiner shall also exercise the various field tests during the construction of the project.

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CHAPTER 6

BENEFITS AND ECONOMIC ANALYSIS

6.1 PROJECT BENEFITS

The project derives its main benefits from assured water supply on account of treated water from the 4 STP's/CETP's. The area under the different crops will be as under:-

Paddy	5417 Ha
Wheat	6772 Ha
Oil Seed	1354 Ha
Total	13543 Ha

6.2 INTANGIBLE BENEFITS

The project shall give following intangible benefits:-

1. Reduction in the pressure on underground water table.
2. Utilization of the treated effluent for irrigation purpose.
3. Prevention of the direct discharge of polluted effluent of Ludhiana city into the River Sutlej.
4. Increase the production of agriculture in the state.
5. Improvement in the socio- ecological and environmental condition.

6.3 INCREMENTAL AGRICULTURAL PRODUCTION

The annual incremental production of crops on full development shall be as under :-

The total production of crop (in 100 Ha) without project	:	31956 Qtls.
The total production of crop (in 100 Ha) with project	:	36017 Qtls

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The incremental Agricultural Production in 100 Ha = 36017- 31956	:	4061 Qtls
Total incremental Agricultural Production = 4061x (12190/100)	:	495036 Qtls

6.4 CROP BUDGETS

The present day crop yields in respect of irrigated/ unirrigated crops and summary of latest prices of agriculture produce are given in Table T-5

Average crop cultivation costs for irrigated/ un-irrigated crops in Punjab for the year 2011-2012 are indicated in Table T-6 & T-7 respectively. Crop budgets for the amin crops proposed to be raised on incremental irrigated areas and existi9ng un-irrigated areas have been darwn based on the data given in Table T-5, T-6 & T-7 and indicated in Table T-8 and T-9 respectively. net value of the proposed irrigated/ un-irrigated crops per hectare shall be as under :-

A. Irrigated Crops		
Paddy	:	Rs.47801 /Ha
Wheat	:	Rs.47422 /Ha
Oil Seed	:	Rs.32845 /Ha
B. Un-Irrigated Crops		
Paddy	:	Rs. 40591 /Ha
Wheat	:	Rs. 40997 /Ha
Oil Seed	:	Rs. 30420 /Ha

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6.5 CROP BENEFITS

The development of net crop benefits from the additional crops are worked out in Table T-4. On full development, net crop benefits shall amount to Rs. 7186.55 lacs per Annum.

The net crop benefits from the existing un-irrigated crops have been worked out in Table T-10 which amounts to Rs. 2916.86 Lacs per annum.

6.7 BENEFITS COST ANALYSIS

Benefit Cost analysis of the project has been worked out as per guidelines of the Central Water Commission, Government of India.

6.8 ASSUMPTIONS FOR B.C. ANALYSIS.

The following set of assumptions have been adopted for calculations of B.C. ratio:

a) Prices for inputs and outputs remained constant.

b) The latest prices of the year 2011-12 are applicable.

c) The crop yields do not improve in future with or without project condition.

d) Interest rate is considered at 6.5 % per annum.

6.9 BENEFIT COST ANALYSIS WITH CWC METHOD

The values of the main produce in the project area, both in the pre-project and post-project stages have been worked out in the standard performa of CWC vide Table T-10 and T-4 and Net values vide Table T-12 and T-11 respectively.

6.10 INCREASE IN RURAL EMPLOYMENT

Farm activities would be increased due to cultivation of additional land in future. It will boost the rural employment on full development of the project. Opportunities for employment of skilled/ semi-skilled personnel on supporting services shall also open up.

Sub Divisional officer Sidhwan Canal Sub Division Ludhiana.	Sub Divisional officer Moga Canal Sub Division Moga	Sub Divisional officer Zira Canal Sub Division Zira.	Executive Engineer Sidhwan Canal Division Ludhiana

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IRRIGATION WORKS PUNJA
HEAD OFFICE

To

Superintending Engineers :-

1) Sirhind Canal Circle, Ludhiana
2) U.B.D.C. Circle, Amritsar.
3) Director/Water Cell I.B.H.O. Pb, Chandigarh.

Memo No.2009/( )ਸਪੈਸ਼ਲ-5 Dated 25 /11/09.

Sub:- **Cleaning of rivers –laying of Irrigation network from the STP's.**

Hon'ble Chief Minister Punjab, took a meeting on 24/11/2009 on the subject. Kindly find enclosed list of towns alongwith the Sewerage Discharge in MLD where Irrigation Schemes are proposed . The concerned Executive Engineer may be directed to contact his counterpart in Water Supply Sewerage Board to know the location of proposed STP and prepare the Irrigation network Scheme alongwith rough cost estimate and submit the same within six days i.e 1//12/2009 . The Hon'ble Chief Minister is very serious about the issue and has directed that the Schemes and rough cost estimate be submitted within seven days . He will hold a review meeting after seven days to concider these schemes. An early action is requested.

Executive Engineer/Canals,
For Chief Engineer, Irrigation Works, Punjab,
Chandigarh.

ਨਿਗਰਾਨ ਇੰਜੀਨੀਅਰ
ਸਤਲੁਜ ਕੈਨਾਲ ਸਰਕਲ ਲੁਧਿਆਣਾ।

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ISDG- J & tTEND CANAL E FAX NO. :01722724079

Project: Cleaning of Rivers- laying of Irrigation network from the STP's

List of Towns with sewerage discharge (MLD)

1 cusec= 1MLD/2.5

Sr.No.	Name of Town	District	Discharge as on 2025 (in MLD)
1.	Bholath	Kapurthala → Pipes at site	4
2.	Begowal	STP fund Kapurthala → completed	2.50
3.	Phagwara	Kapurthala	38
4.	Dhilwan	STP fund Kapurthala	2
5.	Sultanpur Lodhi	Kapurthala	2.60
6.	Kapurthala	Kapurthala	25
7.	Nawanshahar	Shaheed Bhagat Singh Nagar	6
8.	Banga	Shaheed Bhagat Singh Nagar	3
9.	Mukerian	Hoshiarpur	5
10.	Dasuya	Hoshiarpur	5
11.	Tanda urmur	Hoshiarpur	4
12.	Shamchurasi	Hoshiarpur	1
13.	Hoshiarpur	Hoshiarpur	35
14.	Makhu	Ferozpur Moga	3
15.	Dharamkot	Moga	3
16.	Zira	Ferozpur Moga	8
17.	Talwandi Bhai	Ferozpur Moga	3
18.	Moga	Moga	27
19.	Machiwara	Ludhiana	3.5
20.	Balloke	Ludhiana	257
21.	Bhattian	Ludhiana	161
22.	Jamalpur	Ludhiana	48
23.	Jalandhar	Jalandhar	185
24.	Pathankot	Gurdaspur	20
25.	Nangal	Ropar	5
26.	Ropar – Thermal Plant (STP)	Ropar	14.50
27.	Kurali	Ropar	5

Jalandhar 100 MLD, 1.5 MLD, 5 MLD – STP under construction

21.84 crore, 8000 acres

Dasuya = 26.47 lac received and utilised, work in progress. 7.5 MLD, 400 acre = 160 ha

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Table T

PROJECT COST AND PROPOSED PHASING OF FUCNTIONING

The total cost of the project proposed to be funded out of RIDF- XVIII works out of the Rs 137.67 Crores as per guidelines of NABARD bank. New schemes would be provided loan assitence to the extent 95% of the total financial outlay. whereas the balance 5% of the cost would be state share.

Total Financial Outlay (TFO)		:	Rs .137.67 Crores
Loan From NABARD	(i.e. 95% of TFO under RIDF XVIII	:	Rs. 130.79 Crores
5% States Share of new scheme		:	Rs. 6.88 Crores.
Time required to complete the project		:	3.0 Years (Subjected to availability of funds)

IMPLEMENTATION OF SCHEDULE

The work included in the project will be completed within 3 years from the date of receipt of funds.

The cost of this project works out to Rs. 137.67 Crores. As the work is of Public interest so an early approval of the scheme is requested please.

Table T-1

PROJECT ESTIMATE FOR THE DOMESTIC SEWERAGE OF LUDHIANA CITY AFTER TREATMENT AT STP THROUGH BUDHA NALLAH AND BY CONSTRUCTING NET WORK OF DISTRIBUTORY/WATER COURSE.

METEROLOGICAL DATA

Average of 10 Years (From 1998-2008)

District	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
MEAN RAINFALL (MM)												
LUDHIANA	30.48	38.66	33.92	17.8	32.17	88.49	99.26	187.3	98.04	23.11	3.49	16.11
MEAN WIND SPEED (KM/HOUR)												
LUDHIANA	3.71	4.1	4.6	4.92	6.08	6.41	5.27	4.41	3.45	2.57	2.48	2.07
MEAN TEMPERATURE (DEGREE CENTIGRADE)												
LUDHIANA	12.68	15.14	19.99	26.88	31.06	31.57	30.05	29.8	28.06	24.5	19.3	13.68
MEAN RELATIVE HUMIDITY (%)												
LUDHIANA	79.18	75.34	66.26	45.09	41.7	58.6	76.7	80.01	75.1	65.3	64.1	75

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Table T-2

PROJECT ESTIMATE FOR THE DOMESTIC SEWERAGE OF LUDHIANA CITY AFTER TREATMENT AT STP THROUGH BUDHA NALLAH AND BY CONSTRUCTING NET WORK OF DISTRIBUTORY/WATER COURSE.

PUNJAB IRRIGATION PROJECT

CROP CALENDER

S.No.	Name of Crop	Optimum Time for		Days of Maturity
		Sowing	Harvesting	
A	Kharif Crop			
1	Paddy	10-20 Jan	Oct	115
2	Cotton	April-May	Dec	180
3	Maize	May-June	Sept	90
4	Pulses (Moong Mash)	June-July	Oct	90
5	Ground Nuts	25 May-10June	Nov	120
6	Fodder (Jawar)	Mid June-Mid July	Mid Sept-Mid Oct	90
B	Rabi Crops			
1	Wheat	Oct-Nov	15-Apr	145
2	Oilseed	Oct	March	150
3	Grams	10-25 Oct	March End	160
4	Barley	Oct-Nov	March End	130
5	Pulses (Masur)	Oct-Nov	March	155
6	Fodder (Barseem)	15 Sept.	15-May	240
7	Sugar cane	March	Nov-Dec	280

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Table T-3 (P-1)

PROJECT ESTIMATE FOR THE DOMESTIC SEWERAGE OF LUDHIANA CITY AFTER TREATMENT AT STP THROUGH BUDHA NALLAH AND BY CONSTRUCTING NET WORK OF DISTRIBUTORY/WATER COURSE.

ASTRACT OF CANAL STRUCTURE TO BE CONSTRUCTED

S.No.	Description	Unit	Number of structures
1	Bridges	Nos	47
2	Syphon Crossings	Nos	11
3	Syphon Aquaduct	Nos	4
4	Escape	No.	1
5	Fall	No.	1
6	Head Regulator	Nos	2

Table-3
(P-2)

PROJECT ESTIMATE FOR THE DOMESTIC SEWERAGE OF LUDHIANA CITY AFTER TREATMENT AT STP THROUGH BUDHA NALLAH AND BY CONSTRUCTING NET WORK OF DISTRIBUTORY/WATER COURSE.

LIST OF PUCCA STRUCTURE

BRDIGES

1	SINGLE V.R. BRIDGE AT RD	=	4492
2	SINGLE V.R. BRIDGE AT RD	=	6692
3	SINGLE V.R. BRIDGE AT RD	=	112545
4	SINGLE V.R. BRIDGE AT RD	=	114530
5	SINGLE V.R. BRIDGE AT RD	=	117650
6	SINGLE V.R. BRIDGE AT RD	=	122244
7	SINGLE V.R. BRIDGE AT RD	=	123989
8	SINGLE V.R. BRIDGE AT RD	=	128105
9	SINGLE V.R. BRIDGE AT RD	=	130655

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10	SINGLE V.R. BRIDGE AT RD	=	132000
11	SINGLE V.R. BRIDGE AT RD	=	134800
12	SINGLE V.R. BRIDGE AT RD	=	135234
13	SINGLE V.R. BRIDGE AT RD	=	138400
14	SINGLE V.R. BRIDGE AT RD	=	164265
15	SINGLE V.R. BRIDGE AT RD	=	166645
16	SINGLE V.R. BRIDGE AT RD	=	173375
17	COMBINED V.R. BRIDGE AT RD	=	14380
18	COMBINED V.R. BRIDGE AT RD	=	17285
19	COMBINED V.R. BRIDGE AT RD	=	19978
20	COMBINED V.R. BRIDGE AT RD	=	22948
21	COMBINED V.R. BRIDGE AT RD	=	34390
22	COMBINED V.R. BRIDGE AT RD	=	35285
23	COMBINED V.R. BRIDGE AT RD	=	37723
24	COMBINED V.R. BRIDGE AT RD	=	41205
25	COMBINED V.R. BRIDGE AT RD	=	45485
26	COMBINED V.R. BRIDGE AT RD	=	47330
27	COMBINED V.R. BRIDGE AT RD	=	52030
28	COMBINED V.R. BRIDGE AT RD	=	53123
29	COMBINED V.R. BRIDGE AT RD	=	54800
30	COMBINED V.R. BRIDGE AT RD	=	58766
31	COMBINED V.R. BRIDGE AT RD	=	60510
32	COMBINED V.R. BRIDGE AT RD	=	63989
33	COMBINED V.R. BRIDGE AT RD	=	66452
34	COMBINED V.R. BRIDGE AT RD	=	69477
35	COMBINED V.R. BRIDGE AT RD	=	73251
36	COMBINED V.R. BRIDGE AT RD	=	80389
37	COMBINED V.R. BRIDGE AT RD	=	85110
38	COMBINED V.R. BRIDGE AT RD	=	86600
39	COMBINED V.R. BRIDGE AT RD	=	89291
40	COMBINED V.R. BRIDGE AT RD	=	93000
41	COMBINED V.R. BRIDGE AT RD	=	97850
42	COMBINED V.R. BRIDGE AT RD	=	98731
43	COMBINED V.R. BRIDGE AT RD	=	104838
44	COMBINED V.R. BRIDGE AT RD	=	145430
45	COMBINED V.R. BRIDGE AT RD	=	148875
46	COMBINED V.R. BRIDGE AT RD	=	151840
47	COMBINED V.R. BRIDGE AT RD	=	152930

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SYPHON CROSSING

1	SYPHON CROSSING AT RD	=	21000
2	SYPHON CROSSING AT RD	=	30000
3	SYPHON CROSSING AT RD	=	40000
4	SYPHON CROSSING AT RD	=	58000
5	SYPHON CROSSING AT RD	=	67500
6	SYPHON CROSSING AT RD	=	70000
7	SYPHON CROSSING AT RD	=	75500
8	SYPHON CROSSING AT RD	=	93300
9	SYPHON CROSSING AT RD	=	102000
10	SYPHON CROSSING AT RD	=	112000
11	SYPHON CROSSING AT RD	=	118000

SYPHON AQUEDUCT CROSSING

1 Syhon Aqwueduet at RD 45285 crossing Pijrian Drain
2 Syhon Aqueduct crossing Jassowal Drain at RD 110000
3 Syhon Aqueduct Cum Bridge at RD 156305 crossing Kishan pura disty
4 Syhon Aqueduct at RD 159750 crossing of Kishan pura Drain.

ESCAPE

1 Escape Regulators at RD 110000 Proposed Disty.

FALLS

1 Fall at RD 132200

HEAD REGULATOR

1 R.D. 150000 oF Budha Nala/ R.D. 0 of Proposed Channel
2 R.D. 2300 of 6-R Distributory/ R.D. 175600 of Proposed Channel

Table T-4

PROJECT ESTIMATE FOR THE DOMESTIC SEWERAGE OF LUDHIANA CITY AFTER TREATMENT AT STP THROUGH BUDHA NALLAH AND BY CONSTRUCTING NET WORK OF DISTRIBUTORY/WATER COURSE.

ESTIMATED VALUE OF PRODUCE AND COST OF CULTIVATION POST PROJECT AND NET CROP BENEFITS

Crop	Area Ha	PRODUCE				INPUTS VALUE		
		Yield per ha(Qtl)	Total Yield (Qtl)	Rate Rs./Qtl.	Total (Rs. Lac) Col 4 x 5	Rate Rs.Ha refer Table T-15	Total Value Rs.Lac Col.2 x 7	Net Crop benefits (Col 6-8) (In Lac)
1	2	3	4	5	6	7	8	9
Paddy	5417	74	400858.00	1030	4128.8374	28419	1539.45723	2589.38017
Pwheat	6772	57	386004.00	1285	4960.1514	25823	1748.73356	3211.41784
Oil Seeds	1354	21	28434.00	2425	689.5245	18080	244.8032	444.7213
Total	13543		**815296**		0		3532.99399	**6245.51931**
BY PRODUCT								
Paddy	0	0	0	0	0	0	0	0
wheat	6772	54	365688.00	250	914.22			914.22
Oil Seeds	1354	18	24372.00	110	26.8092			26.8092
Total			**390060**		0			**941.0292**
G.Total			1205356		0		3532.99399	7186.54851

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TABLE-T-5

PROJECT ESTIMATE FOR THE DOMESTIC SEWERAGE OF LUDHIANA CITY AFTER TREATMENT AT STP THROUGH BUDHA NALLAHA AND BY CONSTRUCTING NET WORK OF DISTRIBUTORY/WATER COURSE

LATEST CROP YIELDS IN PUNJAB FOR MAIN CROPS AND THEIR PRICES IN 2018

S.No.	Crop	Type	Crop yield qtls ha.Main Product	Price per Qtl.Rs.
1	Paddy	Irrigated	74	1030
2	Paddy	Un-Irrigated	67	1030
3	Wheat	Irrigated	57	1285
4	Wheat	Un-Irrigated	52	1285
5	Oil Seeds.	Irrigated	21	2425
6	Oil Seeds.	Un-Irrigated	20	2425
7	By product of wheat	Irrigated	54	250
8	By product of wheat	Un-Irrigated	49	250
9	By product of Oil seeds.	Irrigated	18	110
10	By product of Oil seeds.	Un-Irrigated	8	110
11	P:ulses	Irrigated	12	2800
12	Pulses	Un-Irrigated	11	2800

Table -6

PROJECT ESTIMATE FOR THE DOMESTIC SEWERAGE OF LUDHIANA CITY AFTER TREATMENT AT STP THROUGH BUDHA NALLAHA AND BY CONSTRUCTING NET WORK OF DISTRIBUTORY/WATER COURSE

Average Crop cultivation costs per Hectare in Punjab for the Year 2011-12 (Irrigation)

(PRE-Project)

S.No.	Name of crop and type	Seeds	Human labour & bullock charges Rs./Ha	Farm Yard manure & fertillizers Rs./Ha	Chemicals (insecticides & pesticides Rs./Ha)	Other Charges Rs./Ha	Total Charges (Col.3 to 7) Rs./Ha
1	2	3	4	5	6	7	8
1	Paddy	1013	6941	5064	2347	13054	28419
2	Wheat	2099	7682	5940	2099	8003	25823
2	Oil Seeds	840	4792	2519	1210	8719	18080

Table -7

PROJECT ESTIMATE FOR THE DOMESTIC SEWERAGE OF LUDHIANA CITY AFTER TREATMENT AT STP THROUGH BUDHA NALLAHA AND BY CONSTRUCTING NET WORK OF DISTRIBUTORY/WATER COURSE

Average Crop cultivation costs per Hectare in Punjab for the Year 2016-17 (Irrigation)

(Post-Project)

S.No.	Name of crop and type	Seeds	Human labour & bullock charges Rs./Ha	Farm Yard manure & fertillizers Rs./Ha	Chemicals (insecticides & pesticides Rs./Ha)	Other Charges Rs./Ha	Total Charges (Col.3 to 7) Rs./Ha
1	2	3	4	5	6	7	8
1	Paddy	1013	6941	5064	2347	13054	28419
2	Wheat	2099	7682	5940	2099	8003	25823
2	Oil Seeds	840	4792	2519	1210	8719	18080

Table -8

PROJECT ESTIMATE FOR THE DOMESTIC SEWERAGE OF LUDHIANA CITY AFTER TREATMENT AT STP THROUGH BUDHA NALLAHA AND BY CONSTRUCTING NET WORK OF DISTRIBUTORY/WATER COURSE

CROP BUDGET FOR IRRIGATED POST PROJECT CROPS

S.No.	Name of crop and type	Yield/hectare in Qtl.	Rate for qtl	Gross Value Rs	Total inputs/ha Refer table 15	Net value col (5-6 Rs.ha
1	2	3	4	5	6	7
1	Paddy	74	1030	76220	28419	47801
2	Wheat	57	1285	73245	25823	47422
2	Oil Seeds	21	2425	50925	18080	32845
BY PRODUCTS						
1	Paddy	0	0	0	0	0
2	Wheat	54	250	13500	0	13500
2	Oil Seeds	18	110	1980	0	1980

Table T-9

PROJECT ESTIMATE FOR THE DOMESTIC SEWERAGE OF LUDHIANA CITY AFTER TREATMENT AT STP THROUGH BUDHA NALLAHA AND BY CONSTRUCTING NET WORK OF DISTRIBUTORY/WATER COURSE

CROP BUDGET FOR UNIRRIGATED /RAINFED PRE PROJECT CROPS

S.No.	Name of crop and type	Yield/hectare in Qtl.	Rate for qtl	Gross Value Rs	Total inputs/ha Refer table 15	Net value col (5-6 Rs.ha
1	2	3	4	5	6	7
1	Paddy	67	1030	69010	28419	40591
2	Wheat	52	1285	66820	25823	40997
2	Oil Seeds	20	2425	48500	18080	30420
BY PRODUCTS						
1	Paddy	0	0	0	0	0
2	Wheat	25	250	6250	0	6250
2	Oil Seeds	8	110	880	0	880

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Table-10

PROJECT ESTIMATE FOR THE DOMESTIC SEWERAGE OF LUDHIANA CITY AFTER TREATMENT AT STP THROUGH BUDHA NALLAH AND BY CONSTRUCTING NET WORK OF DISTRIBUTORY/WATER COURSE.

ESTIMATED VALUE OF PRODUCE AND COST OF CULTIVATION PRE PROJECT AND NET CROP BENEFIT

			PRODUCE				INPUTS VALUE		
S.No.	Crop	Area(Ha)	Yield per ha (QTL)	Total Yield(QTL)	Rate Rs./QTL	Total (Rs.Lac)	Rate Rs.Ha	Total Value (Rs.Lc)	Net crop benefits (Col.6-8) Rs.Lacs.
	1	2	3	4	5	6	7	8	9
1	Paddy	2708	67	181436	1030	1868.7908	28419	769.58652	1099.204
2	Wheat	3386	52	176072	1285	2262.5252	25823	874.36678	1388.158
2	Oil Seeds	677	20	13540	2425	328.345	18080	122.4016	205.9434
	Total	3385.5	139	371048	4740	4459.661	72322	1766.3549	2693.306
	BY PRODUCT								
1	Paddy	0	0	0	0	0	0	0	0
2	Wheat	3386	25	84650	250	211.625	0	0	211.625
2	Oil Seeds	1354	8	10832	110	11.9152	0	0	11.9152
	Total			95482		223.5402	0	0	223.5402
	G.Total			466530		4683.2012		1766.3549	2916.846

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Table 11

PROJECT ESTIMATE FOR THE DOMESTIC SEWERAGE OF LUDHIANA CITY AFTER TREATMENT AT STP THROUGH BUDHA NALLAHA AND BY CONSTRUCTING NET WORK OF DISTRIBUTORY/WATER COURSE

POST PROJECT NET VALUE OF FARM PRODUCE
(IRRIGATED)

S.No.	GROSS RECEIPTS (From table T-12)	(Rs.in lac)
i	Gross value of farm produce	9778.51
	Gross value of by products receipt	941.03
	Total receipts	10719.5
ii	**EXPENSES**	
3	Total cost of cultivation	3532.97
4	Depreciation of implements @ 2.70% of Gross value of peroduce.	289.43
5	Share and cash rent @ 5% total gross produce.	535.98
6	Land revenue @ 2% gross value of farm produce	195.57
	Total	4553.95
iii)	NET VALUE OF PRODUCE	

RECEIPTS		EXPENSES				
10719.54		4553.97				6165.57

(83)

Table 12

PROJECT ESTIMATE FOR THE DOMESTIC SEWERAGE OF LUDHIANA CITY AFTER TREATMENT AT STP THROUGH BUDHA NALLAHA AND BY CONSTRUCTING NET WORK OF DISTRIBUTORY/WATER COURSE

PRE PROJECT NET VALUE OF FARM PRODUCE (UN-IRRIGATED)

S.No.	GROSS RECEIPTS (From table T-18)	(Rs.in lac)
i	Gross value of farm produce	4460
	Gross value of by products receipt	223.55
	Total receipts	4683.22
ii	**EXPENSES**	
3	Total cost of cultivation	1766.36
4	Depreciation of implements @ 2.70% of Gross value of peroduce.	126.45
5	Share and cash rent @ 5% total gross produce.	234.16
6	Land revenue @ 2% gross value of farm produce	89.19
	Total	2216.16
iii)	NET VALUE OF PRODUCE	

	RECEIPTS		EXPENSES				
	4683.22		2216.16				2467.06

TABLE-13 (P-1)

PROJECT ESTIMATE FOR THE DOMESTIC SEWERAGE OF LUDHIANA CITY AFTER TREATMENT AT STP THROUGH BUDHA NALLAH AND BY CONSTRUCTING NET WORK OF DISTRIBUTORY/WATER COURSE.

ECONOMICS IN CROP PRODUCTION (100 Ha MODEL)

S. No.	Crop	Without Project							With Project						
	Kharif	Yield Qtl Ha	Area in Ha	Production in Qtl	Value of Production		Cost of Cultivation		Yield Qtl	Area in Ha	Production in Qtl	Value of Production		Cost of Cultivation	
					Rate	Amount	Rate/Ha	Amount				Rate	Amount	Rate/Ha	Amount
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Paddy	67.00	80.00	5360.00	1030.00	55.21	28419.00	22.74	74.00	80.00	5920.00	1030.00	60.98	28419.00	22.74
2	Fodder	700.00	12.00	8400.00	70.00	5.88	14000.00	1.68	800.00	12.00	9600.00	70.00	6.72	14000.00	1.68
3	Repeseed/Oil Seedds	20.00	1.00	20.00	2425.00	0.49	18080.00	0.18	21.00	1.00	21.00	2425.00	0.51	18080.00	0.18
4	Vegetables	60.00	0.50	30.00	1000.00	0.30	15000.00	0.08	70.00	0.50	35.00	1000.00	0.35	15000.00	0.08
5	Cotton	28.00	2.50	70.00	2800.00	1.96	32826.00	0.82	31.00	2.50	78.00	2800.00	2.18	32826.00	0.82
6	Sugar Cane	803.00	1.50	1204.50	139.12	1.68	53227.00	0.80	880.00	1.50	1320.00	139.12	1.84	53227.00	0.80
7	Maize	49.00	0.50	24.50	960.00	0.24	15437.00	0.08	54.00	0.50	27.00	960.00	0.26	15437.00	0.08
8	Pulses	11.00	2.00	22.00	2800.00	0.62	19192.00	0.38	12.00	2.00	24.00	2800.00	0.67	19192.00	0.38
	Total	**1738.00**	**100.00**	**15131.00**	**11224.12**	66.36	**196181.00**	**26.75**	**1942.00**	**100.00**	**17025.00**	**11224.12**	**73.51**	**196181.00**	**26.75**

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TABLE-13 (P-2)

S. No.	Crop	Without Project							With Project						
	Rabi	Yield Qtl Ha	Area in Ha	Production in Qtl	Value of Production		Cost of Cultivation		Yield Qtl	Area in Ha	Production in Qtl	Value of Production		Cost of Cultivation	
					Rate	Amount	Rate/Ha	Amount				Rate	Amount	Rate/Ha	Amount
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Wheat	52.00	84.00	4368.00	1285.00	56.13	25823.00	21.69	57.00	84.00	4788.00	1285.00	61.53	25823.00	21.69
2	Rabi Fodder	690.00	12.00	8280.00	70.00	5.80	14000.00	1.68	800.00	12.00	9600.00	70.00	6.72	14000.00	1.68
3	Rapesse d/Oil Seeds	20.00	1.00	20.00	2425.00	0.49	18080.00	0.18	21.00	1.00	21.00	2425.00	0.51	18080.00	0.18
4	Vegetab les	60.00	0.50	30.00	1000.00	0.30	15000.00	0.08	70.00	0.50	35.00	1000.00	0.35	15000.00	0.08
5	Sugar Cane	0.00	1.50	0.00	0.00	0.00	0.00	0.00	0.00	1.50	0.00	0.00	0.00	0.00	0.00
6	Pulses	11.00	1.00	11.00	2800.00	0.31	19192.00	0.19	12.00	1.00	12.00	2800.00	0.34	19192.00	0.19
7	By product of wheat	49.00	84.00	4116.00	250.00	10.29	0.00	0.00	54.00	84.00	4536.00	250.00	11.34	0.00	0.00
	Total	882.00	184.00	16825.00	7830.00	73.31	92095.00	23.82	1014.00	184.00	18992.00	7830.00	80.78	92095.00	23.82
	G.Total			31956.00		139.67		50.57			36017.00		154.29		50.57

139.67-5057 = 89.10 Lacs

154.29-50.57 = 103.72 Lacs.

Incremental Agricultural production/100 Ha

36017-31956 = 4061/Qtl

Net Benefit /100 Ha

103.72-89.10 = 14.62/Ha

Table T-14

PROJECT ESTIMATE FOR THE DOMESTIC SEWERAGE OF LUDHIANA CITY AFTER TREATMENT AT STP THROUGH BUDHA NALLAH AND BY CONSTRUCTING NET WORK OF DISTRIBUTORY/WATER COURSE.

DESCRIPTIVE STATEMENT OF NEW PROPOSED STP DISTY.

Name of Channel	Off taking channel	Off taking RD	Discharge of Channel at Head in cs.	Tail RD	Length in KM	Comminded Area Ha		Benified Area Ha 90% of CCA			Additional Irrigation Potential created in Ha
						GA	CCA	Kharif	Rabi	Avg.	
1	2	3	4	5	6	7	8	9	10	11	12
New propsed STP Disty	Budha Nalla 150000	150000	220 Cs	175600	53.54	15575	13544	12190	12190	12190	12190

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PROJECT ESTIMATE FOR THE DOMESTIC SEWERAGE OF LUDHIANA CITY AFTER TREATMENT AT STP THROUGH BUDHA NALLAH AND BY CONSTRUCTING NET WORK OF DISTRIBUTORY/WATER COURSE.

MAIN ABSTRACT OF COST

Part-I

	DIRECT CHARGES	AMOUNT IN RS.LACS
A	A-Preliminary	43.00
B	Land	2878.03
C	Works	19.95
D	Regulator	633.40
E	Falls	19.25
F	Cross Drainage Works	1767.00
G	Bridges	942.00
H	Escapes	402.88
I	Navigation works	0.00
K	Building	51.92
L-1	Earth Work	66.50
L-2	Lining	0.00
M	Plantation	0.00
N	Tanks & Reservoirs	0.00
O	Misc.	18.76
P	Maintenance	105.06
Q	Special T& P	1.58
R	Communication	0.00
S	Power Plant & Electrical System	0.00
T	Water supply works	0.00
U	Distributaries, Minors & Sub Minors	0.00
V	Water Courses and field channels	0.00
W	Drainage	0.00
X	Environment & Ecology	0.00
Y	Losses & Stock and Unforeseen	26.26
	Total Direct Charges	6975.59
	Indirect Charges	207.83
	Total	7183.42
	Say	**137.67 Cr.**

Executive Engineer
Sidhwan Canal Division
Ludhiana.

Superintending Engineer
Sirhind Canal Cirlce
Ludhiana.

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Annexure A1

PROJECT ESTIMATE FOR THE DOMESTIC SEWERAGE OF LUDHIANA CITY AFTER TREATMENT AT STP THROUGH BUDHA NALLAH AND BY CONSTRUCTING NET WORK OF DISTRIBUTORY/WATER COURSE.

DETAIL ABSTRACT OF COST

S.NO.	DESCRIPTION		AMOUNT (IN Lac)
	DIRECT CHARGES		
	I-WORK		
1	**A-PRELIMINARY**		
	Detailed Surveying,Levelling & observing Cross Section (L.S)	=	5.50
	Prepration & Printing of Project Reports (LS)	=	1.50
	Establishing & Fixing Bench Marks (LS)	=	2.50
	Cosultancy Charges (LS)	=	11.00
	Field Tests & Soil Classification (L.S)	=	2.50
	54 Km Havey Jungle Celearance	=	20.00
	Total	=	**43.00**
2	**B-LAND**		
I)	For straightening the alignement (7000x120/43560) =19.28 Acres		
ii)	For Drain		
	50000 x 20/ 43560 = 22.95 Acre		
	For disputed Land (L.S.) 40 Acre		
	Total Land = 82.23 Acre		
	Cost of 82.23 Acre land @ 25.00 Lac per Acre	=	2055.75
	Add 30% of compulsory Acquistion charges	=	616.72
	Add 5% of Crop Compensation Charges	=	102.78
	Add 5% for compensation of Buildigns	=	102.78
	Total	=	**2878.03**
3	**C-WORKS.**		
	57 No. Constructing outlets/Tail Clusters@ 35000/each.	=	19.95

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4	**D-REGULATOR**		
i)	Providing Head Regulator and Cross regulator of proposed disty. And cross regulator of proposed disty. And Budha Nala at RD 0 cost of civil works including protection works	=	600.00
	Cost of Gatges and Gearing		
	Gate Sizes (18 x 5.00) = 90 Sqft. @ 6000/per Sqft.		5.40
	Gate Sizes (65 x 5.00) = 325 Sqft. @ 6000/per Sqft.		19.50
ii	Intake Structure at RD 2500 of 6-R Disty and RD 175600 of propsed disty		
	Cost of Civil Works	=	5.50
	Cost of Gates & Gearing	=	3.00
	Total		633.40
5	**E-FALLS at RD**		
	Discharge upto 100 cs. @ 19.25		
	1 Nos Constructing falls at RD 132200		19.25
6	**F-CROSS DRAINAGE WORKS**		
	Syphon crossing at RD		
	11 No.21000, 30000, 40000, 58000, 67500, 70000, 75500, 93300, 102000,112000, 118000		242.00
	@ Rs. 22.00 Lacs each		
	1 No.Syphone Acqueduct at RD 45285 crossing Purain Drain 350/-		350.00
	1 N. Symphon Aqueduct crossing Jaisowal Drain at RD 110000		
	@ 800/- Lac		800.00
	1 N. Symphon Aqueduct cum Bridge at RD 156305 crossing Kishanpura		
	distributory		
	@ Rs.200.00		200.00
	Syphon Aqueduct at RD 159750 crossing Kishanpura Drain		
	@ Rs. 175.00		175.00
	Total		1767.00
7	**G.Bridges.**		
	Discharge above 100 cs.		
	7 No. construction of Single V.R.Bridges at RD 4492,6692,112545,		
	114530,117650,122244,123989,@ 13.15		

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			92.05
	27 Nos Construction of Double V.R.Bridges at RD 14380,17285,19978		
	22948,34390,35285,37723,41205,45485,47330,52030,53123,54800,		
	58766,60510,63989,66452,69477,73251,80389,85110,86600,89291,		710.10
	93000,97850,98731,104838,		
	Rs. 26.30 Lac each		
ii)	Discharge upto 100 cs.		
	9 Nos. Cosnstruction of Single V.R.Bridge at RD 128105,130665,		74.25
	132000,134800,135234,138400,164265,166645,173375,		
	Rs. 8.25		
	4 Nos. construction of Combind disty /drain V.R.Bridges at RD 145430,		
	148875,151840,152980,		
	Rs. 16.50 lac each		66.00
	Total		942.40
8	**H-Escapes**		
	1 No. Escape Regulator At RD 110000 of proposed distributory		
	Cost of Civil Works.		400.00
	Cost of gates & gearing Gate size 16 x 3 = 48 ft. @ 6000 per Sft.		2.88
	Total		402.88
9	**I-NAVIGATION WORKS**		Nil
10	**K-BUILDINGS**		
	6 Nos. (2700Sqft.) Construction of Residential Quarters		
	Required for the employees of Sidhwan Canal Division, Ludhiana.		
	Rs.1923 per Sq.ft of the covered Area.		51.92
11	**L-I EARTH WORK**		
	As per detasils attached.		6650
	L-II LINING		

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	GRAND TOTAL OF E/W & LINING		
12	M-PLANTATION		Nil
13	N-TANKS AND RESERVOIRS		Nil
14	O-MISCELLANEOUS		
	28800 Km (24 x 1200) running of Vehicles for inspection purpose during implementation of the project @ 13.70/K.M.		3.95
ii)	351 Nos. (175600/500) Fixing of Distance Marks & Boundary Pillars.Rs. 2680/-each (For cost refer Page No.		9.41
iii)	70 Nos. (175600/2500) Sign Boards/indentification Boards @ Rs.3000/each (M.R.)		2.10
iv	Visit of Dignitaries (L.S.)		1.10
v)	Technical Records/Photographic Records (LS)		1.10
vi)	Inaugural Ceremonies (L.S.)		1.10
	Total		18.76
15	P-MAINTENANCE		
	1% of the cost of I-works except the cost of A-Preliminary B-Land ,		105.06
	Q Special T& P		
	1% of (19.95 +633.40+19.25+1767+942.40+402.88+51.92+6650+18.76) 10505.56		
16	Q-SPECIAL T & P		
I)	1 No. purchase of computer with printer		0.38
	Rs. 37700/each (M.R.)		
ii)	1 No. purchase of Fax. Machine		0.10
	Rs. 10000/- each (M.R.)		
iii)	1 No. purchase of Photostate Machine		1.10
	rs. 55000/-		
	Total		1.58
17	R-Communication		
18	S-POWER PLANT & ELECT. SYSTEM.		
19	T-WATER SUPPLY WORKS		
20	U-DISTY, MINORS & SUB MINORS.		
21	V-WATER COURSES & FIELD CHARGES.		

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22	W-DRAINAGE		
23	X-ENVIRONMENT AND ECOLOCY		
24	Y-LOSSES ON STOCK AND UNFORESSEN ITEMS		
	0.25 % of the cost of 1-works except the cost of A-preliminary, B-land		
	Q-Special		
	0.25% of 10505.56	=	26.26
25	ESTABLISHMENT CHARGES		
	TOTAL DIRECT CHARGES	=	13559.49
	INDIRECT CHARGES		
	Capitalization of abutment of Land revenue & 5% of 2055.75 lacs.	=	102.78
	Audit & Account Charges @ 1% on 10Works 10505.56	=	105.05
	TOTAL INDIRECT CHARGES	=	207.83
	TOTAL INDIRECT AND DIRECT CHARGES.	=	13767.32
	Total Cost in Crores	=	137.67

Sub Divisional officer
Sidhwan Canal Sub Division
Ludhiana.

Sub Divisional officer
Moga Canal Sub Division
Moga.

Sub Divisional officer
Zira Canal Sub Division
Zira

Executive Engineer
Sidhwan Canal Division
Ludhiana.

Annexure-A2 (93)

PROJECT ESTIMATE FOR THE DOMESTIC SEWERAGE OF LUDHIANA CITY AFTER TREATMENT AT STP THROUGH BUDHA NALLAH AND BY CONSTRUCTING NET WORK OF DISTRIBUTORY/WATER COURSE.

ABSTRACT OF COST FOR L-I EARTH WORK

Qty.	Unit	Description	AMOUNT IN LACS
266850	cum	Earth work undressed combind lead 45 Meter including breaking of clods @ (39.77 +4 x 1.66) +12% = 51.98	138.71
1716521	cum	Earth work undressed for combind with avg. lead 5 KM including Ist Km and Last 2 Km Katcha including loading and unloading Complete in all respects. @ (142.50 + 20% 75 +20% 32.25)+15% 4.33 +4.15 +36.50 +12% +15.22 +15% = 256.11	4396.18
827187	cum	Earth work undressed with Avg. lead 5 KM including Ist KM and Last 2 KM Katcha including Loading and unloading Complete in all respects @ 142.50+20% of 75 +20% 32.25+15% 15.22 +15% = 205.74	1701.85
743250	sqm	Dressing of Earth work. @ 0.50 +12% = 0.56/Sqm	4.16
		Add 5% for water charges and contingency	6240.9
		Add cost as per detail attached	312.04
		G.Total	6552.84

Sub Divisional officer
Sidhwan Canal Sub Division
Ludhiana.

Sub Divisional officer
Zira Canal Sub Division
Zira

Sub Divisional officer
Moga Canal Sub Division
Moga.

Executive Engineer
Sidhwan Canal Division
Ludhiana.

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PROJECT ESTIMATE FOR THE DOMESTIC SEWERAGE OF LUDHIANA CITY AFTER TREATMENT AT STP THROUGH BUDHA NALLAH AND BY CONSTRUCTING NET WORK OF DISTRIBUTORY/WATER COURSE.

ABSTRACT OF COST FOR L-I EARTH WORK

Qty.	Unit	Description	AMOUNT IN LACS
28853	cum	Earth work undressed combind lead 45 Meter including breaking of clods @ (39.77 +4 x 1.66) +12% = 51.98	15.00
37468	cum	Earth work undressed for combind with avg. lead 5 KM including Ist Km and Last 2 Km Katcha including loading and unloading Complete in all respects. @ (142.50 + 20% 75 +20% 32.25)+15% 4.33 +4.15 +36.50 +12% +15.22 +15% = 256.11	77.09
63172	Sqm	Dressing of Earth work @ 0.50 +12% = 0.56/ Sqm	0.35
			92.44
		Add 5% for water charges and contingency	4.62
		G.Total	97.06

Sub Divisional officer
Sidhwan Canal Sub Division
Ludhiana.

Sub Divisional officer
Zira Canal Sub Division
Zira

Sub Divisional officer
Moga Canal Sub Division
Moga.

Executive Engineer
Sidhwan Canal Division
Ludhiana.

PROJECT ESTIMATE FOR THE DOMESTIC SEWERAGE OF LUDHIANA CITY AFTER TREATMENT AT STP THROUGH BUDHA NALLAH AND BY CONSTRUCTING NET WORK OF DISTRIBUTORY/WATER COURSE.

EARTH WORK STATEMENT RD 0-60000

S.No	X-Section RD	Length	Earth work Excavation			Earth work Puddling			Earth work Dressed		
			Area	Mean Area	Contents	Area	Mean Area	Contents	Area	Mean Area	Contents
1	2	3	4	5	6	7	8	9	10	11	12
1	150	150	0	0	0	123.22	61.61	9242	45.43	0	0
2	10000	9850	86.25	43.12	424732	295.13	209.18	2060423	42.74	44.08	434188
3	20000	10000	58.96	72.6	726000	158.32	226.72	2267200	41.02	41.88	418800
4	30000	10000	33.04	46	460000	319.76	240.04	2400400	40.37	40.69	406900
5	40000	10000	50.7	41.87	418700	0	341.47	3414700	43.47	41.92	419200
6	50000	10000	135.04	92.87	928700	370.95	365.86	3658600	42.24	42.86	428600
7	60000	10000	116.77	125.9	1259000	327.14	348.85	3488500	44.42	43.33	433300
8	70000	10000	87.03	101.9	1019000	399.63	363.38	3633800	41.75	43.08	430800
9	80000	10000	88	84.51	845100	393.59	396.61	3966100	43.16	42.45	424500

10	90000	10000	148.69	118.34	1183400	86.65	240.12	2401200	33.83	38.5	385000
11	100000	10000	25.59	87.14	871400	378.78	232.71	2327100	45.52	39.67	396700
12	110000/109850	10000	0	12.79	127900	657.99	518.38	5183800	53.63	49.57	495700
13	120000	10000	0	0	0	321.1	489.55	4895500	48.8	51.21	512100
14	130000	10000	0	0	0	446.82	383.96	3839600	52.43	50.6	506000
15	140500	10500	28	7.85	82425	450.76	448.79	4712295	52.43	52.43	550515
16	150000	9500	0	32.15	305425	401.95	426.355	4050372.5	51.39	51.91	493145
17	159750	9750	56	46.155	450011	306.25	354.1	3452475	48.95	50.17	489157.5
18	175600	15850	0	28	443800	301.82	304.05	4819192.5	48.47	48.71	772053.5
					9545593.25			60580499.5			7996659 Sft
				Or	268856 cum			1716521 cum			743250 Sqm

1. Earth work undressed combind lead 45 Metre
2. Earth work undressed for combind lead 5 KM
3. Earth work Dressed with Avg. Lead 5 KM

= 268856 cum
= 1716521 cum
= 743250 Sqm

Sub Divisional officer Sidhwan Canal Sub Division Ludhiana.	Sub Divisional officer Moga Canal Sub Division Moga.	Sub Divisional officer Zira Canal Sub Division Zira	Executive Engineer Sidhwan Canal Division Ludhiana.

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PROJECT ESTIMATE FOR THE DOMESTIC SEWERAGE OF LUDHIANA CITY AFTER TREATMENT AT STP THROUGH BUDHA NALLAH AND BY CONSTRUCTING NET WORK OF DISTRIBUTORY/WATER COURSE.

EARTH WORK STATEMENT RD 140000-150000

S.No	X-Section RD	Length	Earth work Excavation			Earth work Puddling			Earth work Dressed		
			Area	Mean Area	Contents	Area	Mean Area	Contents	Area	Mean Area	Contents
1	2	3	4	5	6	7	8	9	10	11	12
1.	140000-150000	10000	101.88	0	1018800	234.18	0	2341800	0	0	0
					1018800 cft			2341800 cft			
				or							

1. Earth work Long lead 5 KM 66321 - 28853 = 37468
2. Earth work Local available = 28853
3. Earth work Dressed (2x25+2x5x1.80) x 10000 = 680000 Sft = 63172 Sqm

Sub Divisional officer Sidhwan Canal Sub Division Ludhiana.	Sub Divisional officer Moga Canal Sub Division Moga.	Sub Divisional officer Zira Canal Sub Division Zira	Executive Engineer Sidhwan Canal Division Ludhiana.

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Annexture A4

PROJECT ESTIMATE FOR THE DOMESTIC SEWERAGE OF LUDHIANA CITY AFTER TREATMENT AT STP THROUGH BUDHA NALLAHA AND BY CONSTRUCTING NET WORK OF DISTRIBUTORY/WATER COURSE.

ANALYSIS OF RATE

Carriage of materials

1.	C/o of Cement with avg. lead 15 km pucca including loading & unloading complete in all respect.(CSR Item 5.2 ii) @ (72+5x8.25+5x6.75)x15%(1.68+1.68)+13% = 169.05/Tone +20+3.80=12.25 Bag	**12.25 / Bag**
2.	C/o of Bricks with avg. lead 10 km pucca.(CSR Item 5.2 ii) @ (288.75x5x27.75)+15%+(39.20+39.20)+13% = 580.22/%	**580.22 /%**
3.	C/o of sand with avg. lead 60 km @(142.50+5x11.25+10x7.50+20x4.50)+15%+(20x3.35)+10% (15.80+9.80)=26.60+13% = 522.07/cum	**522.07/cum**
4.	C/o of course sand with avg. lead 225 Km including loading & unloading @(142.50+5x11.25+10x7.50+20x4.50)+15%+(20x3.35)+10% +(9.0x1.70)+8%+(75x1.10)+5%(16.80+9.80)+13% = 773.94/cum	**773.94/cum**
5.	C/o shingle with avg.lead 225 Km including loading & unloading @ 773.94-11.07=762.87 / cum	**762.87/cum**
6.	C/o of Brick bats with avg.lead 25 Km including loading & unloading @(142.50+5x11.25)+15%+26.60+13% = 258.62/cum	**258.62/cum**
7.	C/o of steel with avg.lead 50 Km including loading & unloading @(101.25+6x5x5.62x5)+15%+(56.0+44.80)+13% = 297.16/Ton or 29.72/ Qtl	**29.72 / Qtl**

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ANALYSIS OF RATES

1.	E/work excavation undressed with avg. lead 15 mtr a combined lead up to 15 mtr including breaking of clouds complete in all respect.(CSR Item 6.2 b) @ 39.77+12%=44.54/ cum	44.54/ cum
a)	Extra E/work excavation undressed for every 7.5 additional lead behind 15 mtr but only 300 mtr i/c breaking of clouds complete in all respect.(CSR Item 6.2 b(i) @ 1.66+12% = 1.86 cum	1.86/ cum
2.	E/work excavation undressed with an av. lead 1.00 km. Katcha including loading & unloading complete in all respect.(CSR Item 5.2 (i)) @ (75+20%of 75) +15%+16.80 + 13%= 122.48/cum	122.48/ cum
3.	E/work excavation undressed with an av. lead 2.00 km. Katcha including loading & unloading complete in all respect.(CSR Item 5.2 (i)) @(93+20%of 93)+15%+16.80+13%=147.32/cum	147.32/cum
4.	E/work excavation undressed with an av. lead 3.00 km. Katcha including loading & unloading complete in all respect.(CSR Item 5.2 (i)) @(110.25+20%of 110.25)+15%+16.80 +13%=171.13/cum	171.13/cum
5.	E/work excavation undressed with an av. lead 4.00 km. Katcha including loading & unloading complete in all respect.(CSR Item 5.2 (i)) @(126.75+20%of 126.75)+15%+16.80 + 13%=193.90/cum	193.90/cum
6.	E/work excavation undressed with an av. lead 5.00 km. Katcha including loading & unloading complete in all respect.(CSR Item 5.2 (i)) @(142.50+20%of 142.50)+15%+16.80 + 13%=215.63/cum	215.63/cum
7.	E/work excavation undressed with an av. lead 6.00 km.	

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	Katcha including loading & unloading complete in all respect.(CSR Item 5.2 (i)) @(142.50+11.25+1.50x1+20%of 153.75)+15%+16.80 + 13% =231.16/cum	231.16/cum
8.	Extra for laying E/w in 20 cm layers,watering & rolling to specifications complete in all respect.(CSR Item6.2(i toiii) (4.33+4.15+36.50)+12%=50.38/ cum	50.38/ cum
9.	Dressing of E/work complete in all respect(CSR Item 6.3(i) @ Rs. 0.50+12%=0.56/ sqm	0.56/sqm
10.	Extra Dressing of E/work complete in all respect. @ Rs. 1.69+12%=1.89/cum (CSR Item 6.12)	1.89/cum
11.	Compaction for earth taken from private land @ 25+12%%=28/cum (CSR Item 6.4)	28.00/cum
12.	E/w Excavation in foundation and trenches etc in all kinds of soil where pick-jumper work is not involved and not exceeding 2mtr depth i.c dressing of bottom and sides of trenches,stacking of excavated soil clear from the edge of excavation and subsequence filling around masonry in 15 cm layers with compaction in doing disposal of all surplus soil as directed with lead of 30 mtrs. (CSR item 6.6) @ 66.28+12% = 74.23/cum	74.23/cum
13.	Laying cement sand mortar1:5 including supply & carriage of all material and loading & unloading complete in all respect.	
	5.75 bags S/o & C/o Cement including loading & unloading @ (295+12.25)=307.25/bag	1766.69
	1.15 cum S/o & C/o sand including loading & unloading @ (52.75+522.07)=574.82	661.04
	1.00 cum Labour charges @ 425.19+12% = 476.21/cum	476.21
	Total =	**Rs.2903.94**

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14.	E/work for Lip cutting for lining of Irrigation channels inclusive of all allowances leads and dressing Upto 1.50 mtr. height (CSR 19.23(a)) @ Rs. 68.78+12% = 77.03/cum		77.03/cum
15.	Extra E/work for Lip cutting for lining of Irrigation channels inclusive of all allowances leads and dressing Exceeding 1.50 mtr. but upto 3.00 mtr.height @ Rs.72.10+12% = 80.75/cum (CSR 19.23(b)		80.75/cum
16.	Laying brick lining 7.5 cm thick laid in 1:3 C.S.M. over first layer of 12.5 mm thick cement plaster on subgrade and second layer of 10mm thick cement plaster 1:3 including supply, carriage and loading & unloading of cement, sand & bricks complete in all respect. (For side lining)		
	364 Nos.	S/o brick @ Rs. 4418.18/%o Nos.	1608.22
	364 Nos.	C/o bricks from nearest kiln with an av. lead 25 km including loading & unloading @ Rs. 580.22/% Nos.	211.20
	0.47 cum	S/o Sand @ Rs. 52.75 /cum	24.79
	0.47 cum	C/o Sand from to site of work with an av. lead 60 km pucca including loading & unloading @ Rs.522.07/cum	245.37
	3.89 bags	S/o Cement @ Rs. 295/bag	245.37
	3.89 bags	C/o Cement with lead 15 km. including loading & unloading @ Rs.12.25/bag	47.65
	10 sqm	Labour charges @ Rs. 82.06+12%=91.91/sqm	919.10
		Total	**4203.88 Or 420.39/sqm**
17.	**Laying brick lining 7.5 cm thick laid in 1:3 C.S.M. over first layer of 12.5 mm thick cement plaster on subgrade and second layer of 10mm thick cement plaster 1:3 including supply, carriage and loading & unloading of cement, sand & bricks complete in all respect.(For Bed)**		

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	364 Nos.	S/o brick @ Rs. 4418.18%o Nos.	1608.22
	364 Nos.	C/o bricks from nearest kiln with an av. lead 10 km including loading & unloading @ Rs. 580.22/%o Nos.	211.20
	0.47 cum	S/o Sand @ Rs. 52.75 /cum	24.79
	0.47 cum	C/o Sand from to site of work with an av. lead 60 km pucca including loading & unloading @ Rs.522.07/cum.	245.37
	3.89 bags	S/o Cement @ Rs. 295/bag	1147.55
	3.89 bags	C/o Cement with lead 15 km. including loading & unloading @ Rs. 12.25/bag	47.65
	10 sqm	Labour charges @ Rs.(82.06-10%)+12%=82.71/sqm	827.10
		Total =	**4111.88 Or 411.19/sqm**
18.	Dressing Bed and preparation of sub grade for lining @ 4.05 + 12% = 4.54/sqm (CSR item 19.1)		4.54/sqm
19.	Dressing of side slopes & preparation of sub grade for lining @ 6.60 + 12% = 7.39/sqm(CSR item 19.2)		7.39/sqm
20.	Extra allowances for producing templates in curved position. (CSR itm19.14) @ 6.89 + 12% = 7.72 sqm		7.72/sqm
21.	Extra allowances for scaffolding in tiles & concrete lining. (CSR itm19.16) @ 10.62 + 12% = 11.89 sqm		11.89/sqm
22.	Curing lining for 28 days in bed (CSR item 19.13 a) @ 3.05 + 12% = 3.42 Sqm		3.42/sqm
23.	Curing lining for 28 days in side slopes @ Rs. 11.05 + 12% = 12.38 Sqm		12.38/sqm
		Total	
24.	**Cement Brick masonry 1:3 Foundation and plinth**		

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	480 Nos	S/o & C/o loading and unloading of Bricks @ Rs. 4418+580.22=4998.40/ % 0 Nos.	2399.23
	2.40 Bags	Supply, Carriage, loading and unloading of Cement @ Rs.295+12.25=307.25 per Bag	737.40
	0.25 cum	Supply, Carriage, loading and unloading of Sand @ Rs.52.75+522.07=576.82 per cum	143.71
	1.00 cum	Labour charges @ Rs.(355.18+12% = 397.80 (CSR Item No.11.9)	397.80
		Total	**3678.14**
25.	**Cement Brick masonry 1:3 Super Structure**		
	480 Nos	S/o & C/o loading and unloading of Bricks @ Rs. 4418+580.22=4998.40/ % 0 Nos.	2399.23
	2.40 Bags	Supply, Carriage, loading and unloading of Cement @ Rs.295+12.25=307.25 per Bag	737.40
	0.25 cum	Supply, Carriage, loading and unloading of Sand @ Rs.52.75+522.07=576.82 per cum	576.82
	1.00 cum	Labour charges @ Rs.537.78+12% = 602.31/cum	602.31
		Total	**4315.76**
26.	**Cement Brick masonry 1:3 Foundation and plinth**		
	480 Nos	S/o & C/o loading and unloading of Bricks @ Rs. 4418+580.22=4998.40/ % 0 Nos.	2399.23
	1.75 Bags	Supply, Carriage, loading and unloading of Cement @ Rs.295+12.25=307.25 per Bag	537.69
	0.25 cum	Supply, Carriage, loading and unloading of Sand @ Rs.52.75+522.07=576.82 per cum	144.21
	1.00 cum	Labour charges @ Rs.355+18+12% = 397.80/cum	397.80
		Total	**3478.93**

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27.	**Laying 1st class brick masonry in cement sand mortar 1:4 in super structure including supply & carriage loading and unloading of cement sand and brick complete in all respects**		
		Same as per Item No. 26 above except Labor Charges =3478.93-397.80= 3081.13	3081.13
		Labour Charges (587.78+12% =602.31	602.31
		Total	**3683.44**
28.	**350mm wide brick on edge coping laid with cement sand mortar 1:3 and filling triangular portion with over 10 mm thick CP 1:4 over 12.50 mm thick CP i.c prepration of sub-grades.(unit 10 Mtrs)**		
	2.00 sqm	Prepration of sub-grades@ 4.05+12% = 4.54 Sqmtr	9.08
	1.00 sqm	10mm thick cement plaster 1:3 @ 3.14+12% = 40.48 sqm	40.48
	1.00 sqm	12.5 mm thick cement plaster 1:5 @45.18+12% = 50.60 sqm	50.60
	2.00 sqm	cement plaster 12.50 mm thick 1:3 @45.18+12% = 50.60 sqm	101.20
	195 nos	S/o brick @ Rs. 4418/%o Nos.	861.55
	195 nos	C/o bricks including loading & unloading @ 580.22/% Nos.	113.14
	1.71 Bag	S/o & C/o of cement @ 295+12.25 =307.25 / Bag	525.40
	0.20 cum	S/O sand @ 52.75 / Cum	10.55
	0.20 cum	C/o ,Loading & Unloading charges @522.07/ Cum	104.41
	0.41 cum	Labour charges for brick masnry 1:3 Cement sand mortor @ 397.80/cum	163.10
	0.036	Labour charges for cement sand mortor1:3	17.14

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		@476.21	
		Total =	**1996.65 or 199.67/mtr**
29.	**Brick on edge coping 9" wide $4^{1/2}$ thick cement sand mortar 1:3,10 mm thick CP 1:4 over 12.50 mm thick CP 1:5 and preparation of sub-grades.(unit 10 Mtrs)**		
	0.91 sqm	Prepration of sub-grades @ 4.05+12% = 4.54 Sqmtr	4.13
	0.76 sqm	10mm thick cement plaster 1:3 @ 36.14+12% = 40.48 sqm	30.76
	0.76 sqm	12.5 mm thick cement plaster 1:5 @45.18+12% = 50.60 sqm	38.46
	0.91 sqm	cement plaster 12.50 mm thick 1:3 @45.18+12% = 50.60 sqm	46.05
	130 nos	S/o brick @ Rs. 4418/%o Nos.	574.36
	130 nos	C/o bricks including loading & unloading @ 580.22/% Nos.	754.29
	1.15 Bag	S/o & C/o of cement @ 295+12.25 =307.25 / Bag	353.34
	0.13 cum	S/O, Loading & Unloading sand @ 52.75+522.07=574.82 / Cum	74.73
	0.25 cum	Labour charges for brick masnry 1:3 Cement sand mortor @ 397.80/cum	99.45
	0.036 cum	Cement sand mortor 1:3 @ 476.21/cum	17.14
		Total =	**1992.7 or 199.27/mtr**
30.	**Deep Variety in Cement Sand Mortor 1:3 (unit 1 Sq/mtr)**		
	0.015 bag	S/o & C/o of cement bags @ 307.25	4.61
	0.0014 cum	S/o & C/o of sand i.c loading & Unloding @574.82/cum	0.80

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	1.00 Sqm	Labour Charges (CSR item 15.60) @ 46.15+12%=51.69/sqmtr	51.69
		Total	**57.10**
31.	**Deep Variety in Cement Sand Mortor 1:2 (unit 1 Sq/mtr)**		
	0.044 bag	S/o & C/o of cement bags @ 307.25	13.52
	0.003 cum	S/o & C/o of sand i.c loading & Unloding @574.82/cum	1.72
	1.00 Sqm	Labour Charges (CSR item 15.59) @ 46.15+12%=51.69/sqmtr	51.69
		Total	**66.93**
32.	**Laying cement concrete1:4:8 with 40mm brick ballast hand mixed for foundation(unit 1 cum)**		
	1.04 cum.	S/o brick bats @ Rs. 41+15%=307.50	319.80
	1.04 cum	Breaking of Brick Bats into brick Ballast 40 mm @ 82.50	85.80
	0.96 cum.	C/o brick bats from nearest kiln with an av. lead 10 km including loading & unloading @ Rs. 358.62/cum.	248.28
	0.48 cum	S/o & C/o of Sand @ 574.82 /cum	275.91
	3.50 bags	S/o & C/o Cement bags@ Rs. 307.25/bag	1075.38
	1.00 cum	Labour charges@ Rs.330.21+12% = 369.84cum	369.84
		Total =	**Rs. 2375.01**
33.	**Reinforced cement cons. M-20 with shingle machine mixed including materials at site,curing using of vibrator & shuttering etc. complete in all respects. (For Main Slab)**		**(Unit per cum)**
	7.5 Bags	Supply of cement @ 295/bag	2212.50
	7.5 Bags	Carriage, loading and unloading of Cement with avg lead 15 km pucca @ 12.25 per Bag	91.88
	0.43 cum	Supply of course Sand @ 182.56 per cum	78.50

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	0.43 cum	Carriage, loading and unloading of coarse Sand with avg lead 225 km pucca @ 773.94 per cum	332.79
	0.85 cum	Supply of Shingle @ Rs.281.66/- per cum	239.41
	0.85 cum	Carriage, loading, unloading & washing of Shingle with avg. lead of 225 Km pucca @ Rs.762.87/- per cum	648.44
	8.25 sqm	Centering & shuttering @ 162.80+12% =182.34 sqmtr	1504.30
	1 cum	Labour charges RCC(M-20) @ Rs.(1271.86+12%=1424.48 per cum	1424.48
		TOTAL	**6532.30**
34.	**Reinforced cement cons. M-20(1:1$^{1/2}$:3) with shingle machine mixed including materials at site,curing using of vibrator & shuttering etc. complete in all respects. (For Approach Slab)**		**(unit per cum)**
	7.5 Bags	Supply of cement @ 295/bag	2212.50
	7.5 Bags	Carriage, loading and unloading of Cement with avg lead 15 km pucca @ 12.25 per Bag	91.88
	0.343 cum	Supply of course Sand @ 182.56 per cum	78.50
	0.343 cum	Carriage, loading and unloading of coarse Sand with avg lead 225 km pucca @ 773.94 per cum	332.79
	0.665 cum	Supply of Shingle @ Rs.281.66/- per cum	239.41
	0.665	Carriage, loading, unloading & washing of Shingle with avg. lead of 225 Km pucca @ Rs.762.87/- per cum	648.44
	1 cum	Labour charges RCC(M-20) @ Rs.(921.39+12%=1031.96 per cum	1031.96
		TOTAL	**6139.78**
35.	**Cement concrete M-15(1:2:4) with shingle machine mixed including materials at site,curing using of vibrator centering & shuttering etc. complete in all respects.**		**(unit per cum)**

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	6.50 Bags	Supply,Carriage, loading and unloading of Cement with avg lead 10 km pucca @ 307.25 per Bag	1997.12
	0.45 cum	Supply,Carriage, loading and unloading of coarse Sand with avg lead 150 km pucca @ 773.94+182.56= 956.50 per cum	430.43
	0.90 cum	Supply of Shingle @ Rs. 281.66 per cum	253.49
	0.90 cum	Carriage, loading, unloading & washing of Shingle with avg. lead of 150 Km pucca @ Rs.762.87 per cum	686.58
	1 cum	Labour charges RCC(M-20)(CSR Item22.90) @ 686.92+12% = 769.35 per cum	769.35
		TOTAL	**4136.97**
36	**Reinforced Cement concrete M-15(1:2:4) with shingle machine mixed including materials at site, curing using of vibrator centering & shuttering etc. excluding S/o & C/o of steel.**		
		Same as per item no. 35 except labour charges @(4136.97-769.35)	3367.62
		Labour charges for RCC,M-15 @869.29+12% = 973.60 (CSR 21.32)	973.60
		Total	**4341.22**
37.	**S/o & C/o and fixing for steel up to 20mm dia**		
	1 Qtl	S/o Steel @ Rs. 4300 per Qtl.	4300.00
	1Qtl	C/o Steel from with Avg. lead 50 Km. pucca i.c loading & unloading @ 29.72 qtl	29.72
		Labour Charges (C.S.R. Item 18.18) @ 358.23 + 12% = 401.22	401.22
		Total	**4730.94**
38.	**S/o & C/o structural steel and fixing**		

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		Same as per item no.37 except labor charges (4730.94-401.22)+200= 4529.72	4529.72
		Labour Charges (C.S.R. Item 18.30) @ 1970.81 + 12% = 2207.31/-qtl	2207.31
		Total	**6737.03**
39.	**Cement concrete M-15(1:3:6) with shingle machine mixed including materials at site, including using of vibrator centering & shuttering etc. complete in all respect**		
	4.50 Bags	Supply of cement @295/bag	1327.50
	4.50 Bags	Carriage, loading and unloading of Cement with avg lead 15 km pucca @ 12.25per Bag	55.13
	0.47 cum	Supply of course Sand @ 182.56 per cum	85.80
	0.47 cum	Carriage, loading and unloading of coarse Sand with avg lead 150 km pucca @ 773.94 per cum	363.75
	0.94 cum	Supply of Shingle @ 281.66/- per cum	264.76
	0.94 cum	Supply of Shingle @ 762.87/- per cum	717.10
	1 cum	Labour charges cement concrete(CSR 21.40) @ Rs.519.19+12% = 581.49 per cum	581.49
		TOTAL	**3395.53**
40.	**Filling Sand Behind wing walls & abutments (compacted)**		Unit cum
	1 cum	S/o sand @ 52.75/cum	52.75
	1 cum	C/o sand @ 522.07 /cum	522.07
	1 cum	Sand filling @ 155.63+12% = 174.31	174.31
		TOTAL	**749.13**
41.	**Dry brick on edge paving over 25mm thick mud mortar grouted with sand**		Unit 10 sqmt
	575 no.	S/o Bricks @ 4418 / %	2540.00
	575 no.	C/o including loading & unloading Bricks @ 580.22 / %	333.63

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	0.15 cum	S/o sand @ 52.75	7.91
	0.15 cum	C/o including loading & unloading sand @ 522.07	78.31
	10 sqmtr	Labour Charges 30.07 + 12% = 33.68/- sqmt	336.80
		TOTAL	**3296.65**
42.	**Laying 200mm (0.65') thick brick masonry cement mortar 1:4 over 150mm (0.50') thick M-10 in-foundation and plinth.**		
	96 Nos.	S/o Brick @ Rs. 4418/- % Nos.	424.15
	96 Nos.	C/o & Loading & Unloading of bricks @ Rs. 580.22 % Nos.	55.70
	1.046 Bags	S/o Cement @ Rs. 295/- per Bag.	308.57
	1.046 Bags	C/o and Loading & Unloading of Cement @ Rs. 12.25 per Bag	12.81
	0.104 Cum	S/o Sand @ Rs. 52.75 per Cum	5.49
	0.104 Cum	C/0 and Loading & Unloading of Sand @ Rs. 522.07 per Cum	54.30
	0.128 Cum	S/o Shingle Size 12mm @ Rs. 281.66 per Cum	36.05
	0.128 cum	C/o and Loading & Unloading of Shingle @ Rs. 762.87 per Cum	97.65
	0.150 Cum	For Labour Charges of conc. @ 769.35 (CSR 22.90)	115.43
	0.200 Cum	Labour Charges for brick masonary 1:4 @ 355.18+12%	79.56
		Total	**1189.71**
43.	**Laying stone in wire creates including supply and carriage. Loading & Unloading of stone complete in all respects as per drawing, design and specifications.**		
	1.0 Cum	S/o Stone @ Rs. 344.31/- per Cum	344.31

	1.0 Cum	C/o ,Loading & Unloading @ Rs. 762.87/ Cum	762.87
	1.0 Cum	Labour Charges @ 104.26 + 12% = 116.77	116.77
		Total	**1223.95**
44.	**Weaving wire of requisite mesh including cost of supply and carriage.**		
	2.20 kg	Anniled wire @ 41340 Mt.	90.95
	1 Sq. Mtr.	Weaving Charges@ 2373+12% = 26.56/sqmtr	26.56
		Total	**121.63**
45.	**Extra for smooth surface with steel shuttering exposed surface (CSR 9.16)** @ 102.12+12%=114.24		**114.24**
46.	**Providing & fixing 18mm vide pre-moulded bituminous filling for expansion joint including cost of ceiling compound and primer coat 20mm vide** @ 1+12% =1.12 (C.S.R. Item 24.40)		11.20 Mtr/ Depth
47.	**Rubbing top surface for abutments and piers rubbed with coir bore natum stone.**		25 Sq. Mtr. / Market Rate
48.	**10 mm thick cement plaster 1:3 including supply, carriage, loading and unloading of all materials at site, complete in all respect.**		(Unit per Sqm.)
	0.12 bags	Supply,carriage,loading & unloading of cement @ Rs. (295+12.25)= 307.25 per bag	36.87
	0.012 cum	Supply, carriage, loading and unloading of sand @ Rs. 574.82per cum	6.90
	1.00 sqm	Labour charges @ 36.14+12% = 40.48 per sqm	40.48
		TOTAL	**84.25**
49.	**Laying Dry Brick bats including breaking, stacking, supply, carriage, loading and unloading of brick bats etc. at site, complete in all respect.**		(Unit per cum)
	1.00 cum	Supply, Carriage, loading and unloading of brick	566.12

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		bats @ Rs.307.50+258.62=566.12 per cum	
	1.00 cum	Labour charges @ Rs.(155.63+12%)= 174.31 per cum	174.31
		TOTAL	**744.43**
50.	Preparation, watering and raming of surface for laying concrete (C.S.R. Item 10.34) @ 5.17+12% = 5.79		**5.79**
51.	Dismantling brick work and cement hydraulic work complete in all respects. @ (241.54+50%)+12% = 405.79		405.79 Cum
52.	Dismantling brick work in cement non hydraulic work complete in all respects. @ (241.54+12%)		270.52 Cum
53.	Dismantling cement concrete 1:3:6 hydraulic work complete in all respects. @ (340.54+50%) + 12% = 580.51		580.51 cum
54.	**Making Sikri Sarkanda temporary godown 3m x3m with 2 m height 1.1/2 brick thick burnt laid dry excluding cost of bricks but including the cost of other material** @ 2400+15%= 2760 each		**2760.00**
55.	**Dismantling RCC 1:1 ½ :3 =779.99+15%**		**896.99 Cum**
56.	**Dismantling RCC 1:3 :6 = 345.54 + 15%**		**397.37**
57. (a)	**Ordinary jungle clearance of both banks of running disty./ Minor & drains with discharge upto 1.5 cums** $\frac{(1248+1920.01)}{2}$**+15%**		**1821.60 KM**
(b)	**1.5 cums but upto 4.5 cums** $\frac{(1920+2496.01)}{2}$**+15%**		**2539.20 Km**
(c)	**Discharge exceeding 4.5 cums** $\frac{(2496+3168.01)}{2}$**+15%**		**3256.81 KM**

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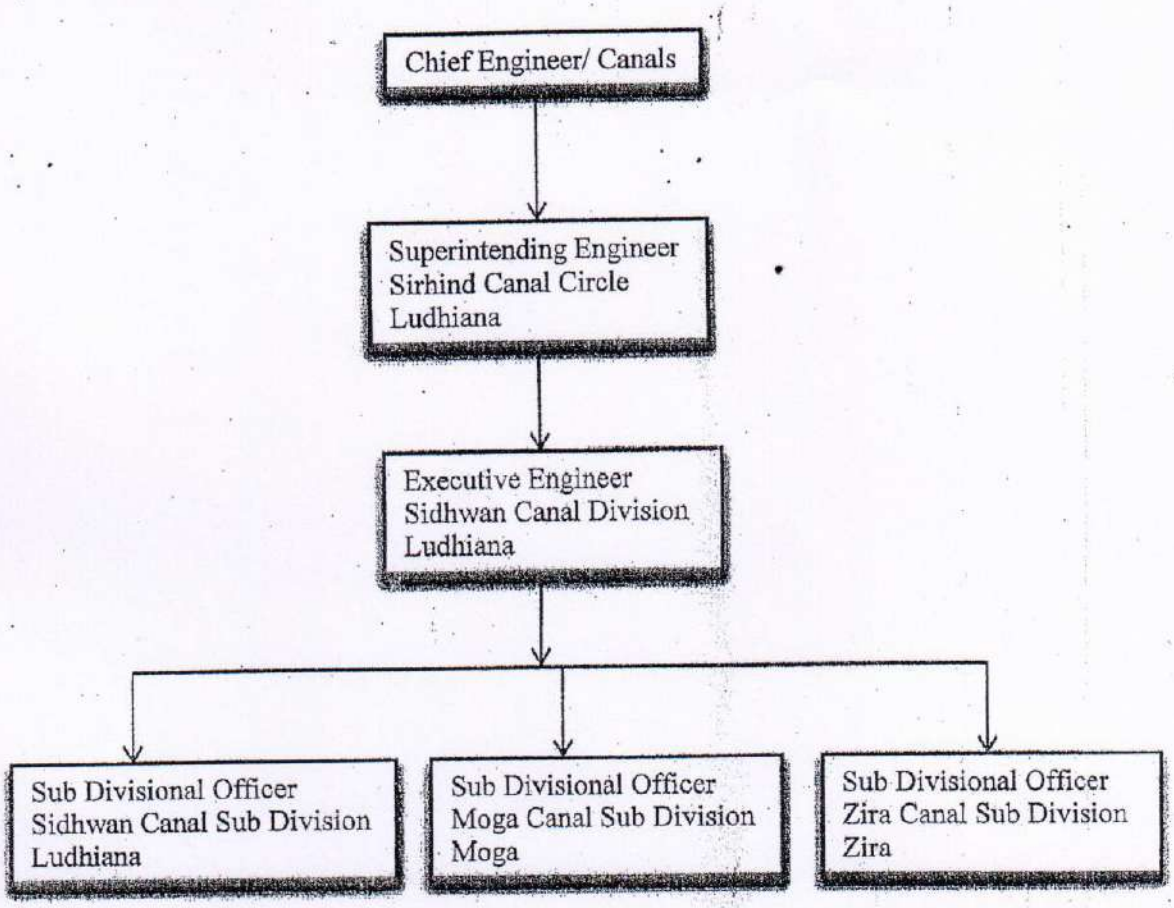
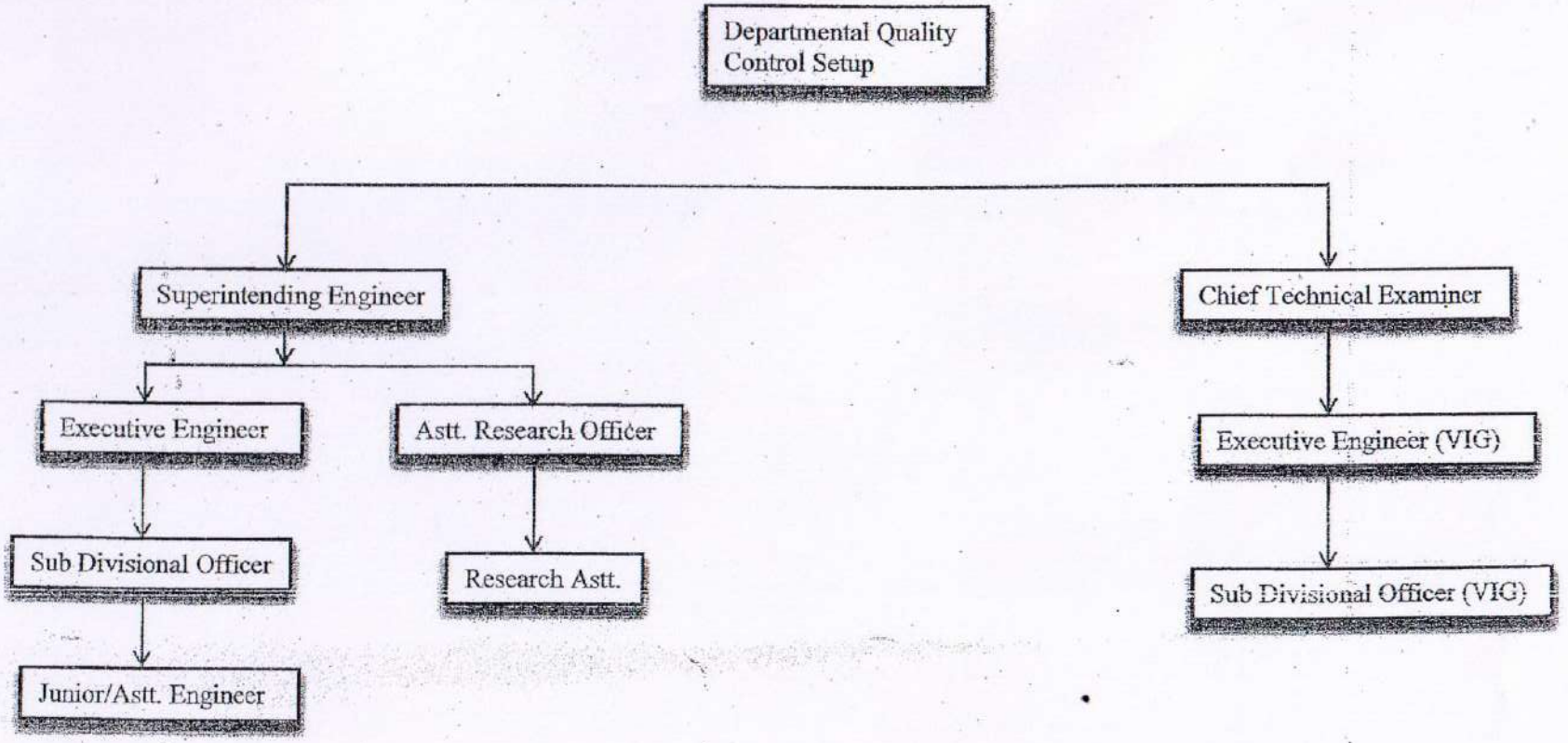
Annexure A5

PROJECT ESTIMATE FOR THE DOMESTIC SEWERAGE OF LUDHIANA CITY AFTER TREATMENT AT STP THROUGH BUDHA NALLAHA AND BY CONSTRUCTING NET WORK OF DISTRIBUTORY/WATER COURSE.



Annexure C

QUALITY CONTROL MANAGEMENT SETUP



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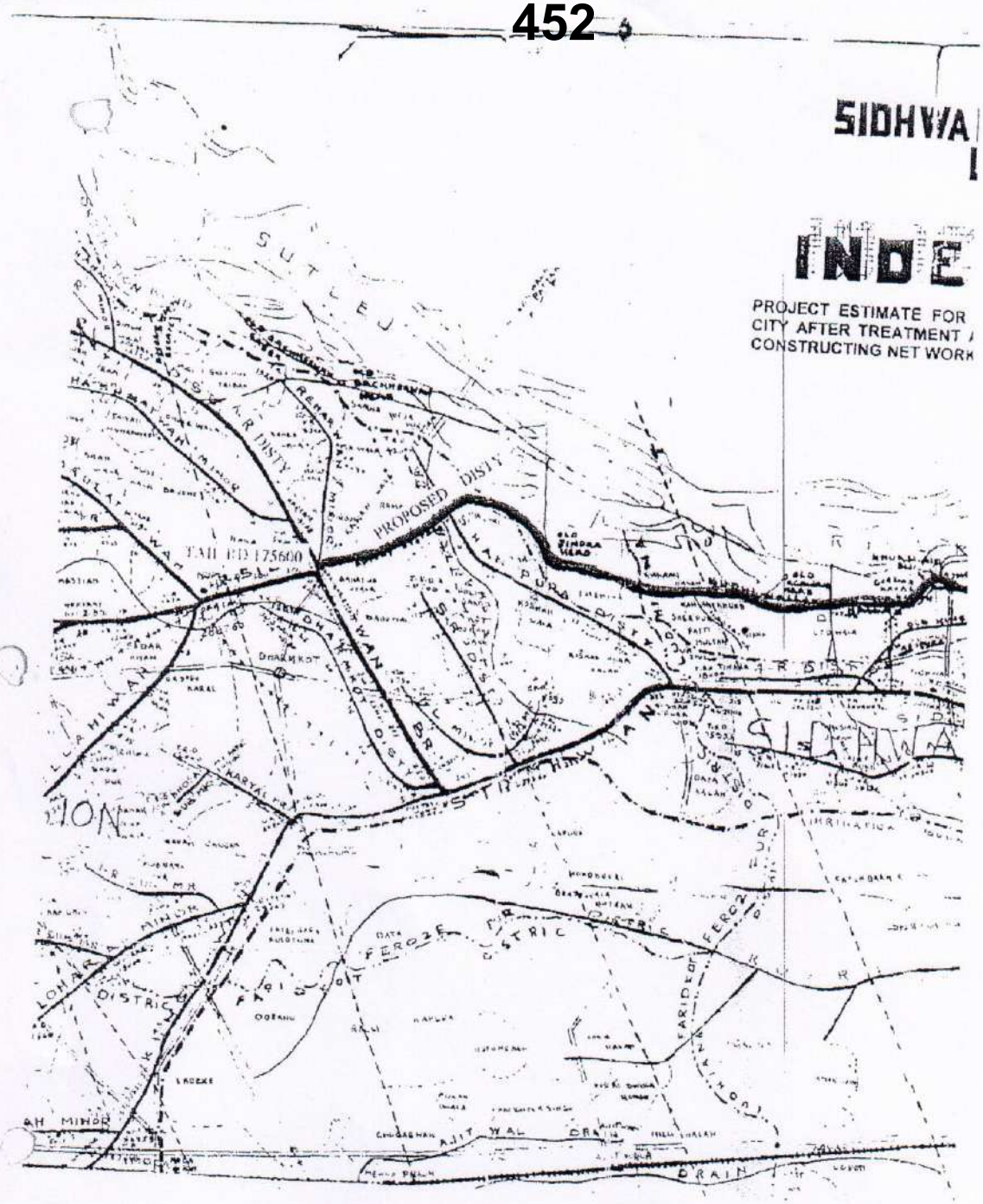
SIDHWA

INDE

PROJECT ESTIMATE FOR
CITY AFTER TREATMENT
CONSTRUCTING NET WORK



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DIVISION
UDHIANA

PLAN

E DOMESTIC SEDWERAGE OF LUHDIANA
STP THROUGH BUDHA NALLAHA AND BY
F DISTRIBUTORY/WATER COURSE.

SALIENT FEATURE

1	Total Cost of the estimate	Rs. 120.28 Lac
2	Location of Project Area	In the Districts Ludhiana, Moga & Ferozepur
3	Benifited Vilalges in Nos.	35 Nos.
4	Total GA/CCA under Project	38472/33454 Acres
5	Type of Canal	Un-Lined
6	Benifited Area	33454 Acres
7	Length of Channel	53.54 KM.
8	Benifited Cost Ratio	2.74:1