खंड–4
(केवल कार्यालय उपयोग हेतु)

Volume-IV
(FOR OFFICIAL USE ONLY)

सत्यमेव जयते

भारत सरकार
GOVERNMENT OF INDIA
जल संसाधन, नदी विकास और गंगा संरक्षण मंत्रालय
MINISTRY OF WATER RESOURCES, RIVER DEVELOPMENT & GANGA REJUVENATION
केन्द्रीय जल आयोग
CENTRAL WATER COMMISSION

जलवर्ष पुस्तिका
WATER YEAR BOOK
(जून 2017 - मई 2018) (June 2017 – May 2018)
वंषधारा,रूषिकुल्या,सारदा एंव नागावली बेसिन
VAMSADHARA, RUSHIKULYA, NAGAVALI & SARADA BASIN

जल विज्ञानीय प्रेक्षण परिमंडल
HYDROLOGICAL OBSERVATION CIRCLE
भुवनेश्वर (BHUBANESWAR)

September: 2018

खंड–4

Volume-IV

जलवर्ष पुस्तिका

WATER YEAR BOOK

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वंषधारा,रूषिकुल्या,सारदा एंव नागावली बेसिन

VAMSADHARA, RUSHIKULYA, NAGAVALI & SARADA BASIN

FOREWORD

Proper assessment, analysis and compilation of hydro-meteorological data are essential for planning and management of precious water resources, which is vital not only for economic development but also for providing basic needs for such a large population of our country. Water reaches the land-mass through precipitation, a part of which evaporates, a portion of it percolates into ground as natural ground water and the excess runoff flows through rivulets and rivers and drain into the sea. Central Water Commission (CWC), an apex technical Organisation of Government of India for surface water resources, carries out systematic collection of hydro-meteorological data and assessment of surface water as one of its prime functions.

Hydro-meteorological observation stations have been established by CWC in almost all the river basins of India in a phased manner. These are further modernised and strengthened under various schemes. In the process, additional Divisions, Circles and Regional offices have been set up on a basin-wise concept.

The basin encompassing the east flowing rivers in-between the Ganga and the Godavari basins viz. Subarnarekha, Burhabalang, Baitarani, Brahmani, Mahanadi, Rushikulya, Vamsadhara, Nagavali and Sarada has been identified as Mahanadi and Eastern Rivers Basin which is dealt by Mahanadi and Eastern Rivers Organisation (MERO), CWC, Bhubaneswar. Hydrological Observation Circle (HOC), Bhubaneswar under MERO carries out hydrological observation and flood forecasting activities in these 9 river basins flowing mainly through Odisha along with its neighbouring States of Jharkhand, Chattisgarh, Andhra Pradesh and West Bengal through two Divisions under its jurisdiction viz. Mahanadi Division (MD), Burla and Eastern Rivers Division (ERD), Bhubaneswar.

There are a total of 119 observation stations under MERO. Systematic gauge and discharge observations are regularly conducted at 42 hydrological stations (out of the above 119) throughout the year. Sediment, Water Quality and Meteorological data are also observed at some of the stations. After scrutiny and checking, the collected & processed data are stored in a database through a custom made software "Surface Water Data Entry System (SWDES) and published in the form of Water Year Books. The present publication of Water Year Book contains Hydrological, Sediment and Water Quality data for the hydrological year 2017-18, i.e. from June 2017 to May 2018.

Water Year Book pertaining to the Hydrological Observation Circle, CWC, Bhubaneswar is published in four volumes. While Volume-I incorporates data of Mahanadi basin, Volume-II contains data of Brahmani basin, Volume-III of Subarnarekha, Burhabalang & Baitarani basins and Volume-IV of Rushikulya, Vamsadhara, Nagavali and Sarada basins. Each Volume contains Discharge data as Section-I, Sediment data as Section-II and Water Quality data as Section-III for respective river basins.

This Volume-II covers hydrological, sediment and water quality data for Water Year 2017-18 of seven sites of Brahmani river basin and three effluent stations alongwith salient features and other important statistical information. Sincere effort put in by the officers and staff of ERD, CWC, Bhubaneswar namely, Smt.Dr. Shanthala Devi B.S, Extra Assistant Director,Shri Prasan Kumar Samantara, Sxcientific Assistant and S.S. Mohanty, Senior Computer of Hydromet Section under the able leadership of Shri N.C.Nanda, Executive Engineer, in collecting & processing the data and bringing out this publication is highly commendable. The guidance and encouragement of Shri A.K.Nayak, Chief Engineer, MERO, Bhubaneswar and co-operation of the officials of H.O. Circle and Chief Engineer's office are duly acknowledged.

Place: Bhubaneswar
Date: September,2018

(D.K. Jena)
Superintending Engineer
HOC, CWC
Bhubaneswar

LIST OF ABBREVIATIONS USED:

General:

CWC	:	Central Water Commission
H.P.	:	Hydrology Project
IMD	:	India Meteorological Department
msl	:	mean sea level
Q	:	Discharge
WL	:	Water level

Type of station:

G	:	Gauge (Water Level)
D	:	Discharge (Average discharge passing across a cross section of the river
S	:	Sediment (suspended sediment load)
Q	:	Water Quality

Units:

m	:	meter
mm	:	milli meter
km	:	kilometer
s	:	second
MCM	:	million cubic meters
MT	:	metric tonne
g	:	gramme
l	:	litre

CONTENTS

(VOLUME-IV)

VAMSADHARA, RUSHIKULYA, NAGAVALI & SARADA BASINS

SI NO.	SUBJECT	PAGE No.
1	VAMSADHARA Basin Description	1 – 6
2	GUNUPUR	7 – 28
3	KASHINAGAR	29 – 52
4	RUSHIKULYA Basin Description	53 – 58
5	PURUSHOTTAMPUR	59 – 83
6	NAGAVALI Basin Description	84 – 89
7	SRIKAKULAM	90 – 114
8	SARADA Basin Description	115 – 119
9	ANAKAPALLI	120 – 129

VAMSHADHARA BASIN

VAMSADHARA BASIN

1. GENERAL

1.1 Introduction

Vamsadhara river is an important east flowing river between Mahanadi and Godavari. The river originates near Lanjigarh village in Kalahandi district (Odisha) and runs for a total distance of about 254 km before it joins the Bay of Bengal at Kalingapatnam (Andhra Pradesh). The basin is narrow and undulated. It is situated within the geographical co-ordinates of 18°15′ to 19°55′ north latitudes and 83°20′ to 84°20′ east longitudes. The total catchment area of this basin works out to 10830 sq. km. The state-wise break-up is as follows:-

Sl. No.	Name of State	Catchment Area (sq. km)	Percentage of total catchment area
1.	Odisha	8,015	74
2.	Andhra Pradesh	2,815	26
	Total	**10,830**	**100**

Basin Map of Vamsadhara river system showing the various hydrological and hydro meteorological observation stations maintained by CWC, State Government and India Meteorological Department is enclosed herewith. Central Water Commission is maintaining 7 sites, out of which 1 is of GDSQ type, 1 of G&D type, and balance 5 of G type.

1.2 River system.

The Vamsadhara River is joined by six principal tributaries. Details for the same are tabulated below.

Name of River	River/Tributary	Length (km)	Catchment area (sq.km)	Percentage of total catchment area
Vamsadhara	Main Stream	254	5,458	50.4
Chauldua	Left Tributary	60	768	7.1
Phalphalia	Left Tributary	50	524	4.8
Ganguda(Harbhangi)	Left Tributary	85	1,689	15.6
Sanna Nadhi	Left Tributary	100	1,276	11.8
Mahendrathanaya	Left Tributary	70	1,115	10.3
	Total		**10,830**	**100.0**

1.3 Climatic Characteristics.

The climate in the basin is characterized by hot summers and mild winters. The basin is influenced by the south-west monsoon during June to November and occasional cyclones due to formation of depressions in the Bay of Bengal. The average annual rainfall is around 1400 mm. The maximum temperature in the plains of the basin rises up to 43 ^{0}C during May and goes down to 12 ^{0}C in December-January. The humidity during monsoon is as high as 95% to 96%. Due to topographical and other characters of the basin, the run-off time is limited, thus creating flash floods.

1.4 Geology

The basin surface is mostly covered with Kankar and Murum. The important minerals found in the Vamsadhara basin are Manganese, Graphite, Quartz, Lime Stone, Mica and Bauxite besides building materials. Manganese Ore is available extensively in Srikakulam (Andhra Pradesh) and Koraput (Odisha).

1.5 Site Details

Sl. No.	Name of Project	River	Status
1	Harbhangi	Harbhangi	Existing
2	Badanalla	Badanalla	Existing
3	Gotta Barrage	Vamsadhara	Existing
4	Chelligarha	Badajore	Under Construction

2. STREAM FLOW DATA

2.1 Methodology

Area-velocity method is generally adopted for measuring discharge at sites. Cup type current meter is used to measure the velocity of the flow and the depth is measured by using sounding rod for depths upto 3 m and by log line beyond 3 m. Discharge by area velocity method is being observed once in a day starting at 0800 Hrs. at all the sites except on Sundays and holidays. Besides, silt and water quality observation are also being carried out at CWC sites as list above.

The observed stage and discharge figures for each season (monsoon and non-monsoon) are plotted and a mean Stage V/s. Discharge curve is drawn, giving due attention to the scattered points with reference to area, velocity etc.

The factors responsible for the shifting of the curves are also taken care of by studying the river cross section at regular intervals and with super imposition of previous years' Stage V/s. Discharge curves. Accordingly, the trend of the current curve is finalised. Finally, the discharges of the non observed days are computed from these Stage V/s. Discharge Curves.

2.2Data Availability

Details of data availability for Vamsadhara Basin is tabulated below:

Sl. No.	Code No.	Station Name	Type	Data available From	To
1.	AV000K9	Gunupur	G&D	G -19.04.78 D -01.06.01	Continuing -do-
2.	AV000J4	Kashinagar	GDSQ	G -20.03.71 D -28.04.71 S - 13.10.72 Q -01.09.72	Continuing -do- -do- -do-
3.	KUTRAGADA	Kutragada	G	G -08.06.87	Continuing
4.	GUDARI	Gudari	G	G -02.07.78	Continuing
5.	MAHENDRAGARH	Mahendragarh	G	G -01.06.87	Continuing
6.	MOHANA	Mohana	G	G -26.05.87	Continuing
7.	GOTTA BARRAGE	Gottabarrage	G	G -01.06.77	Continuing

2.3 Explanatory Notes on Water Year Book

SWDES (Surface Water Data Entry Software), a custom made software for processing hydrological data, has been used for preparation of this volume. The explanatory notes described below can be used for interpretation of data presented in this volume.

i) Water Year ranges from June 1st of one calendar year to May 31st of the next calendar year and covers one complete hydrological cycle.

ii) Discharge is given in cubic meters per second.

iii) Discharges are expressed as 0.000 when river bed is dry and 0.000 N.F. when velocity is observed as 'NIL'.

iv) The zero R.L. of gauge is a datum level fixed for given site, which is kept 1 or 2 m lower than the lowest water level recorded in a perennial stream. In a non-perennial stream, it is kept 1 or 2 m lower than the lowest bed level of the stream.

v) Discharges are rounded off as per standard practice.

vi) Runoff in mm is the notional depth of water in millimeters over the catchment, equivalent to annual runoff volume calculated at the discharge measurement station. It is computed using the relation:

$$\text{Runoff (mm)} = \frac{\text{Annual runoff } (Mm^3) \times 1000}{\text{Catchment area } (km^2)}$$

vii) Peak and lowest flow correspond to the highest and lowest water levels recorded from 'SWDES' entered data.

viii) Measuring Authority refers to the field division of Central Water Commission (Eastern Rivers Division) responsible for the operation of the gauging station.

ix) The gauging station code number is a unique seven column alphanumeric reference number which facilitates storage and retrieval of flow data in data base. The first column is identifier of either an integral river basin or, for the sake of convenience, a region having several contiguous river catchments. This is followed by a column which identifies an independent river system which either has one or more outlets to the sea or crosses international border to enter another country. The third, fourth and fifth column spaces denote first, second and third order tributaries, respectively, from the mouth upstream. The sixth and seventh column spaces indicate the location of the gauging station in one of the 225 slots earmarked on the river. The blank column spaces are filled by zero.

3. HYDROLOGICAL DATA

This volume contains the following information for each site stated above:

i. History Sheet: Site Name, State, District, River Basin, Tributary, Sub-Tributary, Catchment Area, Latitude / Longitude, Opening / Closing date for various types of data.

ii. Annual maximum/minimum discharge since period of observation.

iii. Daily Water level and observed/ computed discharge data including 10-daily, monthly and annual totals etc.

iv. Histogram and Hydrograph showing current year monthly mean discharges, Historical monthly mean discharges, historical monthly minimum and monthly maximum discharges.
v. Histogram showing Annual Run off volume since beginning of observation.
vi. Pie-Chart showing monthly mean run off (as percentage of Annual Run off) historical for the current year.
vii. Plot of Pre and Post Monsoon Cross-section of the rivers for current year.
viii. Water Level hydrograph for 3(three) major flood events of current year.

4. SEDIMENT DATA (In case of Sediment Observation sites)

The frequency of sediment observation is carried out daily during monsoon season and once in a week (on Monday) during the non-monsoon period. Data for non-observed days is estimated/ interpolated from the relationship of discharge v/s. sediment load, prepared on the basis of observed sediment concentration and weighted mean discharge of the same year.

Sediment samples are collected from 0.6 depth, using Punjab type bottle sampler, from all the verticals along the hydrological observation sections where velocity is observed for computation of discharge. The collected samples from all the segments are combined in 3 to 7 groups having compartments or groups of equal or nearly equal discharges for analysis. Quantum of suspended sediment load is estimated in three grades, viz. Coarse, Medium and Fine. Coarse and medium grades are separated by sieving process and the fine grade by filtration of left over samples after sieving through filter paper. Grade wise concentration is derived gravimetrically as per standard procedure. The following parameters are derived and recorded:

- Daily Observed suspended sediment (g/l).
- Corresponding discharge.
- Average sediment load in tonnes/day (10 daily & monthly basis).
- Annual sediment load for the current year.
- Annual & Seasonal sediment load and the corresponding volume of inflow for all the years since inception.
- Grain size distribution of bed load.

5. WATER QUALITY DATA (In case of Water Quality Observation sites)

The water samples are collected at a regular interval of once in a month for trend stations and once in two month for base station (on 1st working day, from the main flowing segment of the stream just below the water surface (20 to 30 cm) on the Station Gauge line where depth of flow and velocity are maximum, preferably in the mid stream. The water samples are collected in the pre-rinsed and cleaned one-litre capacity polythene bottle having double stopper (inside and outside) facility. Sampling bottle is filled to its full capacity without entrapping air bubbles inside.

After sampling, the collected samples are sent to the Water Quality Laboratory (Level-II) based at Bhubaneswar (under the Eastern Rivers Division) and to Raipur laboratory (under Mahanadi Division, Burla), along with in-situ physical characteristics, for analysis. The samples received from the sites are preserved in a refrigerator in the water quality laboratories for analysis**.**

Analysis of parameters, namely pH, Electrical conductivity, Sodium, Potassium, Iron, Aluminum, Ammonia, Fluoride, Nitrate, Nitrite, Phosphate, Silicate, Boron, Sulphate, Calcium, Magnesium, Carbonate, Bi-carbonate, Chloride, Dissolved Oxygen, BOD and COD,

are carried out at the Level II laboratory by using standard methodology. Micro biological parameters like total colliform and faecal colliform are also being analyzed. For analysis of trace and toxic elements, samples are sent to Level-II+ laboratory at Hyderabad once in a year, in the month of April.

The following parameters are analyzed and recorded:

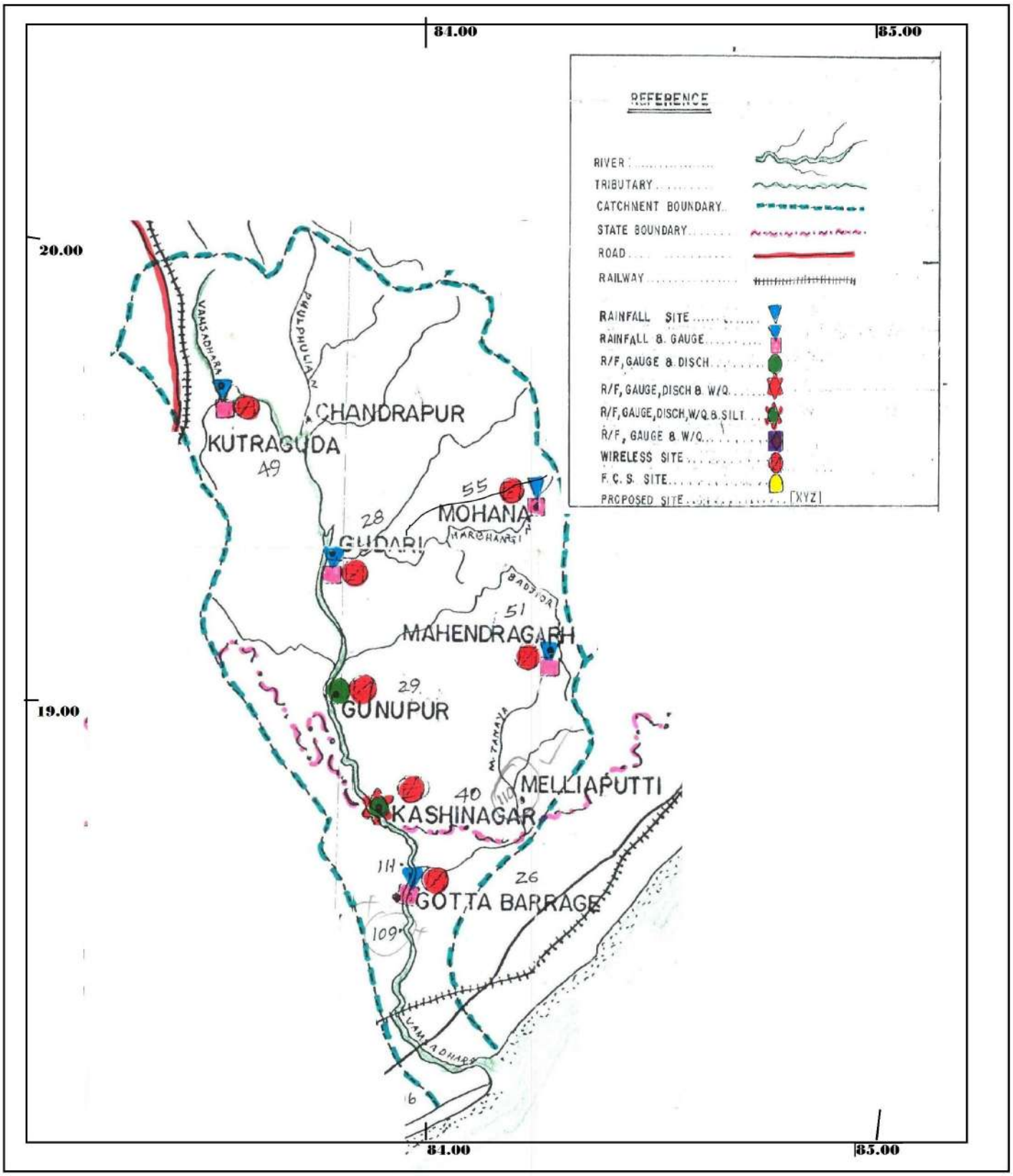
- Monthly Values: Physical; Chemical (mg/l); Biological (mg/l); Traces & Toxic (mg/l) and Chemical Indices.

- Average Values for the Year: 10 Years data to be given season wise averages:-

  - Average for Summer (March to June).
  - Average for Floods (July to October).
  - Average for Winter (November to February)

NAME OF THE SITES IN OPERATION UNDER VAMSADHARA BASIN

Sl. No.	Station Name	River/ Tributary	Type	Latitude	Longitude	Max. Water Level & Discharge upto May,2018			
						WL	Date	Q.	Date
1.	Gottabarrage	Vamsadhara	G	18° 42' 00"	83° 57' 00"	39.87	18/09/80	---	---
2.	Gudari	Vamsadhara	G	19° 23' 00"	83° 48' 00"	121.82	17/09/80	---	---
3.	Gunupur	Vamsadhara	GD	19° 05' 00"	83° 49' 00"	88.75	17/09/80	5286	29/07/91
4.	Kashinagar	Vamsadhara	GDSQ	18° 50' 49"	83° 57' 04"	58.935	18/09/80	6589	23/09/71
5.	Kutragada	Vamsadhara	G	19° 36' 48"	83° 33' 33"	269.84	29/07/91	---	---
6.	Mahendragarh	Badajore	G	19° 13' 19"	84° 15' 55"	568.31	---	---	---
7.	Mohana	Harbhangi	G	19° 26' 40"	84° 16' 21"	463.30	04/11/90	---	---


84.00
85.00
20.00
19.00
REFERENCE
RIVER
TRIBUTARY
CATCHMENT BOUNDARY
STATE BOUNDARY
ROAD
RAILWAY
RAINFALL SITE
RAINFALL & GAUGE
R/F, GAUGE & DISCH
R/F, GAUGE, DISCH & W/Q
R/F, GAUGE, DISCH, W/Q & SILT
R/F, GAUGE & W/Q
WIRELESS SITE
F.C.S. SITE
PROPOSED SITE [XYZ]
VAMSADHARA
PHULJHUR
CHANDRAPUR
KUTRAGUDA
49
55
MOHANA
28
MARCHANGI
BADJOR
51
MAHENDRAGARH
29
GUNUPUR
M. TAMAYA
40
MELLIAPUTTI
KASHINAGAR
111
26
GOTTA BARRAGE
109
VAMSADHARA
16

HISTORY SHEET

Water Year : 2017-2018

Site	**:**	**GUNUPUR**	**Code**	**:**	**AV000K9**
State	:	Orissa	District		Rayagada
Basin	:	EFR B Mahanadi-Godavari	Independent River	:	Vamsadhara
Tributary	:		Sub Tributary	:	
Sub-Sub Tributary	:		Local River	:	Vamsadhara
Division	:	E.E., Bhubaneswar	Sub-Division	:	Behrampur
Drainage Area	:	6740 Sq. Km.	Bank	:	Left
Latitude	:	19°05'00"	Longitude	:	83°49'00"
Zero of Gauge (m)	:	80.25 (m.s.l)	1/1/1970	-	1/1/2158
		Opening Date	Closing Date		
Gauge	:	4/19/1978			
Discharge	:	6/1/2001			
Sediment	:	11/15/2013			
Water Quality	:	12/30/2013			

Annual Maximum / Minimum discharge with corresponding Water Level (m.s.l)

	Maximum			Minimum		
Year	**Q (cumecs)**	**WL (m)**	**Date**	**Q (cumecs)**	**WL (m)**	**Date**
1990-1991	4.824	83.600	8/22/1990	0.926	80.080	7/9/1990
1991-1992	5286	85.750	7/29/1991	10.50	80.550	7/5/1991
1992-1993	4499	85.100	7/27/1992	11.20	80.475	6/15/1992
1993-1994	376.2	82.110	7/16/1993	10.70	80.730	7/2/1993
1994-1995	3094	84.380	9/4/1994	7.300	80.830	6/25/1994
1995-1996	1835	83.000	8/31/1995	24.95	80.460	6/19/1995
1996-1997	968.5	82.950	8/23/1996	23.14	80.800	6/25/1996
1997-1998	2201	84.180	8/21/1997	4.652	80.770	7/17/1997
1998-1999	332.1	82.240	7/2/1998	9.207	80.750	6/27/1998
1999-2000	342.7	82.300	7/29/1999	11.40	81.110	6/28/1999
2000-2001	388.3	82.470	7/18/2000	1.358	80.910	5/3/2001
2001-2002	2211	83.790	7/7/2001	1.106	80.680	5/15/2002
2002-2003	450.2	82.640	8/29/2002	1.162	80.690	3/13/2003
2003-2004	3924	84.910	10/7/2003	0.000	80.530	6/7/2003
2004-2005	771.5	82.995	10/6/2004	1.200	80.550	5/22/2005
2005-2006	1893	83.785	9/19/2005	2.361	80.570	6/7/2005
2006-2007	5243	85.025	7/3/2006	5.070	80.090	4/7/2007
2007-2008	2987	85.950	8/7/2007	3.836	79.940	5/23/2008
2008-2009	3617	84.730	9/17/2008	1.543	79.380	5/2/2009
2009-2010	2049	84.000	7/19/2009	1.682	79.800	4/28/2010
2010-2011	1000	82.560	7/25/2010	1.775	79.800	6/8/2010
2011-2012	899.4	82.470	9/2/2011	1.222	80.070	5/31/2012
2012-2013	1121	82.795	8/3/2012	0.640	80.030	6/8/2012
2013-2014	1211	83.060	10/28/2013	4.011	80.070	4/30/2014
2014-2015	2855	84.125	9/7/2014	4.405	80.230	3/29/2015
2015-2016	670.0	82.500	9/16/2015	0.714	80.090	5/2/2016
2016-2017	393.3	82.050	8/6/2016	1.085	80.070	5/24/2017
2017-2018	1087	83.105	7/19/2017	2.386	80.120	6/2/2017

Stage-Discharge Data for the period 2017 - 2018

Station Name : GUNUPUR (AV000K9) **Division : E.E., Bhubaneswar**

Local River : Vamsadhara **Sub-Division : Behrampur**

Day	Jun		Jul		Aug		Sep		Oct		Nov	
	W.L	Q	W.L	Q	W.L	Q	W.L	Q	W.L	Q	W.L	Q
1	80.140	3.003	80.790	61.98	80.765	61.73	81.305	171.0	81.180	128.0 *	80.890	80.60
2	80.120	2.386	80.770	60.00 *	80.900	83.56	81.410	203.0 *	81.150	122.0 *	80.840	74.23
3	80.210	6.652	80.590	40.56	80.945	89.26	81.240	155.0 *	81.295	166.0	80.790	68.37
4	80.170	5.000 *	80.600	42.31	80.805	64.30	81.090	112.6	81.280	161.1	80.720	63.00 *
5	80.210	6.625	80.590	40.75	80.690	50.82	80.990	97.21	81.550	220.5	80.700	55.00 *
6	80.200	6.239	80.520	32.90	80.800	68.00 *	81.030	103.5	81.290	165.9	80.670	50.91
7	80.190	5.781	80.440	20.33	81.000	99.22	81.020	102.3	82.025	351.0	80.630	45.63
8	80.230	7.716	80.400	20.76	80.890	81.84	81.000	97.40	81.820	292.0 *	80.590	39.72
9	80.190	5.703	80.440	24.00 *	80.720	57.38	81.035	104.8	81.570	223.3	80.560	37.03
10	80.210	6.452	80.570	37.72	81.545	220.0	81.130	114.0 *	81.865	294.0	80.530	34.94
11	80.280	11.00 *	80.830	66.00	81.100	109.4	81.005	100.8	81.515	213.3	80.500	32.71
12	80.510	32.51	80.600	41.55	81.090	107.3	80.950	89.69	81.685	258.0	80.480	30.30 *
13	80.480	28.90	80.550	36.70	81.140	114.0 *	81.005	101.6	81.525	218.0	80.460	27.61
14	80.420	23.17	80.680	45.49	81.000	95.18	81.200	132.8	81.510	215.0	80.460	27.66
15	80.320	15.28	80.700	48.26	81.070	103.0 *	81.240	142.0	81.690	260.0 *	80.440	26.06
16	80.420	22.71	81.300	145.0 *	80.850	79.07	81.060	109.5	81.350	181.0	80.515	33.68
17	80.520	33.48	82.315	486.0	81.210	138.0	81.030	103.0 *	81.210	137.1	80.950	89.36
18	80.450	26.00 *	82.235	443.0	81.030	98.04	81.270	167.9	81.110	115.1	80.780	68.45
19	80.400	20.76	83.105	1087	81.280	168.2	81.095	112.5	81.280	163.0 *	80.660	57.00 *
20	80.720	52.63	82.095	398.7	81.340	192.0 *	81.255	165.3	81.370	188.1	80.770	66.17
21	80.510	32.14	81.525	206.7	81.240	152.0	81.490	208.2	82.475	537.0	80.570	40.15
22	80.900	77.38	81.265	164.7	81.100	109.0	81.225	147.2	82.320	440.0 *	80.660	49.28
23	81.070	97.73	81.090	125.0 *	81.465	193.4	81.060	101.8	82.225	412.0	80.470	29.92
24	80.780	58.98	80.970	97.86	81.340	176.3	81.070	104.0 *	81.875	293.0	80.430	26.91
25	80.550	36.62 *	80.890	84.69	81.415	182.3	81.225	137.1	81.700	260.0	80.620	44.05
26	80.640	45.00 *	80.880	84.45	81.580	231.9	81.275	144.1	81.650	241.0	80.380	38.00 *
27	80.580	39.52	81.140	119.3	81.450	197.0 *	81.355	182.7	81.320	175.3	80.450	36.25
28	80.550	36.13	81.130	118.4	82.300	424.0	81.290	165.0	81.215	138.0	80.440	34.72
29	80.500	30.64	80.885	82.45	82.025	352.0	81.230	135.0 *	81.110	110.0 *	80.430	33.10
30	80.600	43.04	80.770	65.48 *	81.625	252.6	81.250	140.0 *	81.060	102.0	80.390	30.65
31			80.710	56.62	81.360	181.0			80.960	89.00		
Ten-Daily Mean												
I Ten-Daily	80.187	5.556	80.571	38.13	80.906	87.61	81.125	126.1	81.503	212.4	80.692	54.94
II Ten-Daily	80.452	26.64	81.441	279.8	81.111	120.4	81.111	122.5	81.424	194.9	80.602	45.90
III Ten-Daily	80.668	49.72	81.023	109.6	81.536	222.9	81.247	146.5	81.628	254.3	80.484	36.30
Monthly												
Min.	80.120	2.386	80.400	20.33	80.690	50.82	80.950	89.69	80.960	89.00	80.380	26.06
Max.	81.070	97.73	83.105	1087	82.300	424.0	81.490	208.2	82.475	537.0	80.950	89.36
Mean	80.436	27.31	81.012	141.4	81.196	146.2	81.161	131.7	81.522	221.6	80.592	45.72

Annual Runoff in MCM = 2012 Annual Runoff in mm = 298

Peak Observed Discharge = 1087 cumecs on 19-Jul-17 Corres. Water Level :83.105 m

Lowest Observed Discharge = 2.386 cumecs on 02-Jun-17 Corres. Water Level :80.12 m

Q: Observed/Computed Discharge in cumecs WL:Corresponding Mean Water Level(m.s.l) in m *:Computed Discharge

Note:Missing values ignored while arriving at Annual Runoff

Stage-Discharge Data for the period 2017 - 2018

Station Name : GUNUPUR (AV000K9) **Division : E.E., Bhubaneswar**

Local River : Vamsadhara **Sub-Division : Behrampur**

Day	Dec		Jan		Feb		Mar		Apr		May	
	W.L	Q	WL	Q	WL	Q	WL	Q	WL	Q	WL	Q
1	80.380	29.26	80.100	8.801	80.020	6.492	79.940	4.383	79.870	2.700 *	79.910	3.886
2	80.500	39.00 *	80.100	8.912	80.020	6.529	79.940	4.750 *	79.900	3.532	79.920	4.105
3	80.350	26.50 *	80.100	8.721	80.020	6.589	79.930	4.507	79.920	4.226	79.940	4.698
4	80.290	21.88	80.100	8.803	80.020	6.500 *	79.930	4.500 *	79.920	4.245	79.930	4.313
5	80.280	20.19	80.100	8.848	80.010	6.419	79.930	4.441	79.930	4.442	79.930	4.377
6	80.280	21.11	80.090	8.546	80.010	6.360	79.920	4.228	79.930	4.360	79.920	4.100 *
7	80.280	20.91	80.090	8.500 *	80.010	6.455	79.920	4.236	79.930	4.375	79.900	3.599
8	80.280	21.11	80.080	8.198	80.000	6.272	79.920	4.248 *	79.970	5.500 *	79.880	3.131
9	80.550	46.64	80.070	7.811	80.000	6.202	79.920	4.158	79.970	5.662	79.870	2.986
10	80.310	24.50 *	80.070	7.833	80.000	6.281	79.920	4.256	79.970	5.668	79.870	2.951
11	80.290	22.84	80.060	7.523	79.970	6.000 *	79.920	4.200 *	80.100	10.96	79.860	2.947
12	80.270	20.12	80.050	7.643	79.970	5.728	79.920	4.166	80.040	7.104	79.880	3.155
13	80.260	19.31	80.040	7.040	79.970	5.727	79.920	4.020	80.150	12.08	79.870	2.900 *
14	80.250	17.72	80.040	7.000 *	79.960	5.574	79.920	4.018	80.080	9.946	79.980	6.031
15	80.250	17.72	80.040	7.001	79.950	5.784	79.920	4.026	80.130	11.40 *	79.950	5.409
16	80.200	13.55	80.040	7.080	79.940	5.069	79.920	4.015	80.070	9.609	79.950	5.158
17	80.190	12.30 *	80.040	7.041	79.940	5.319	79.920	4.021	79.970	5.712	79.930	4.421
18	80.170	11.52	80.040	7.033	79.940	5.050 *	79.920	4.050 *	79.970	5.700	79.970	5.693
19	80.160	10.44	80.040	7.070	79.940	5.033	79.920	4.099	79.970	5.736	79.940	4.750
20	80.160	10.34	80.030	6.871	79.960	5.511	79.920	4.093	79.960	5.402	79.940	4.700 *
21	80.150	9.667	80.030	6.870 *	79.950	5.259	79.900	3.658	80.010	6.435	80.030	6.843
22	80.150	9.842	80.030	6.533	79.950	5.095	79.890	3.528	79.960	5.400 *	80.010	6.430
23	80.140	9.138	80.030	6.785	79.950	5.123	79.890	3.611	79.950	5.101	79.980	5.771
24	80.140	9.140 *	80.030	6.750	79.950	5.054	79.880	3.314	79.950	5.055	79.950	5.146
25	80.140	9.140 *	80.030	6.762	79.950	5.100 *	79.880	3.310 *	79.960	5.350	79.930	4.691
26	80.140	9.148	80.030	6.700 *	79.950	5.179	79.880	3.301	79.950	5.088	79.930	4.681
27	80.140	9.867	80.030	6.715	79.940	4.752	79.880	2.893	79.940	4.740	79.910	4.100 *
28	80.130	9.344	80.030	6.700 *	79.940	4.737	79.880	2.861	79.940	4.703	79.910	4.207
29	80.150	11.93	80.020	6.574			79.880	2.900 *	79.930	4.400 *	79.910	4.143
30	80.110	9.331	80.020	6.666			79.880	2.900 *	79.920	4.200 *	79.910	4.110
31	80.100	8.950 *	80.020	6.577			79.880	2.910			79.910	4.110
Ten-Daily Mean												
I Ten-Daily	80.350	27.11	80.090	8.497	80.011	6.410	79.927	4.371	79.931	4.471	79.907	3.815
II Ten-Daily	80.220	15.59	80.042	7.130	79.954	5.479	79.920	4.071	80.044	8.365	79.927	4.516
III Ten-Daily	80.135	9.591	80.027	6.694	79.948	5.037	79.884	3.199	79.951	5.047	79.944	4.930
Monthly												
Min.	80.100	8.950	80.020	6.533	79.940	4.737	79.880	2.861	79.870	2.700	79.860	2.900
Max.	80.550	46.64	80.100	8.912	80.020	6.589	79.940	4.750	80.150	12.08	80.030	6.843
Mean	80.232	17.18	80.052	7.416	79.973	5.685	79.909	3.858	79.975	5.961	79.926	4.437

Peak Computed Discharge = 440.0 cumecs on 22-Oct-17 Corres. Water Level :82.32 m

Lowest Computed Discharge = 2.700 cumecs on 01-Apr-18 Corres. Water Level :79.87 m

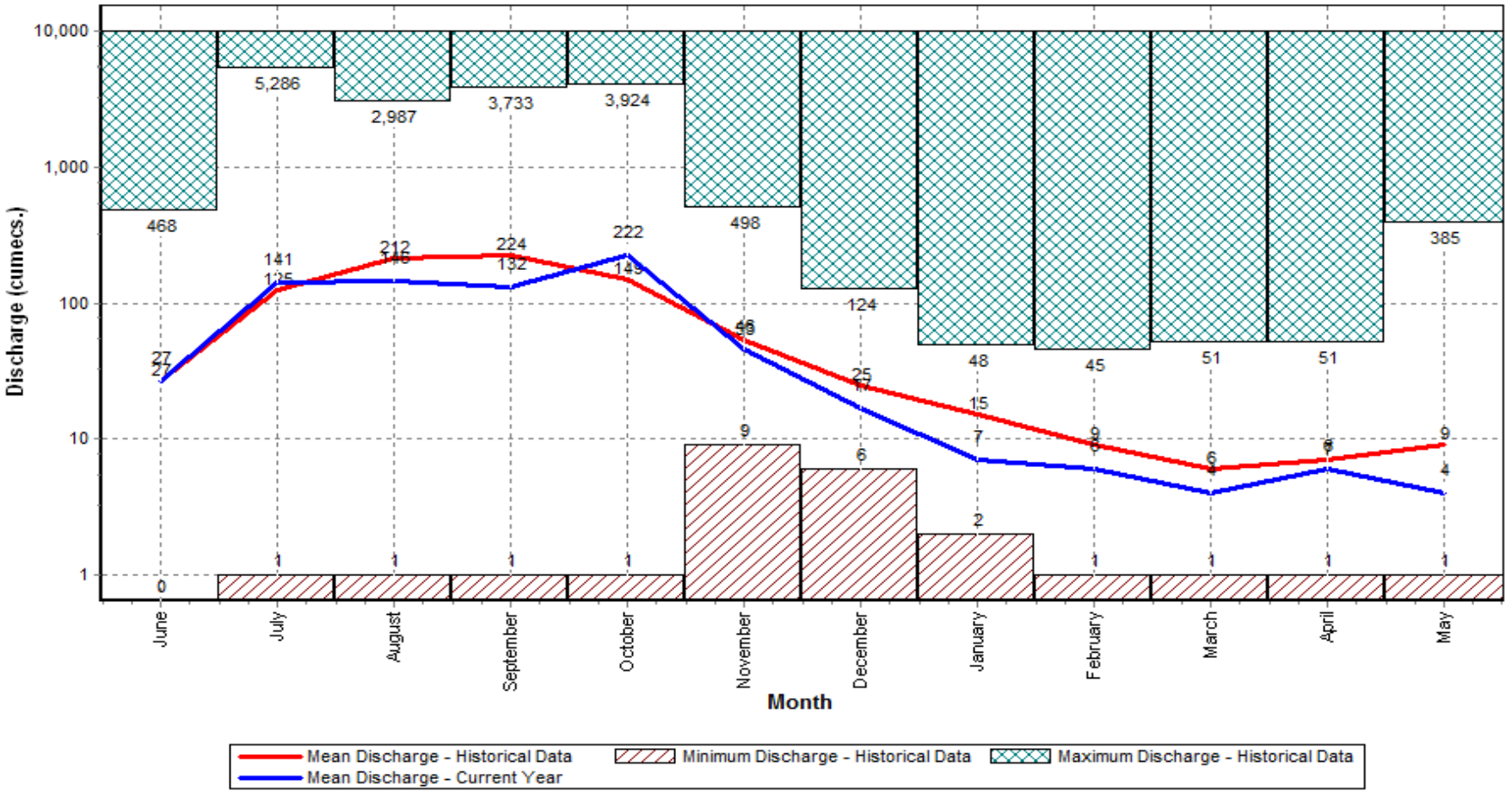
Q: Observed/Computed Discharge in cumecs WL:Corresponding Mean Water Level(m.s.l) in m *:Computed Discharge

Note:Missing values ignored while arriving at Annual Runoff

HISTOGRAM - HYDROGRAPH for Water Year : 2017-2018

Station Name : GUNUPUR (AV000K9) | **Data considered : 1990-2018** | **Division : E.E., Bhubaneswar**

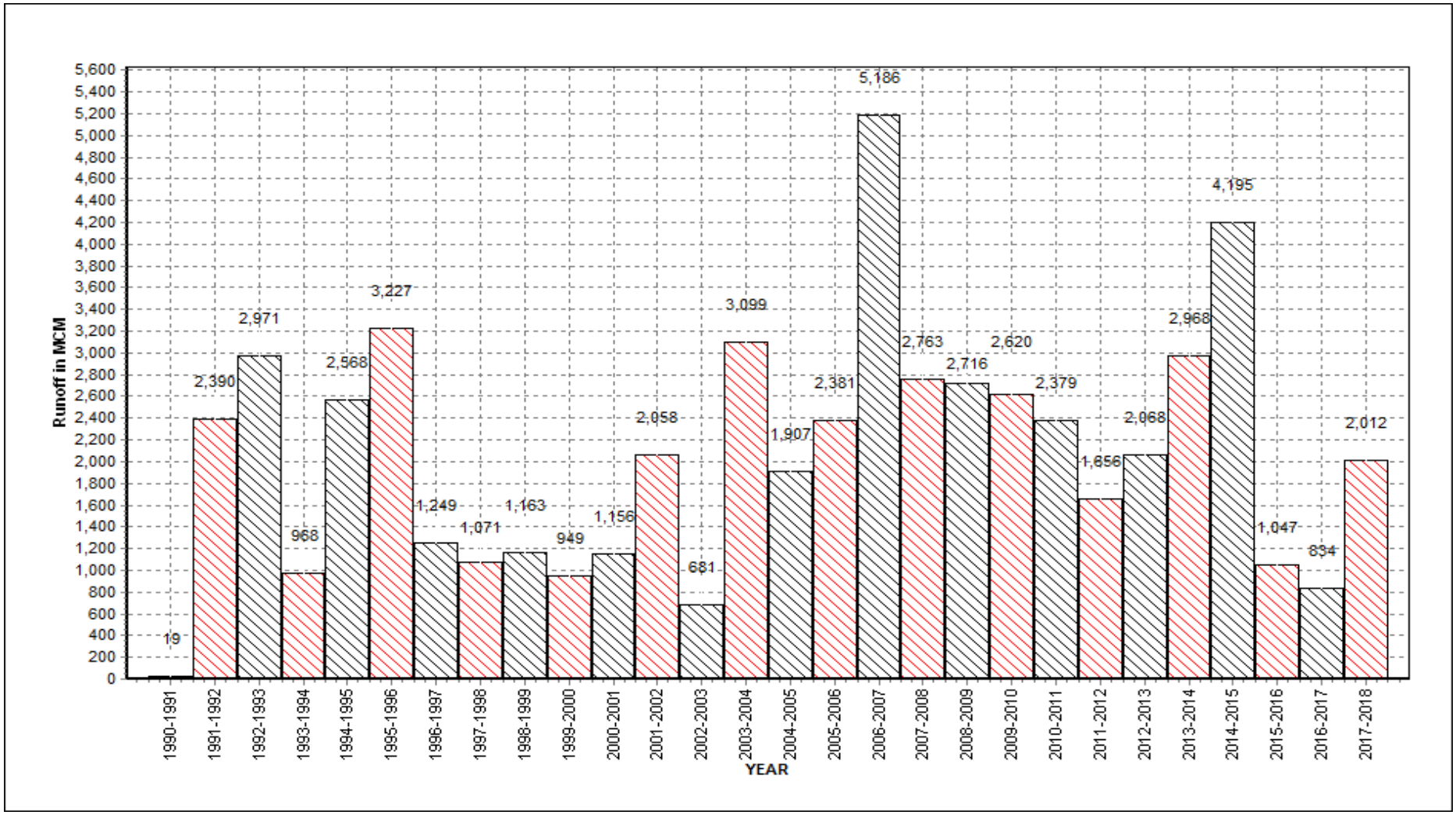
Local River : Vamsadhara | **Sub-Division : Behrampur**



Annual Runoff Values for the period: 1990 - 2018

Station Name : GUNUPUR (AV000K9) **Division : E.E., Bhubaneswar**

Local River : Vamsadhara **Sub-Division : Behrampur**

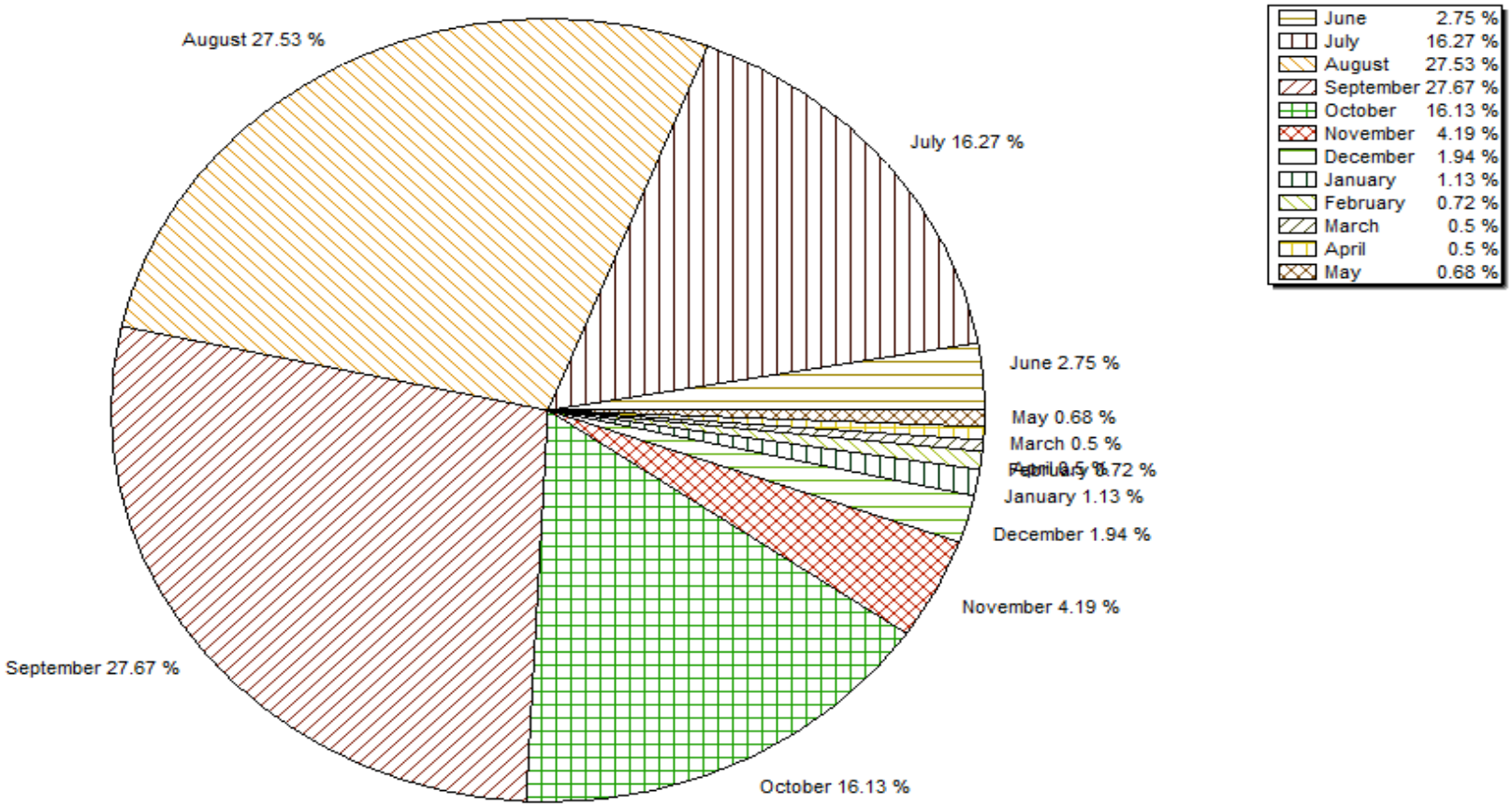


Note: Missing values have not been considered while arriving at Annual Runoff

Monthly Average Runoff based on period : 1990-2017

Station Name : GUNUPUR (AV000K9) **Division : E.E., Bhubaneswar**

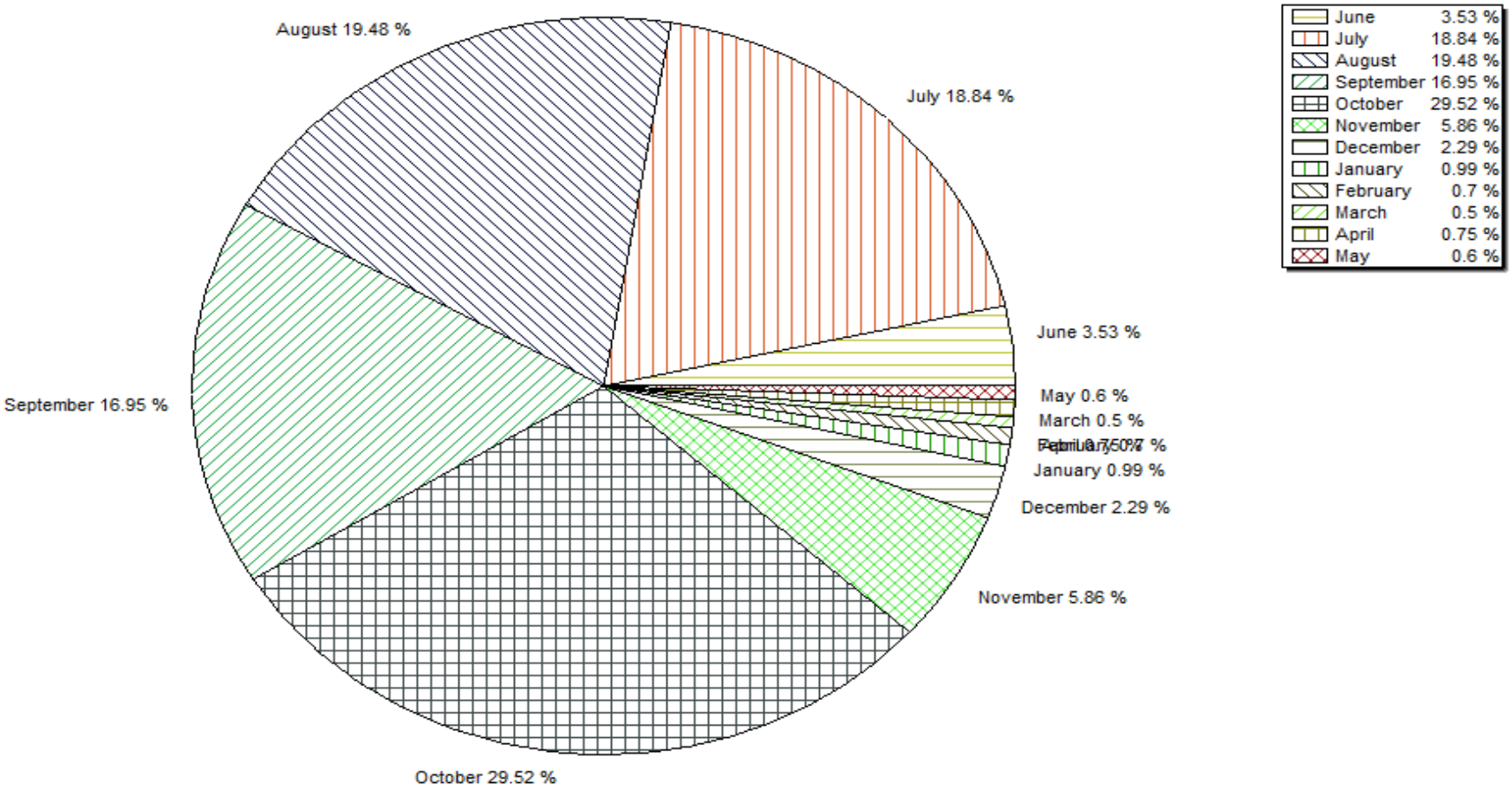
Local River : Vamsadhara **Sub-Division : Behrampur**



Monthly Runoff for the Year : 2017-2018

Station Name : GUNUPUR (AV000K9) **Division : E.E., Bhubaneswar**

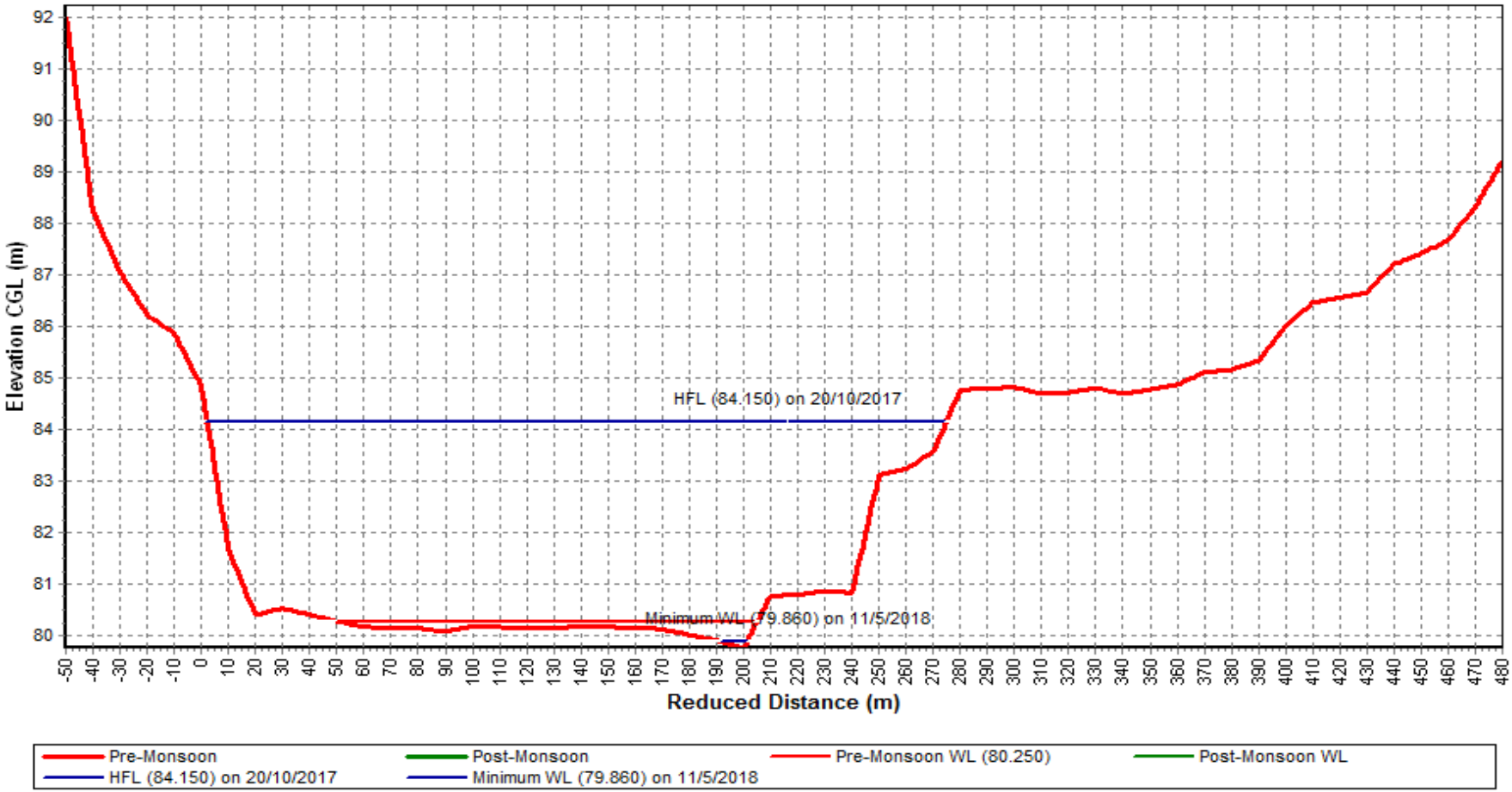
Local River : Vamsadhara **Sub-Division : Behrampur**



Pre-Monsoon & Post-Monsoon X-Section for Water Year : 2017-2018

Station Name : GUNUPUR (AV000K9) **Division : E.E., Bhubaneswar**

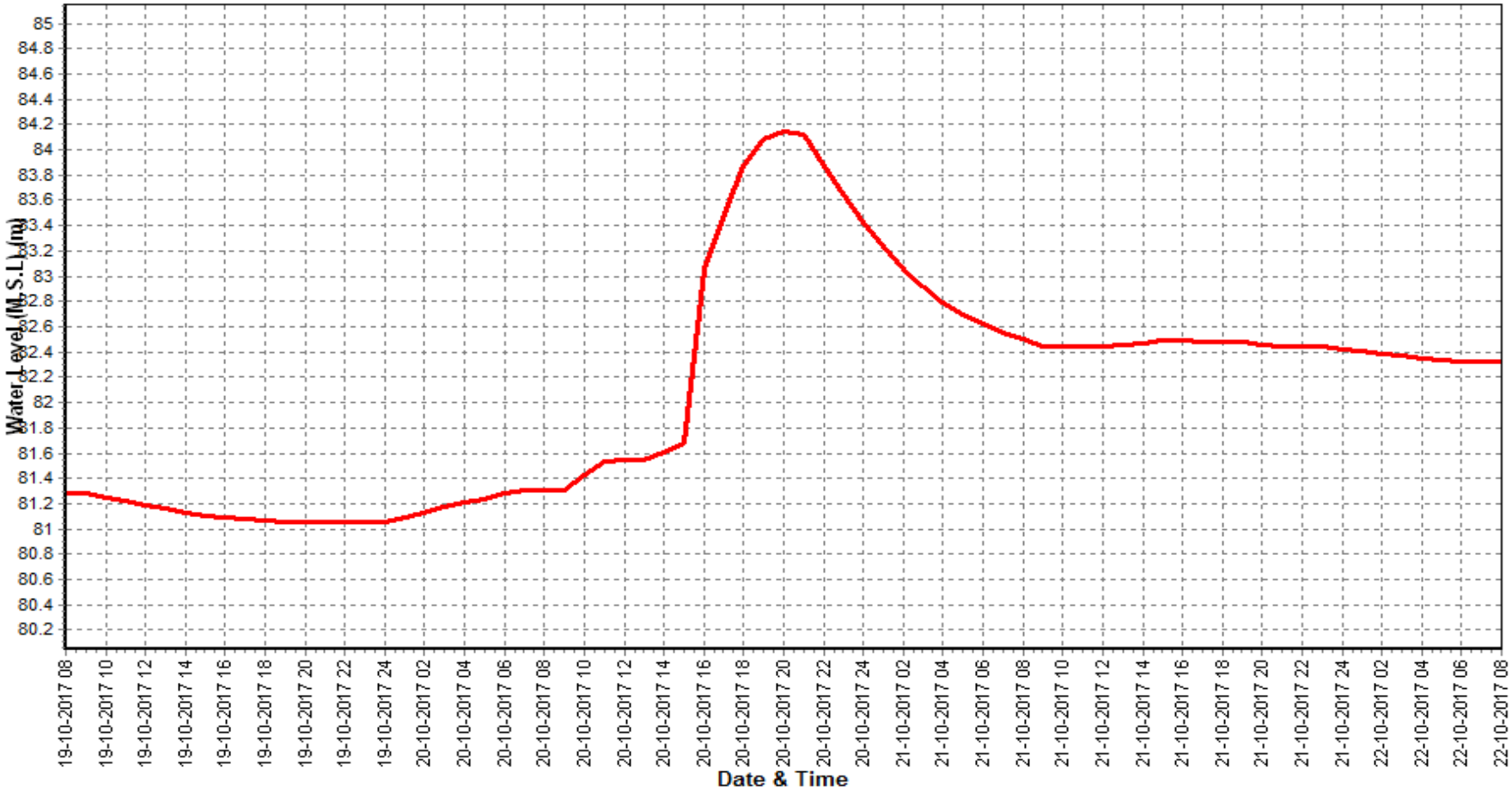
Local River : Vamsadhara **Sub-Division : Behrampur**



Water Level vs. Time - Graph of Highest Flood Peak during the Year : 2017-2018

Station Name : GUNUPUR (AV000K9) **Division : E.E., Bhubaneswar**

Local River : Vamsadhara **Sub-Division : Behrampur**

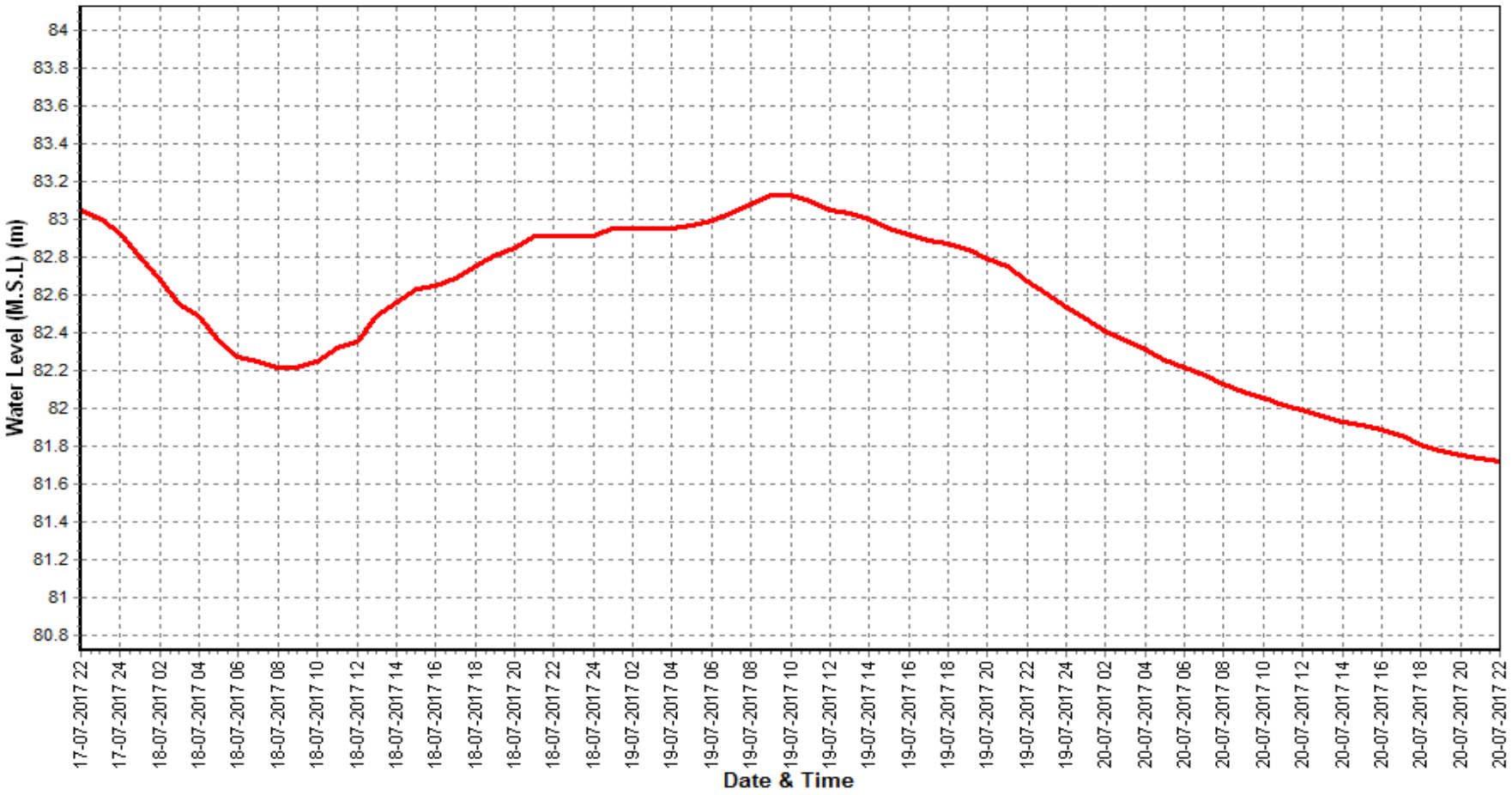


Time Span: 72 Hrs

Water Level vs. Time - Graph of 2nd Highest Flood Peak during the Year : 2017-2018

Station Name : GUNUPUR (AV000K9) **Division : E.E., Bhubaneswar**

Local River : Vamsadhara **Sub-Division : Behrampur**

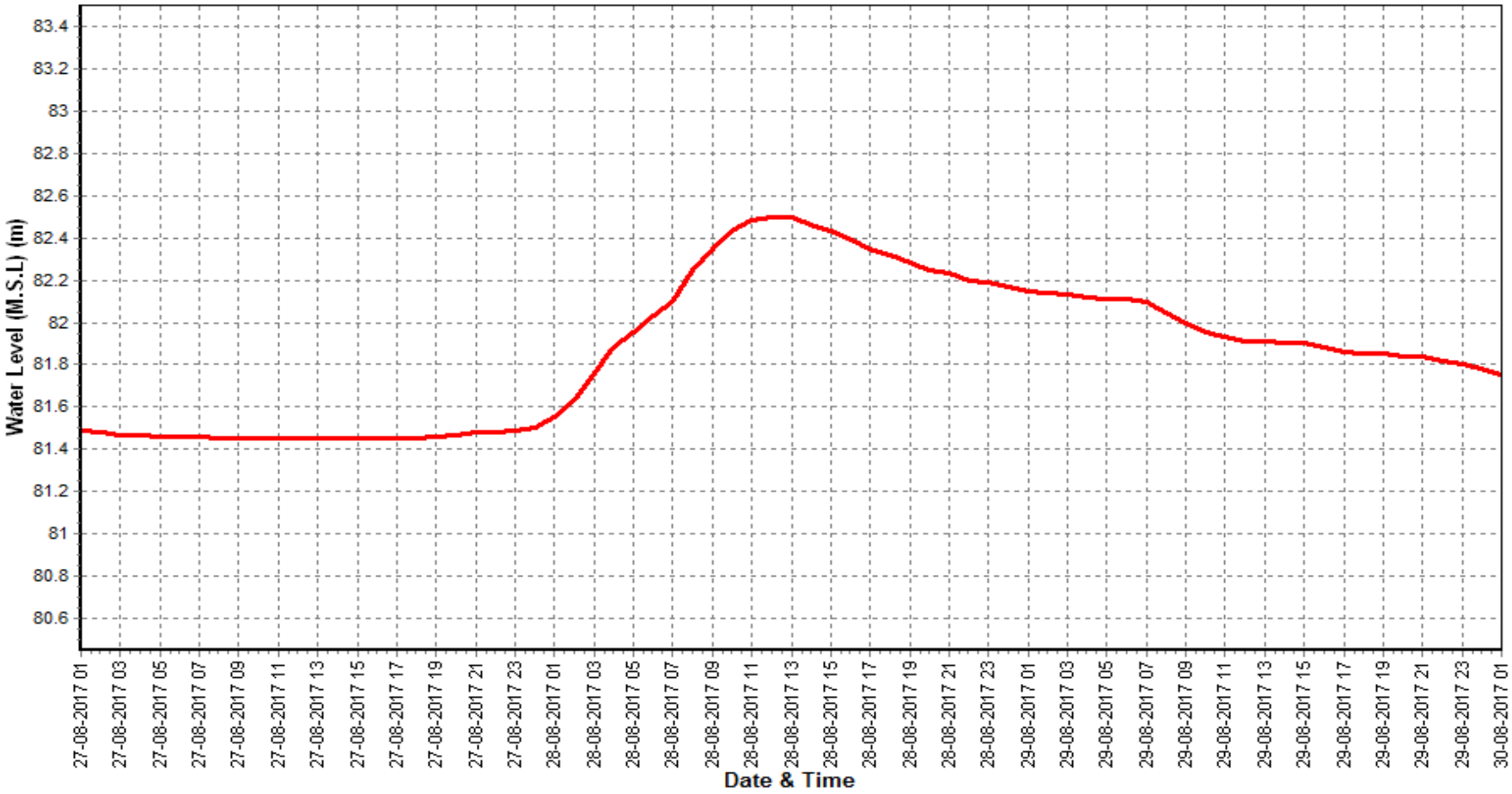


Time Span: 72 Hrs

Water Level vs. Time - Graph of 3rd Highest Flood Peak during the Year : 2017-2018

Station Name : GUNUPUR (AV000K9) **Division : E.E., Bhubaneswar**

Local River : Vamsadhara **Sub-Division : Behrampur**



Time Span: 72 Hrs

Daily Observed Sediment Datasheet for period : 2017-2018

Station Name : GUNUPUR (AV000K9) **Division : E.E., Bhubaneswar**

Local River : Vamsadhara **Sub-Division : Behrampur**

Day	Jun						Jul						Aug					
	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day
1	3.003	0.000	0.000	0.000	0.000	0	61.98	0.000	0.000	0.080	0.080	428	61.73	0.000	0.000	0.049	0.049	261
2	2.386	0.000	0.000	0.000	0.000	0	60.00	0.000	0.000	0.077	0.077	399	83.56	0.000	0.000	0.076	0.076	549
3	6.652	0.000	0.000	0.029	0.029	17	40.56	0.000	0.000	0.075	0.075	263	89.26	0.000	0.000	0.083	0.083	640
4	5.000	0.000	0.000	0.021	0.021	9	42.31	0.000	0.000	0.090	0.090	329	64.30	0.000	0.000	0.065	0.065	361
5	6.625	0.000	0.000	0.025	0.025	14	40.75	0.000	0.000	0.076	0.076	268	50.82	0.000	0.000	0.054	0.054	237
6	6.239	0.000	0.000	0.020	0.020	11	32.90	0.000	0.000	0.092	0.092	262	68.00	0.000	0.000	0.072	0.072	423
7	5.781	0.000	0.000	0.016	0.016	8	20.33	0.000	0.000	0.087	0.087	153	99.22	0.000	0.000	0.083	0.083	712
8	7.716	0.000	0.000	0.030	0.030	20	20.76	0.000	0.000	0.056	0.056	100	81.84	0.000	0.000	0.067	0.067	474
9	5.703	0.000	0.000	0.016	0.016	8	24.00	0.000	0.000	0.065	0.065	135	57.38	0.000	0.000	0.064	0.064	317
10	6.452	0.000	0.000	0.033	0.033	18	37.72	0.000	0.000	0.072	0.072	235	220.0	0.039	0.044	0.142	0.225	4267
11	11.00	0.000	0.000	0.056	0.056	53	66.00	0.000	0.000	0.090	0.090	513	109.4	0.012	0.013	0.092	0.117	1101
12	32.51	0.000	0.000	0.030	0.030	84	41.55	0.000	0.000	0.038	0.038	136	107.3	0.011	0.012	0.091	0.113	1049
13	28.90	0.000	0.000	0.097	0.097	242	36.70	0.000	0.000	0.028	0.028	89	114.0	0.011	0.012	0.097	0.121	1188
14	23.17	0.000	0.000	0.046	0.046	92	45.49	0.000	0.000	0.197	0.197	774	95.18	0.000	0.000	0.079	0.079	650
15	15.28	0.000	0.000	0.081	0.081	107	48.26	0.000	0.000	0.169	0.169	705	103.0	0.010	0.011	0.085	0.106	946
16	22.71	0.000	0.000	0.060	0.060	118	145.0	0.033	0.034	0.277	0.344	4315	79.07	0.000	0.000	0.071	0.071	485
17	33.48	0.000	0.000	0.055	0.055	159	486.0	0.111	0.115	0.490	0.716	30057	138.0	0.014	0.016	0.174	0.204	2432
18	26.00	0.000	0.000	0.043	0.043	97	443.0	0.090	0.096	0.403	0.589	22544	98.04	0.000	0.000	0.080	0.080	678
19	20.76	0.000	0.000	0.135	0.135	242	1087	0.150	0.175	0.526	0.851	79886	168.2	0.028	0.032	0.228	0.288	4185
20	52.63	0.000	0.000	0.222	0.222	1010	398.7	0.079	0.082	0.304	0.465	16018	192.0	0.032	0.037	0.260	0.329	5449
21	32.14	0.000	0.000	0.222	0.222	617	206.7	0.039	0.043	0.133	0.215	3841	152.0	0.023	0.026	0.156	0.205	2697
22	77.38	0.000	0.000	0.217	0.217	1451	164.7	0.019	0.021	0.077	0.117	1659	109.0	0.012	0.014	0.082	0.108	1015
23	97.73	0.000	0.000	0.310	0.310	2618	125.0	0.014	0.016	0.058	0.088	951	193.4	0.038	0.041	0.196	0.274	4583
24	58.98	0.000	0.000	0.230	0.230	1172	97.86	0.000	0.000	0.064	0.064	541	176.3	0.031	0.036	0.134	0.201	3059
25	36.62	0.000	0.000	0.143	0.143	452	84.69	0.000	0.000	0.060	0.060	439	182.3	0.032	0.036	0.140	0.208	3276
26	45.00	0.000	0.000	0.177	0.177	688	84.45	0.000	0.000	0.059	0.059	430	231.9	0.035	0.037	0.147	0.219	4388
27	39.52	0.000	0.000	0.216	0.216	737	119.3	0.014	0.015	0.090	0.119	1229	197.0	0.030	0.032	0.125	0.186	3169
28	36.13	0.000	0.000	0.202	0.202	631	118.4	0.013	0.014	0.088	0.115	1176	424.0	0.045	0.047	0.178	0.270	9884
29	30.64	0.000	0.000	0.195	0.195	516	82.45	0.000	0.000	0.063	0.063	449	352.0	0.036	0.039	0.134	0.209	6347
30	43.04	0.000	0.000	0.254	0.254	945	65.48	0.000	0.000	0.050	0.050	283	252.6	0.025	0.027	0.129	0.181	3944
31							56.62	0.000	0.000	0.055	0.055	269	181.0	0.029	0.030	0.114	0.173	2699
Ten Daily Mean																		
Ten Daily I	5.556	0.000	0.000	0.019	0.019	11	38.13	0.000	0.000	0.077	0.077	257	87.61	0.004	0.004	0.076	0.084	824
Ten Daily II	26.64	0.000	0.000	0.083	0.083	220	279.8	0.046	0.050	0.252	0.349	15504	120.4	0.012	0.013	0.126	0.151	1816
Ten Daily III	49.72	0.000	0.000	0.217	0.217	983	109.6	0.009	0.010	0.072	0.091	1024	222.9	0.030	0.033	0.140	0.203	4097
Monthly Total						12135						168876						71467

Annual Sediment Load (Metric Tonnes) : 474722

Daily Observed Sediment Datasheet for period : 2017-2018

Station Name : GUNUPUR (AV000K9) **Division : E.E., Bhubaneswar**

Local River : Vamsadhara **Sub-Division : Behrampur**

Day	Sep						Oct						Nov					
	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day
1	171.0	0.022	0.025	0.107	0.154	2282	128.0	0.014	0.015	0.093	0.122	1344	80.60	0.000	0.000	0.020	0.020	139
2	203.0	0.026	0.030	0.127	0.183	3213	122.0	0.013	0.014	0.085	0.111	1172	74.23	0.000	0.000	0.021	0.021	135
3	155.0	0.020	0.023	0.097	0.140	1874	166.0	0.017	0.019	0.116	0.152	2174	68.37	0.000	0.000	0.017	0.017	100
4	112.6	0.016	0.020	0.103	0.139	1354	161.1	0.017	0.018	0.115	0.150	2091	63.00	0.000	0.000	0.016	0.016	87
5	97.21	0.000	0.000	0.096	0.096	806	220.5	0.018	0.021	0.157	0.196	3736	55.00	0.000	0.000	0.023	0.023	109
6	103.5	0.011	0.012	0.080	0.103	924	165.9	0.017	0.019	0.116	0.152	2176	50.91	0.000	0.000	0.017	0.017	75
7	102.3	0.011	0.012	0.078	0.101	894	351.0	0.073	0.079	0.268	0.420	12722	45.63	0.000	0.000	0.020	0.020	79
8	97.40	0.000	0.000	0.077	0.077	648	292.0	0.061	0.066	0.223	0.349	8807	39.72	0.000	0.000	0.017	0.017	58
9	104.8	0.013	0.014	0.088	0.115	1041	223.3	0.018	0.021	0.158	0.197	3797	37.03	0.000	0.000	0.016	0.016	51
10	114.0	0.014	0.015	0.096	0.125	1234	294.0	0.061	0.065	0.207	0.332	8441	34.94	0.000	0.000	0.014	0.014	42
11	100.8	0.011	0.013	0.070	0.094	819	213.3	0.017	0.020	0.149	0.186	3433	32.71	0.000	0.000	0.015	0.015	42
12	89.69	0.000	0.000	0.066	0.066	511	258.0	0.037	0.040	0.161	0.238	5299	30.30	0.000	0.000	0.014	0.014	37
13	101.6	0.000	0.000	0.070	0.070	614	218.0	0.017	0.020	0.146	0.183	3452	27.61	0.000	0.000	0.015	0.015	36
14	132.8	0.015	0.016	0.099	0.130	1486	215.0	0.017	0.020	0.137	0.174	3234	27.66	0.000	0.000	0.016	0.016	38
15	142.0	0.016	0.017	0.105	0.138	1693	260.0	0.037	0.040	0.162	0.239	5376	26.06	0.000	0.000	0.013	0.013	29
16	109.5	0.012	0.014	0.089	0.115	1085	181.0	0.013	0.016	0.113	0.142	2225	33.68	0.000	0.000	0.019	0.019	55
17	103.0	0.011	0.013	0.084	0.108	963	137.1	0.010	0.012	0.087	0.109	1288	89.36	0.000	0.000	0.028	0.028	216
18	167.9	0.018	0.021	0.146	0.185	2687	115.1	0.008	0.010	0.080	0.098	973	68.45	0.000	0.000	0.023	0.023	136
19	112.5	0.011	0.013	0.100	0.124	1208	163.0	0.012	0.014	0.113	0.138	1946	57.00	0.000	0.000	0.019	0.019	94
20	165.3	0.017	0.020	0.141	0.178	2543	188.1	0.016	0.017	0.110	0.143	2321	66.17	0.000	0.000	0.022	0.022	126
21	208.2	0.019	0.021	0.150	0.190	3422	537.0	0.112	0.116	0.496	0.723	33563	40.15	0.000	0.000	0.033	0.033	114
22	147.2	0.016	0.019	0.116	0.150	1913	440.0	0.092	0.095	0.406	0.592	22517	49.28	0.000	0.000	0.027	0.027	115
23	101.8	0.011	0.014	0.087	0.112	984	412.0	0.083	0.107	0.311	0.502	17859	29.92	0.000	0.000	0.024	0.024	62
24	104.0	0.011	0.014	0.089	0.114	1028	293.0	0.049	0.052	0.173	0.274	6929	26.91	0.000	0.000	0.022	0.022	51
25	137.1	0.016	0.019	0.103	0.137	1627	260.0	0.041	0.044	0.161	0.247	5542	44.05	0.000	0.000	0.020	0.020	76
26	144.1	0.016	0.019	0.103	0.138	1716	241.0	0.031	0.034	0.152	0.216	4498	38.00	0.000	0.000	0.023	0.023	76
27	182.7	0.017	0.020	0.134	0.172	2711	175.3	0.015	0.017	0.105	0.137	2080	36.25	0.000	0.000	0.021	0.021	66
28	165.0	0.017	0.019	0.116	0.152	2165	138.0	0.014	0.016	0.083	0.113	1344	34.72	0.000	0.000	0.018	0.018	54
29	135.0	0.014	0.015	0.098	0.128	1488	110.0	0.011	0.013	0.066	0.090	853	33.10	0.000	0.000	0.017	0.017	49
30	140.0	0.015	0.016	0.102	0.133	1605	102.0	0.011	0.013	0.073	0.097	854	30.65	0.000	0.000	0.017	0.017	45
31							89.00	0.000	0.000	0.058	0.058	446						
Ten Daily Mean																		
Ten Daily I	126.1	0.013	0.015	0.095	0.123	1427	212.4	0.031	0.033	0.154	0.218	4646	54.94	0.000	0.000	0.018	0.018	88
Ten Daily II	122.5	0.011	0.013	0.097	0.121	1361	194.9	0.019	0.021	0.126	0.165	2955	45.90	0.000	0.000	0.018	0.018	81
Ten Daily III	146.5	0.015	0.018	0.110	0.143	1866	254.3	0.042	0.046	0.189	0.277	8771	36.30	0.000	0.000	0.022	0.022	71
Monthly Total						46538						172490						2393

Annual Sediment Load (Metric Tonnes) : 474722

Daily Observed Sediment Datasheet for period : 2017-2018

Station Name : GUNUPUR (AV000K9) **Division : E.E., Bhubaneswar**

Local River : Vamsadhara **Sub-Division : Behrampur**

Day	Dec						Jan						Feb					
	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day
1	29.26	0.000	0.000	0.013	0.013	33	8.801	0.000	0.000	0.004	0.004	3	6.492	0.000	0.000	0.004	0.004	2
2	39.00	0.000	0.000	0.018	0.018	61	8.912	0.000	0.000	0.004	0.004	3	6.529	0.000	0.000	0.004	0.004	2
3	26.50	0.000	0.000	0.012	0.012	27	8.721	0.000	0.000	0.004	0.004	3	6.589	0.000	0.000	0.004	0.004	2
4	21.88	0.000	0.000	0.011	0.011	21	8.803	0.000	0.000	0.004	0.004	3	6.500	0.000	0.000	0.004	0.004	2
5	20.19	0.000	0.000	0.011	0.011	19	8.848	0.000	0.000	0.004	0.004	3	6.419	0.000	0.000	0.004	0.004	2
6	21.11	0.000	0.000	0.011	0.011	20	8.546	0.000	0.000	0.004	0.004	3	6.360	0.000	0.000	0.004	0.004	2
7	20.91	0.000	0.000	0.011	0.011	20	8.500	0.000	0.000	0.004	0.004	3	6.455	0.000	0.000	0.004	0.004	2
8	21.11	0.000	0.000	0.011	0.011	20	8.198	0.000	0.000	0.004	0.004	3	6.272	0.000	0.000	0.004	0.004	2
9	46.64	0.000	0.000	0.024	0.024	97	7.811	0.000	0.000	0.004	0.004	3	6.202	0.000	0.000	0.004	0.004	2
10	24.50	0.000	0.000	0.013	0.013	28	7.833	0.000	0.000	0.004	0.004	3	6.281	0.000	0.000	0.004	0.004	2
11	22.84	0.000	0.000	0.012	0.012	24	7.523	0.000	0.000	0.004	0.004	3	6.000	0.000	0.000	0.004	0.004	2
12	20.12	0.000	0.000	0.011	0.011	19	7.643	0.000	0.000	0.004	0.004	3	5.728	0.000	0.000	0.004	0.004	2
13	19.31	0.000	0.000	0.010	0.010	17	7.040	0.000	0.000	0.004	0.004	2	5.727	0.000	0.000	0.004	0.004	2
14	17.72	0.000	0.000	0.010	0.010	15	7.000	0.000	0.000	0.004	0.004	2	5.574	0.000	0.000	0.004	0.004	2
15	17.72	0.000	0.000	0.008	0.008	12	7.001	0.000	0.000	0.004	0.004	2	5.784	0.000	0.000	0.004	0.004	2
16	13.55	0.000	0.000	0.007	0.007	8	7.080	0.000	0.000	0.004	0.004	2	5.069	0.000	0.000	0.004	0.004	2
17	12.30	0.000	0.000	0.006	0.006	6	7.041	0.000	0.000	0.004	0.004	2	5.319	0.000	0.000	0.004	0.004	2
18	11.52	0.000	0.000	0.007	0.007	7	7.033	0.000	0.000	0.004	0.004	2	5.050	0.000	0.000	0.004	0.004	2
19	10.44	0.000	0.000	0.007	0.007	6	7.070	0.000	0.000	0.004	0.004	2	5.033	0.000	0.000	0.004	0.004	2
20	10.34	0.000	0.000	0.007	0.007	6	6.871	0.000	0.000	0.004	0.004	2	5.511	0.000	0.000	0.004	0.004	2
21	9.667	0.000	0.000	0.006	0.006	5	6.870	0.000	0.000	0.004	0.004	2	5.259	0.000	0.000	0.004	0.004	2
22	9.842	0.000	0.000	0.006	0.006	5	6.533	0.000	0.000	0.004	0.004	2	5.095	0.000	0.000	0.004	0.004	2
23	9.138	0.000	0.000	0.005	0.005	4	6.785	0.000	0.000	0.004	0.004	2	5.123	0.000	0.000	0.004	0.004	2
24	9.140	0.000	0.000	0.005	0.005	4	6.750	0.000	0.000	0.004	0.004	2	5.054	0.000	0.000	0.004	0.004	2
25	9.140	0.000	0.000	0.005	0.005	4	6.762	0.000	0.000	0.004	0.004	2	5.100	0.000	0.000	0.004	0.004	2
26	9.148	0.000	0.000	0.005	0.005	4	6.700	0.000	0.000	0.004	0.004	2	5.179	0.000	0.000	0.004	0.004	2
27	9.867	0.000	0.000	0.005	0.005	4	6.715	0.000	0.000	0.004	0.004	2	4.752	0.000	0.000	0.004	0.004	2
28	9.344	0.000	0.000	0.005	0.005	4	6.700	0.000	0.000	0.004	0.004	2	4.737	0.000	0.000	0.004	0.004	2
29	11.93	0.000	0.000	0.006	0.006	6	6.574	0.000	0.000	0.004	0.004	2						
30	9.331	0.000	0.000	0.005	0.005	4	6.666	0.000	0.000	0.004	0.004	2						
31	8.950	0.000	0.000	0.005	0.005	4	6.577	0.000	0.000	0.004	0.004	2						
Ten Daily Mean																		
Ten Daily I	27.11	0.000	0.000	0.014	0.014	35	8.497	0.000	0.000	0.004	0.004	3	6.410	0.000	0.000	0.004	0.004	2
Ten Daily II	15.59	0.000	0.000	0.009	0.009	12	7.130	0.000	0.000	0.004	0.004	2	5.479	0.000	0.000	0.004	0.004	2
Ten Daily III	9.591	0.000	0.000	0.005	0.005	4	6.694	0.000	0.000	0.004	0.004	2	5.037	0.000	0.000	0.004	0.004	2
Monthly Total						515						79						55

Annual Sediment Load (Metric Tonnes) : 474722

Daily Observed Sediment Datasheet for period : 2017-2018

Station Name : GUNUPUR (AV000K9) **Division : E.E., Bhubaneswar**

Local River : Vamsadhara **Sub-Division : Behrampur**

Day	Mar						Apr						May					
	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day
1	4.383	0.000	0.000	0.004	0.004	2	2.700	0.000	0.000	0.002	0.002	0	3.886	0.000	0.000	0.004	0.004	1
2	4.750	0.000	0.000	0.004	0.004	2	3.532	0.000	0.000	0.002	0.002	1	4.105	0.000	0.000	0.004	0.004	1
3	4.507	0.000	0.000	0.004	0.004	2	4.226	0.000	0.000	0.002	0.002	1	4.698	0.000	0.000	0.005	0.005	2
4	4.500	0.000	0.000	0.004	0.004	2	4.245	0.000	0.000	0.002	0.002	1	4.313	0.000	0.000	0.004	0.004	1
5	4.441	0.000	0.000	0.004	0.004	2	4.442	0.000	0.000	0.003	0.003	1	4.377	0.000	0.000	0.004	0.004	2
6	4.228	0.000	0.000	0.004	0.004	1	4.360	0.000	0.000	0.003	0.003	1	4.100	0.000	0.000	0.004	0.004	1
7	4.236	0.000	0.000	0.004	0.004	1	4.375	0.000	0.000	0.003	0.003	1	3.599	0.000	0.000	0.003	0.003	1
8	4.248	0.000	0.000	0.004	0.004	1	5.500	0.000	0.000	0.004	0.004	2	3.131	0.000	0.000	0.003	0.003	1
9	4.158	0.000	0.000	0.004	0.004	1	5.662	0.000	0.000	0.004	0.004	2	2.986	0.000	0.000	0.002	0.002	1
10	4.256	0.000	0.000	0.004	0.004	1	5.668	0.000	0.000	0.004	0.004	2	2.951	0.000	0.000	0.002	0.002	1
11	4.200	0.000	0.000	0.004	0.004	1	10.96	0.000	0.000	0.008	0.008	8	2.947	0.000	0.000	0.002	0.002	1
12	4.166	0.000	0.000	0.002	0.002	1	7.104	0.000	0.000	0.005	0.005	3	3.155	0.000	0.000	0.002	0.002	1
13	4.020	0.000	0.000	0.002	0.002	1	12.08	0.000	0.000	0.009	0.009	9	2.900	0.000	0.000	0.002	0.002	1
14	4.018	0.000	0.000	0.002	0.002	1	9.946	0.000	0.000	0.007	0.007	6	6.031	0.000	0.000	0.006	0.006	3
15	4.026	0.000	0.000	0.002	0.002	1	11.40	0.000	0.000	0.008	0.008	8	5.409	0.000	0.000	0.005	0.005	2
16	4.015	0.000	0.000	0.002	0.002	1	9.609	0.000	0.000	0.007	0.007	6	5.158	0.000	0.000	0.005	0.005	2
17	4.021	0.000	0.000	0.002	0.002	1	5.712	0.000	0.000	0.004	0.004	2	4.421	0.000	0.000	0.004	0.004	2
18	4.050	0.000	0.000	0.002	0.002	1	5.700	0.000	0.000	0.004	0.004	2	5.693	0.000	0.000	0.005	0.005	2
19	4.099	0.000	0.000	0.002	0.002	1	5.736	0.000	0.000	0.004	0.004	2	4.750	0.000	0.000	0.004	0.004	2
20	4.093	0.000	0.000	0.002	0.002	1	5.402	0.000	0.000	0.004	0.004	2	4.700	0.000	0.000	0.004	0.004	2
21	3.658	0.000	0.000	0.002	0.002	1	6.435	0.000	0.000	0.004	0.004	2	6.843	0.000	0.000	0.015	0.015	9
22	3.528	0.000	0.000	0.002	0.002	1	5.400	0.000	0.000	0.004	0.004	2	6.430	0.000	0.000	0.014	0.014	8
23	3.611	0.000	0.000	0.002	0.002	1	5.101	0.000	0.000	0.004	0.004	2	5.771	0.000	0.000	0.013	0.013	6
24	3.314	0.000	0.000	0.002	0.002	1	5.055	0.000	0.000	0.004	0.004	2	5.146	0.000	0.000	0.011	0.011	5
25	3.310	0.000	0.000	0.002	0.002	1	5.350	0.000	0.000	0.004	0.004	2	4.691	0.000	0.000	0.005	0.005	2
26	3.301	0.000	0.000	0.002	0.002	1	5.088	0.000	0.000	0.004	0.004	2	4.681	0.000	0.000	0.005	0.005	2
27	2.893	0.000	0.000	0.002	0.002	0	4.740	0.000	0.000	0.004	0.004	2	4.100	0.000	0.000	0.004	0.004	1
28	2.861	0.000	0.000	0.002	0.002	0	4.703	0.000	0.000	0.004	0.004	2	4.207	0.000	0.000	0.004	0.004	1
29	2.900	0.000	0.000	0.002	0.002	1	4.400	0.000	0.000	0.003	0.003	1	4.143	0.000	0.000	0.004	0.004	1
30	2.900	0.000	0.000	0.002	0.002	1	4.200	0.000	0.000	0.003	0.003	1	4.110	0.000	0.000	0.004	0.004	1
31	2.910	0.000	0.000	0.002	0.002	1							4.110	0.000	0.000	0.004	0.004	1
Ten Daily Mean																		
Ten Daily I	4.371	0.000	0.000	0.004	0.004	2	4.471	0.000	0.000	0.003	0.003	1	3.815	0.000	0.000	0.004	0.004	1
Ten Daily II	4.071	0.000	0.000	0.002	0.002	1	8.365	0.000	0.000	0.006	0.006	5	4.516	0.000	0.000	0.004	0.004	2
Ten Daily III	3.199	0.000	0.000	0.002	0.002	1	5.047	0.000	0.000	0.004	0.004	2	4.930	0.000	0.000	0.008	0.008	4
Monthly Total						29						76						68

Annual Sediment Load (Metric Tonnes) : 474722

Annual Sediment Load for period : 2014-2018

Station Name : GUNUPUR (AV000K9) **Division : E.E., Bhubaneswar**

Local River : Vamsadhara **Sub-Division : Behrampur**

Year	Monsoon (M.T.)	Non-Monsoon (M.T.)	Annual Load (M.T.)	Annual Run Off (MCM)
2014-2015	3351292	13088	3364380	4195
2015-2016	409630	2696	412326	1047
2016-2017	93220	223	93443	834
2017-2018	473900	822	474722	2012

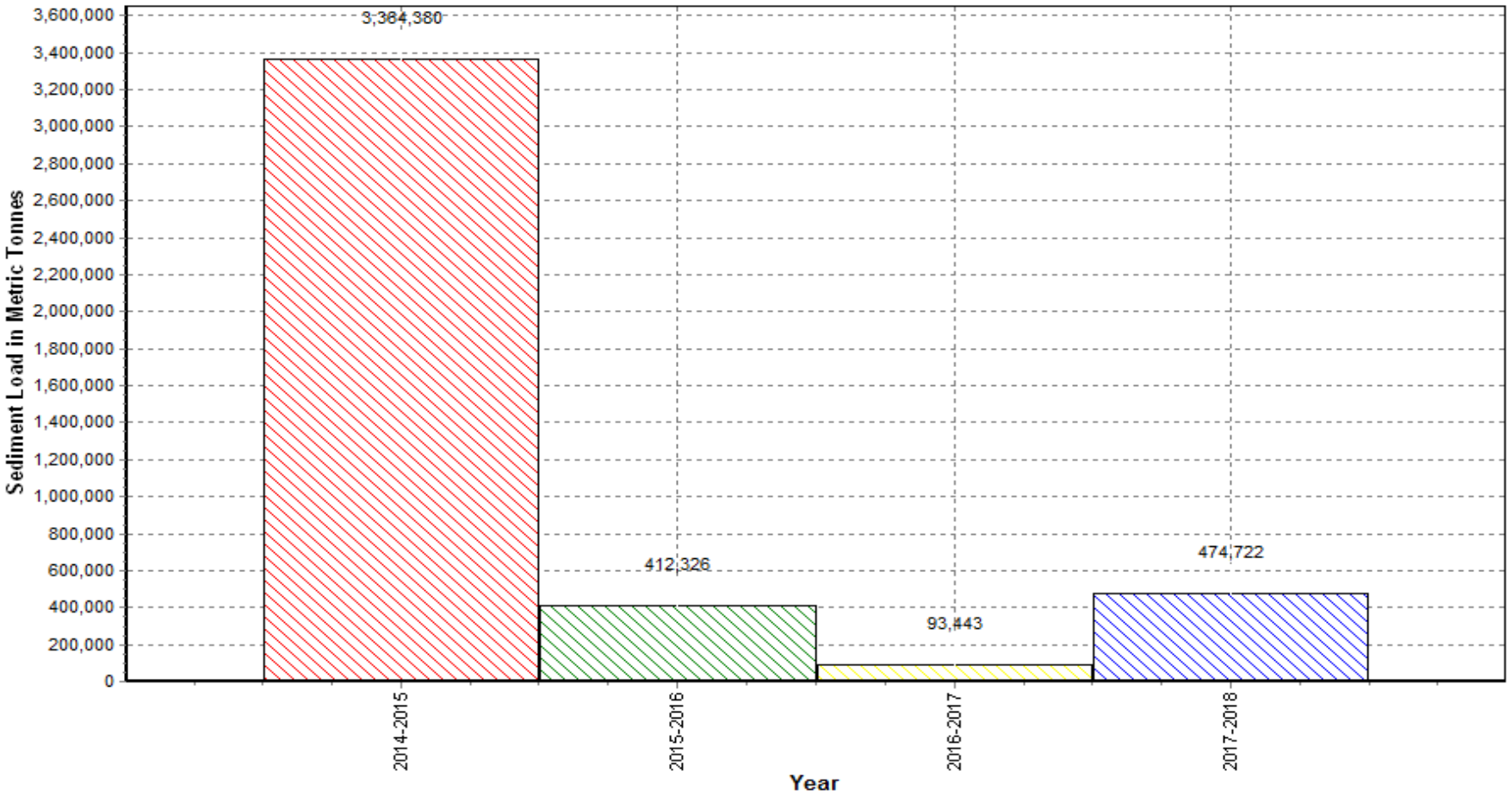
Annual Sediment Load for the period: 2014-2018

Station Name : GUNUPUR (AV000K9)

Local River : Vamsadhara

Division : E.E., Bhubaneswar

Sub-Division : Behrampur



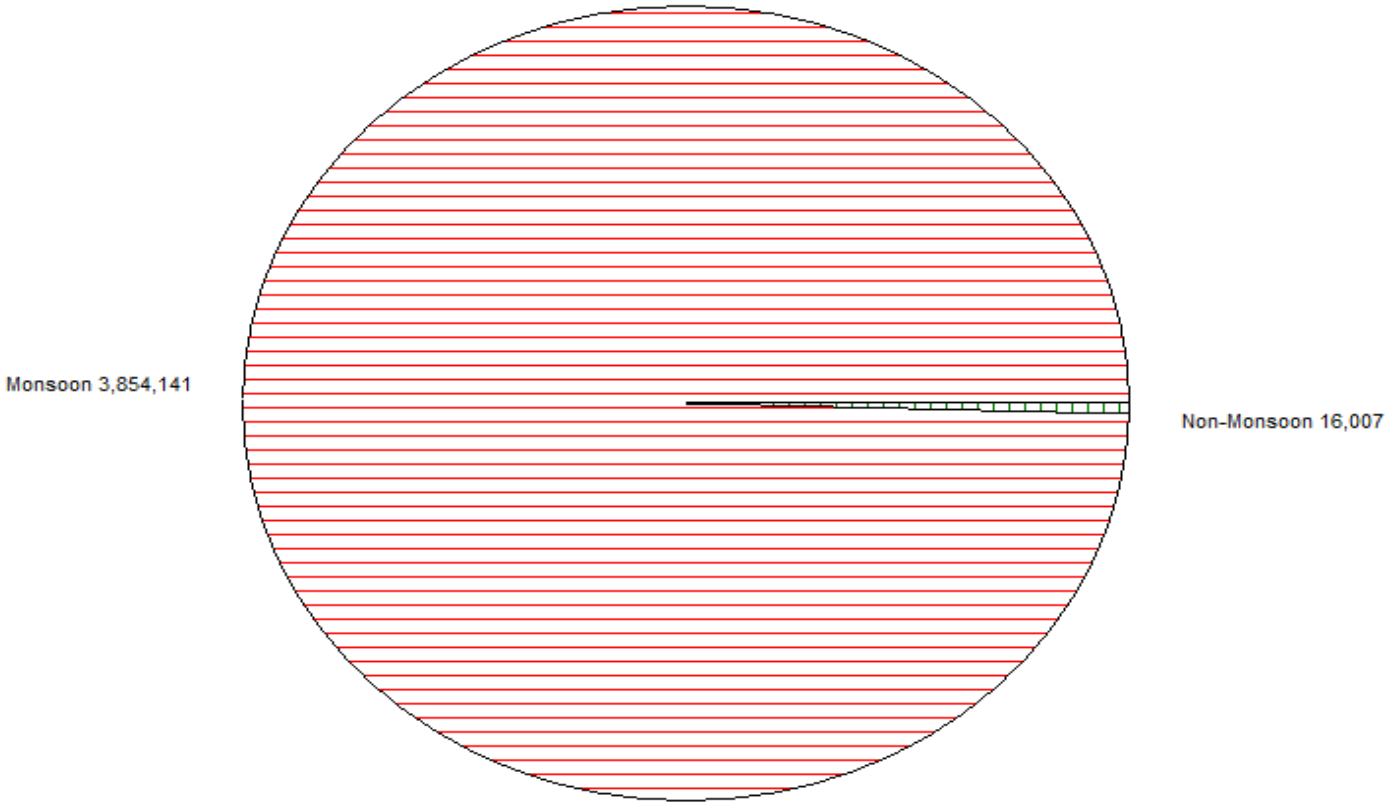
Seasonal Sediment Load for the period : 2014-2017

Station Name : GUNUPUR (AV000K9)

Local River : Vamsadhara

Division : E.E., Bhubaneswar

Sub-Division : Behrampur



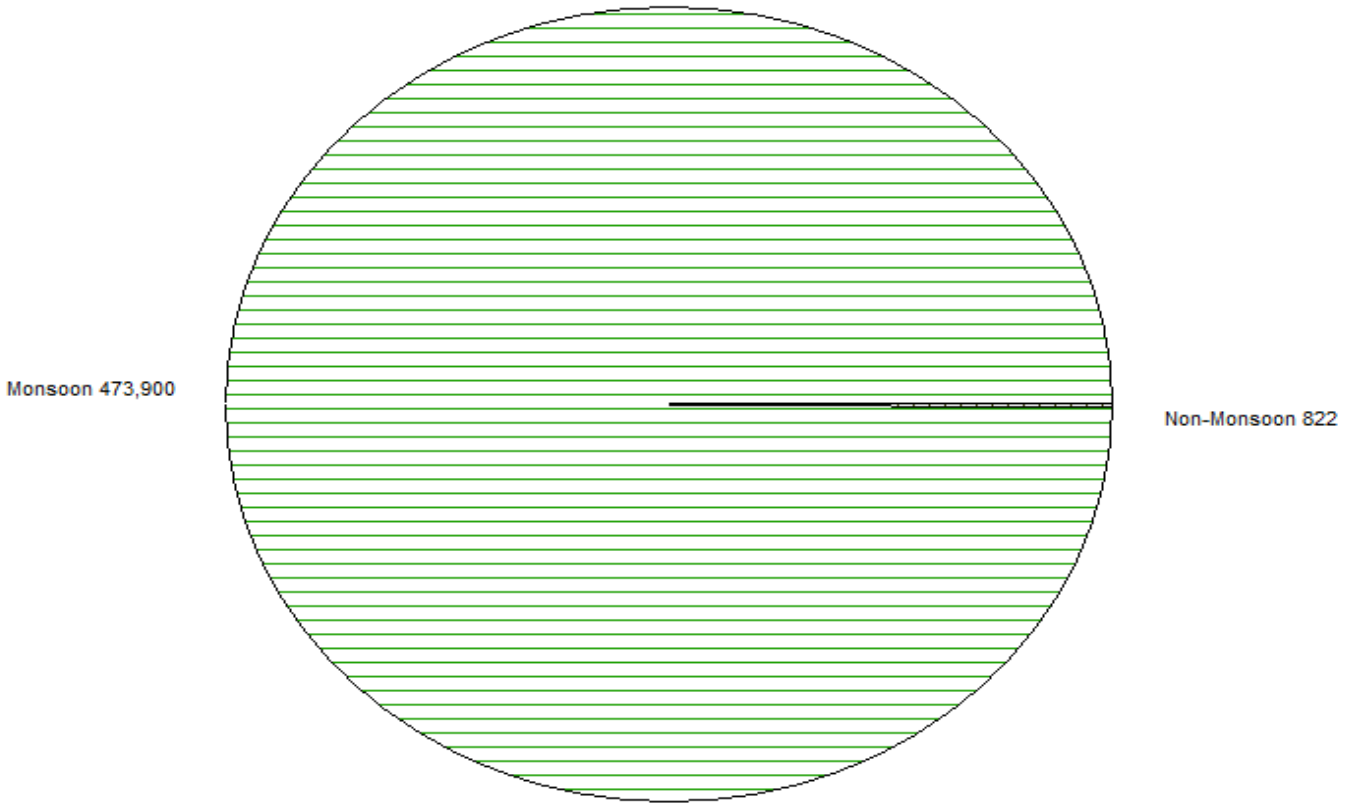
Seasonal Sediment Load for the Year: 2017-2018

Station Name : GUNUPUR (AV000K9)

Local River : Vamsadhara

Division : E.E., Bhubaneswar

Sub-Division : Behrampur



Water Quality Datasheet for the period : 2017-2018

Station Name : GUNUPUR (AV000K9) **Division : E.E., Bhubaneswar**

Local River : Vamsadhara **River Water Analysis** **Sub-Division : Behrampur**

S.No	Parameters	6/1/2017	7/1/2017	8/1/2017	9/1/2017	10/3/2017	11/1/2017	12/1/2017	1/1/2018	2/1/2018	3/1/2018	4/2/2018	5/1/2018
		A	A	A	A	A	A	A	A	A	A	A	A
	PHYSICAL												
1	Q (cumec)												
2	Colour_Cod (-)	Clear	Light Brown	Light Brown	Light Brown	Light Brown	Clear	Clear	Clear	Clear	Clear	Clear	Clear
3	EC_FLD (µmho/cm)	360	258	198	128	156	156	195	219	359	343	450	330
4	EC_GEN (µmho/cm)	352	250	194	122	160	133	187	212	350	337	448	327
5	Odour_Code (-)	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free
6	pH_FLD (pH units)	7.7	7.5	7.7	7.2	7.7	7.7	7.6	7.8	8.3	8.0	7.4	8.0
7	pH_GEN (pH units)	7.6	7.4	7.8	7.1	7.8	7.6	7.7	7.7	8.2	7.9	7.3	8.0
8	Temp (deg C)	29.5	30.0	28.5	32.0	29.8	26.0	28.0	30.0	18.2	21.7	23.7	29.7
	CHEMICAL												
1	Alk-Phen (mgCaCO3/L)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	69	83	60	51	51	55	83	88	92	129	148	129
3	B (mg/L)	0.02	0.02	0.02	0.01	0.02	0.02	0.01	0.02	0.03	0.02	0.03	0.01
4	Ca (mg/L)	46	45	46	45	14	20	36	31	34	39	33	31
5	Cl (mg/L)	17.0	18.9	11.3	9.4	12.1	6.9	10.4	15.6	12.1	13.8	15.6	17.3
6	CO3 (mg/L)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	F (mg/L)	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
8	Fe (mg/L)	0.4	0.4	0.5	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.4	0.4
9	HCO3 (mg/L)	85	101	73	62	62	68	101	107	113	158	180	158
10	K (mg/L)	1.4	2.6	2.2	2.6	2.8	2.9	3.0	3.2	0.9	4.9	1.8	3.0
11	Mg (mg/L)	21.4	21.4	20.4	21.4	5.6	7.2	10.3	9.5	14.3	15.9	14.3	11.1
12	Na (mg/L)	4.1	6.7	6.1	6.2	6.6	6.9	7.4	9.8	10.4	11.6	12.5	3.8
13	NO2+NO3 (mg N/L)	1.08	1.12	1.15	1.22	1.18	1.23	1.21	1.15	1.11	1.18	1.22	1.25
14	NO2-N (mgN/L)	0.03	0.00	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	NO3-N (mgN/L)	1.05	1.12	1.12	1.19	1.18	1.23	1.21	1.15	1.11	1.18	1.22	1.25
16	P-Tot (mgP/L)	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
17	SiO2 (mg/L)	7.0	8.0	9.2	7.6	7.2	6.0	9.1	7.1	6.1	8.5	9.0	7.8
18	SO4 (mg/L)	13.2	6.1	52.8	6.6	7.0	7.2	7.7	7.9	8.0	19.7	20.9	23.3
	BIOLOGICAL/BACTERIOLOGICAL												
	TRACE & TOXIC												
	CHEMICAL INDICES												
1	HAR_Ca (mgCaCO3/L)	116	112	116	112	36	49	89	77	85	98	82	78
2	HAR_Total (mgCaCO3/L)	205	201	201	201	59	79	132	116	145	164	141	125
3	Na% (%)	4	7	6	6	19	15	11	15	14	13	16	6
4	RSC (-)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
5	SAR (-)	0.1	0.2	0.2	0.2	0.4	0.3	0.3	0.4	0.4	0.4	0.5	0.1
	PESTICIDES												

Water Quality Summary for the period : 2017-2018

Station Name : GUNUPUR (AV000K9) **Division : E.E., Bhubaneswar**

Local River : Vamsadhara **Sub-Division : Behrampur**

River Water Summary

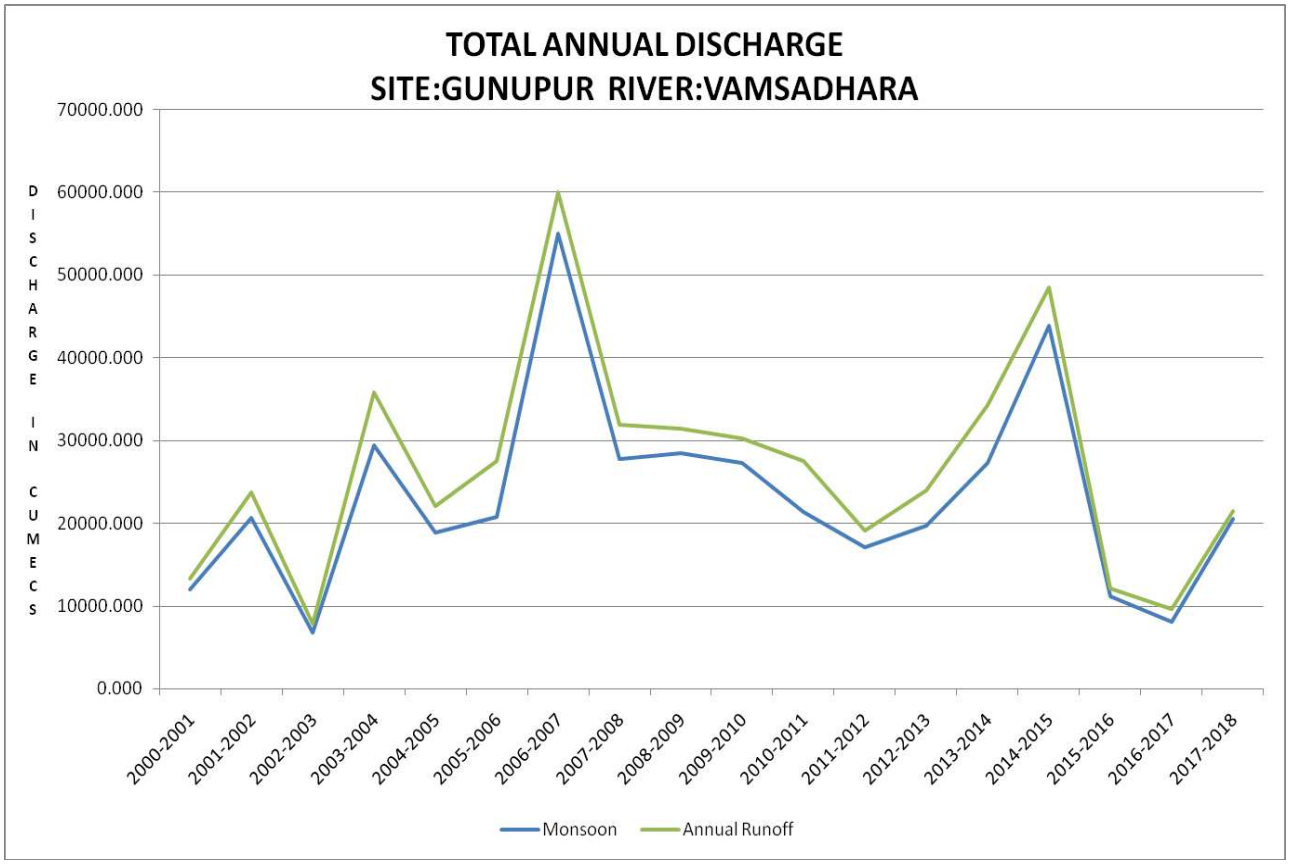
S.No	Parameters	Number of Observations	Maximum	Minimum	Mean
	PHYSICAL				
1	Q (cumec)				
2	EC_FLD (µmho/cm)	12	450	128	263
3	EC_GEN (µmho/cm)	12	448	122	256
4	pH_FLD (pH units)	12	8.3	7.2	7.7
5	pH_GEN (pH units)	12	8.2	7.1	7.7
6	Temp (deg C)	12	32.0	18.2	27.3
	CHEMICAL				
1	Alk-Phen (mgCaCO3/L)	12	0.0	0.0	0
2	ALK-TOT (mgCaCO3/L)	12	148	51	87
3	B (mg/L)	12	0.03	0.01	0.02
4	Ca (mg/L)	12	46	14	35
5	Cl (mg/L)	12	18.9	6.9	13.4
6	CO3 (mg/L)	12	0.0	0.0	0
7	F (mg/L)	12	0.05	0.05	0.05
8	Fe (mg/L)	12	0.5	0.4	0.5
9	HCO3 (mg/L)	12	180	62	106
10	K (mg/L)	12	4.9	0.9	2.6
11	Mg (mg/L)	12	21.4	5.6	14.4
12	Na (mg/L)	12	12.5	3.8	7.7
13	NO2+NO3 (mg N/L)	12	1.25	1.08	1.17
14	NO2-N (mgN/L)	12	0.03	0.00	0.01
15	NO3-N (mgN/L)	12	1.25	1.05	1.17
16	P-Tot (mgP/L)	12	0.001	0.001	0.001
17	SiO2 (mg/L)	12	9.2	6.0	7.7
18	SO4 (mg/L)	12	52.8	6.1	15
	BIOLOGICAL/BACTERIOLOGICAL				
	TRACE & TOXIC				
	CHEMICAL INDICES				
1	HAR_Ca (mgCaCO3/L)	12	116	36	88
2	HAR_Total (mgCaCO3/L)	12	205	59	148
3	Na% (%)	12	19	4	11
4	RSC (-)	12	0.1	0.0	0
5	SAR (-)	12	0.5	0.1	0.3
	PESTICIDES				

Water Quality Seasonal Average for the period: 2015-2018

Station Name : GUNUPUR (AV000K9) **Division : E.E., Bhubaneswar**

Local River : Vamsadhara **River Water** **Sub-Division : Behrampur**

S.No	Parameters	Flood			Winter			Summer		
		Jun - Oct			Nov - Feb			Mar - May		
		2015	2016	2017	2015-2016	2016-2017	2017-2018	2016	2017	2018
	PHYSICAL									
1	Q (cumec)									
2	EC_FLD (µmho/cm)	358	179	220	397	433	232	710	654	374
3	EC_GEN (µmho/cm)	366	182	216	394	436	221	713	659	371
4	pH_FLD (pH units)	7.3	7.4	7.5	7.9	7.7	7.8	8.0	7.8	7.8
5	pH_GEN (pH units)	7.2	7.5	7.5	7.9	7.8	7.8	8.0	7.9	7.7
6	Temp (deg C)	27.2	28.0	30.0	18.5	25.5	25.6	22.5	23.0	25.0
	CHEMICAL									
1	Alk-Phen (mgCaCO3/L)	0.0	0.0	0.0	4.6	0.0	0.0	18.4	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	79	85	63	65	53	80	97	65	136
3	B (mg/L)	0.01	0.02	0.02	0.01	0.01	0.02	0.02	0.03	0.02
4	Ca (mg/L)	20	41	39	21	35	30	27	38	34
5	Cl (mg/L)	11.9	25.8	13.7	15.1	17.9	11.2	18.9	35.8	15.6
6	CO3 (mg/L)	0.0	0.0	0.0	5.5	0.0	0.0	22.2	0.0	0.0
7	F (mg/L)	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
8	Fe (mg/L)	0.5	0.5	0.4	0.4	0.8	0.5	0.4	0.5	0.4
9	HCO3 (mg/L)	96	103	77	68	65	97	73	79	165
10	K (mg/L)	2.7	7.8	2.3	2.8	11.3	2.5	8.0	11.9	3.2
11	Mg (mg/L)	10.4	20.9	18.0	9.2	11.2	10.3	14.6	12.6	13.8
12	Na (mg/L)	10.4	22.1	5.9	21.5	58.2	8.6	17.0	90.1	9.3
13	NO2+NO3 (mg N/L)	0.92	1.00	1.15	1.04	1.16	1.17	0.98	0.99	1.21
14	NO2-N (mgN/L)	0.01	0.04	0.02	0.01	0.01	0.00	0.03	0.03	0.00
15	NO3-N (mgN/L)	0.90	0.96	1.13	1.04	1.15	1.17	0.95	0.97	1.21
16	P-Tot (mgP/L)	0.001	0.010	0.001	0.001	0.010	0.001	0.002	0.010	0.001
17	SiO2 (mg/L)	5.7	6.7	7.8	5.5	6.8	7.1	6.0	7.0	8.4
18	SO4 (mg/L)	13.2	7.7	17.1	7.0	15.8	7.7	7.7	16.0	21.3
	BIOLOGICAL/BACTERIOLOGICAL									
	TRACE & TOXIC									
	CHEMICAL INDICES									
1	HAR_Ca (mgCaCO3/L)	49	103	99	52	88	75	68	96	86
2	HAR_Total (mgCaCO3/L)	93	190	174	91	135	118	129	149	143
3	Na% (%)	18	19	8	33	41	14	21	55	12
4	RSC (-)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
5	SAR (-)	0.5	0.7	0.2	1.0	2.2	0.3	0.7	3.2	0.3
	PESTICIDES									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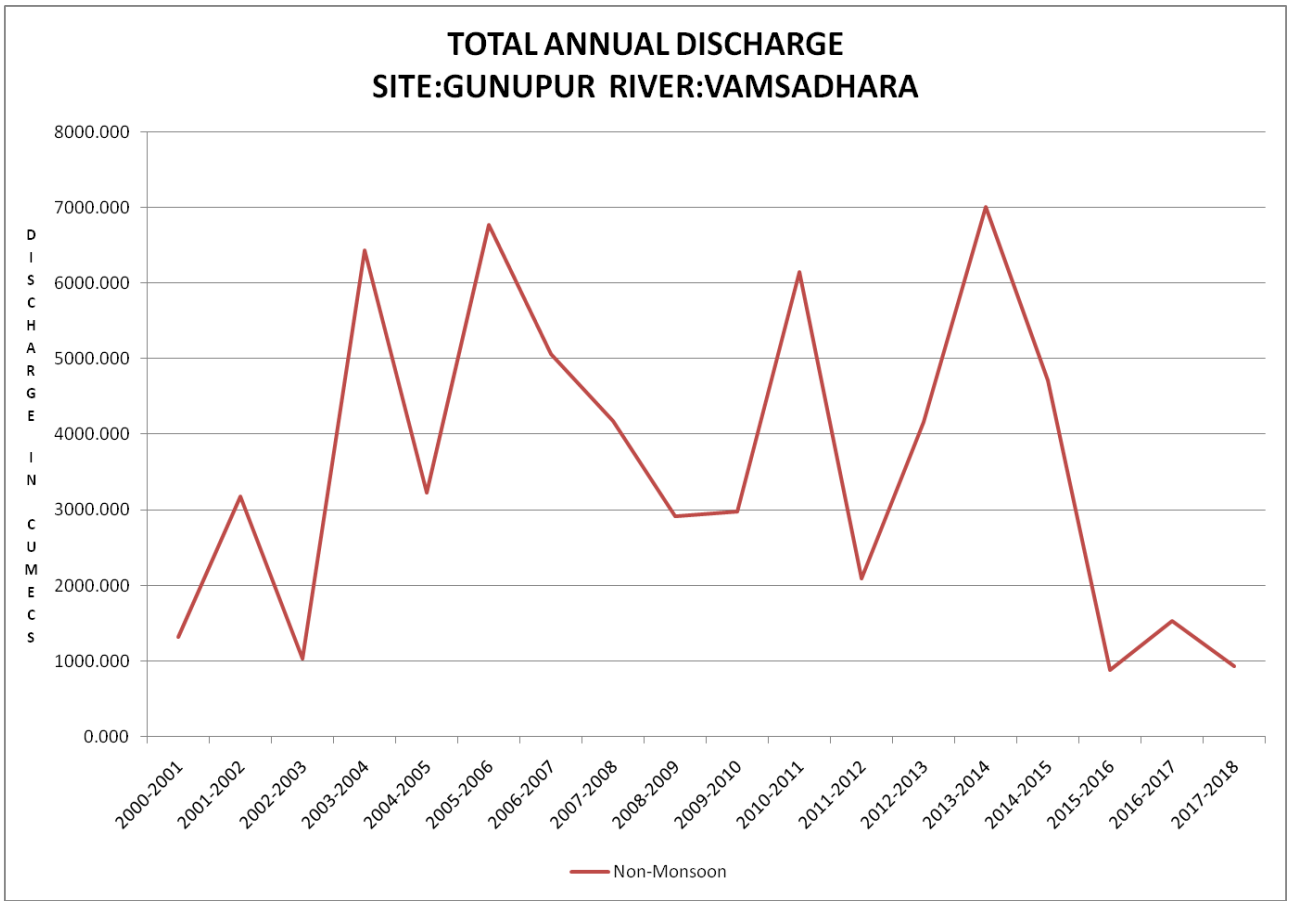
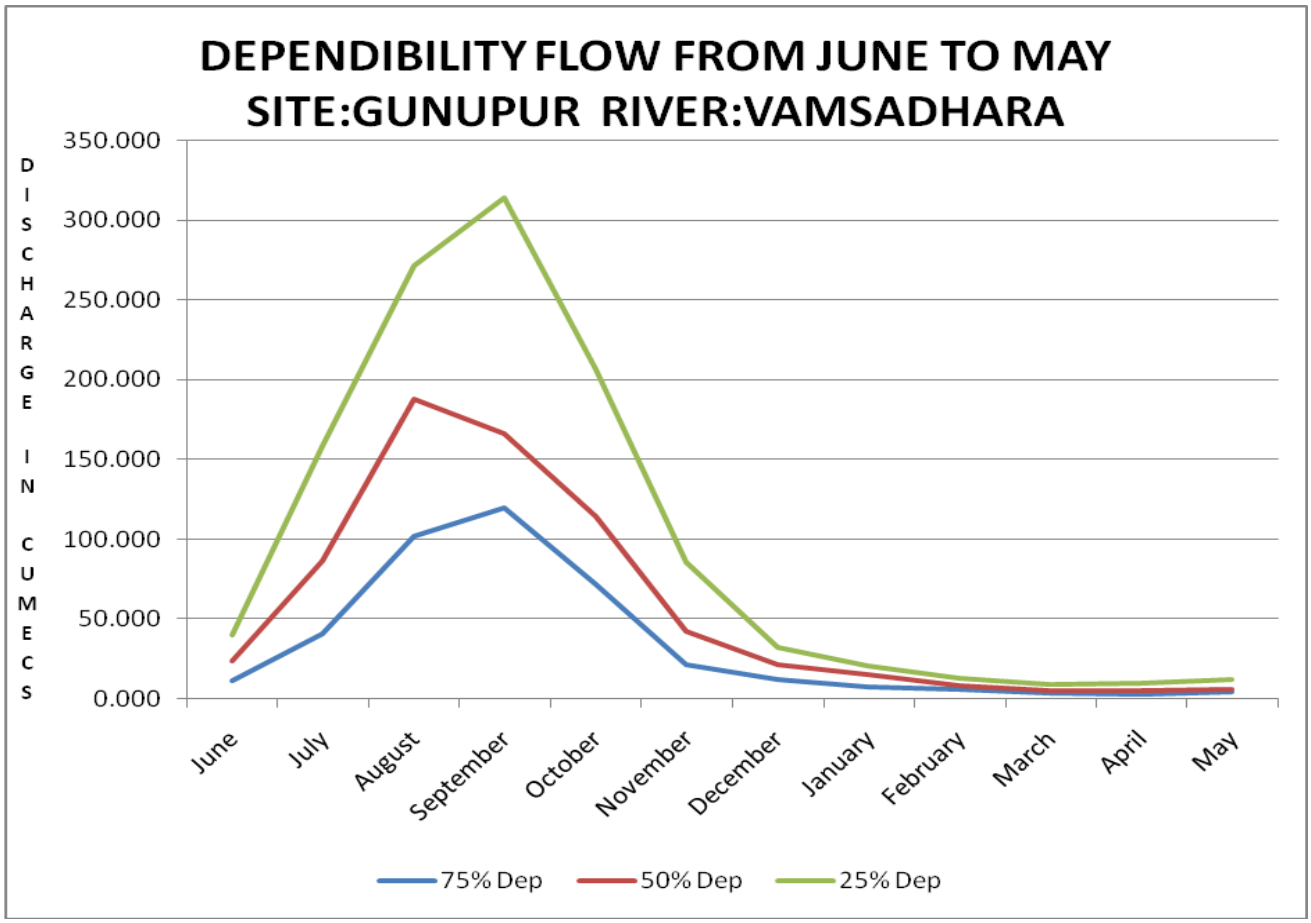
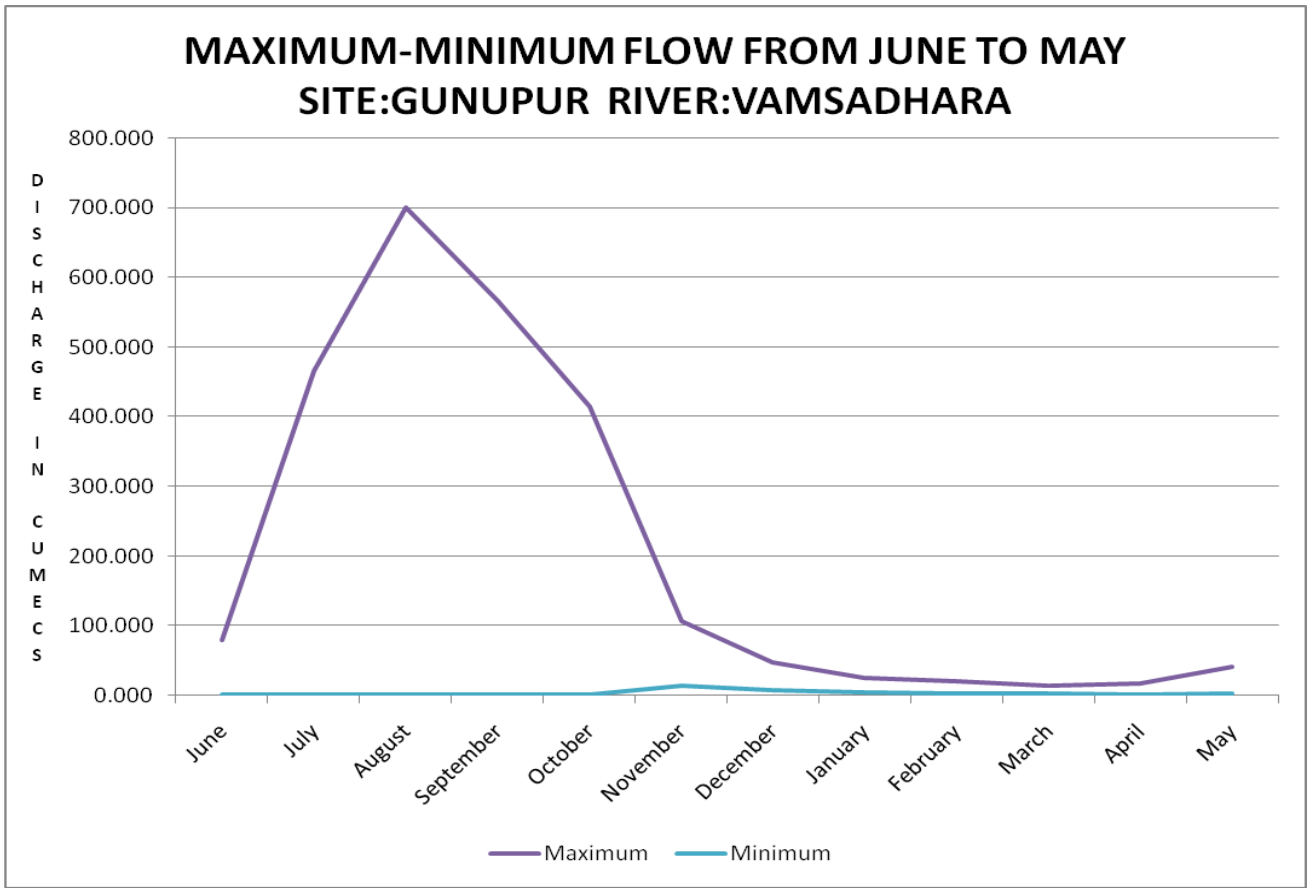
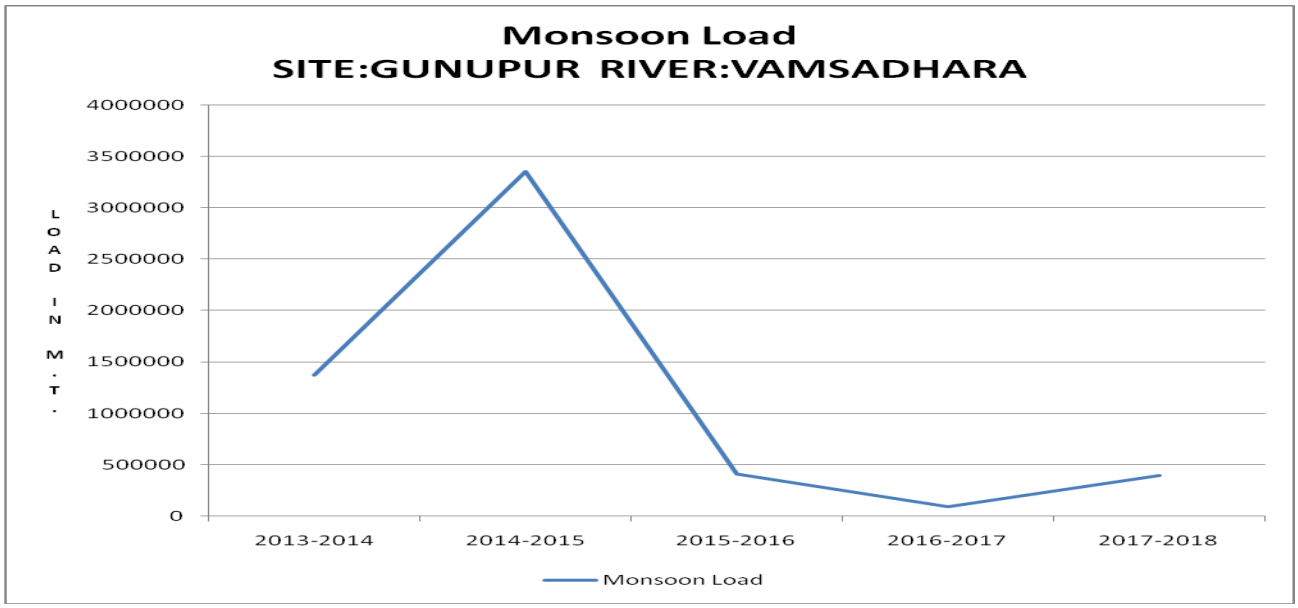
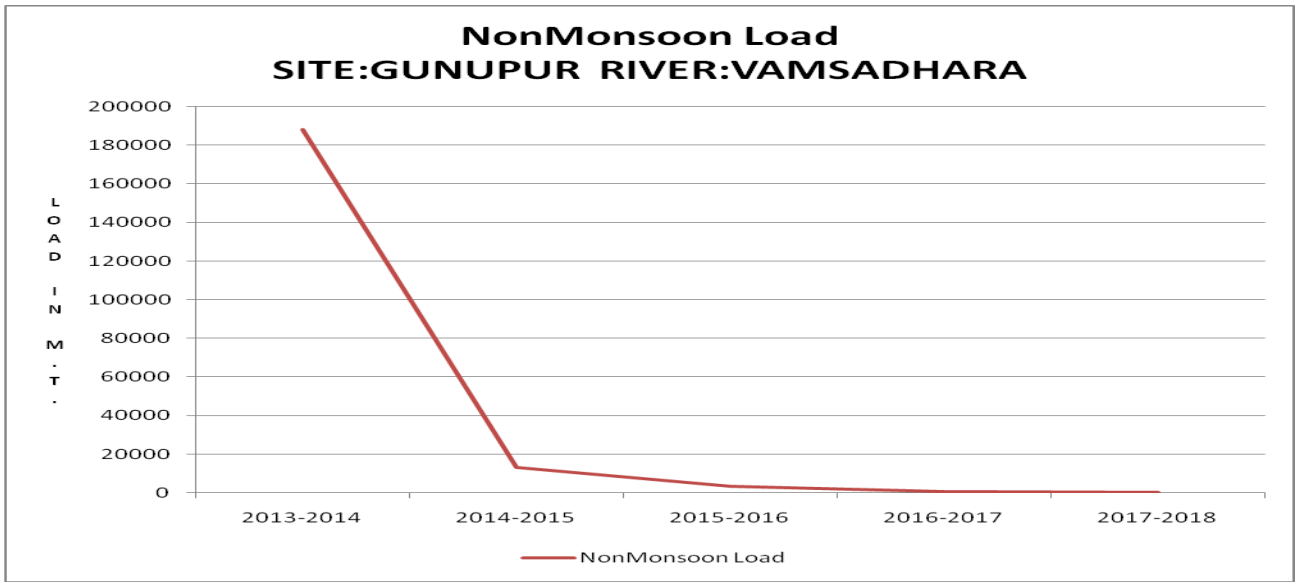
SITE:GUNUPUR RIVER:VAMSADHARA
DISCHARGE IN CUMECS
70000.000
60000.000
50000.000
40000.000
30000.000
20000.000
10000.000
0.000
2000-2001
2001-2002
2002-2003
2003-2004
2004-2005
2005-2006
2006-2007
2007-2008
2008-2009
2009-2010
2010-2011
2011-2012
2012-2013
2013-2014
2014-2015
2015-2016
2016-2017
2017-2018
Monsoon
Annual Runoff

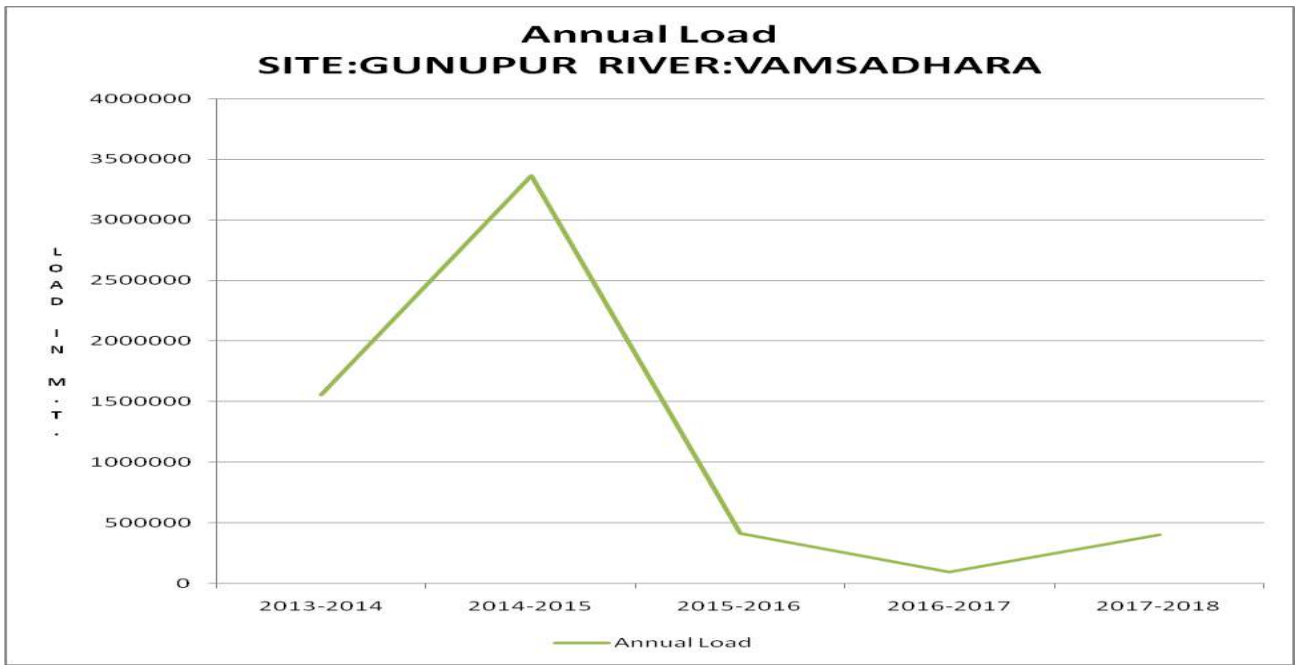

TOTAL ANNUAL DISCHARGE
SITE:GUNUPUR RIVER:VAMSADHARA
DISCHARGE IN CUMECS
8000.000
7000.000
6000.000
5000.000
4000.000
3000.000
2000.000
1000.000
0.000
2000-2001
2001-2002
2002-2003
2003-2004
2004-2005
2005-2006
2006-2007
2007-2008
2008-2009
2009-2010
2010-2011
2011-2012
2012-2013
2013-2014
2014-2015
2015-2016
2016-2017
2017-2018
Non-Monsoon


DEPENDIBILITY FLOW FROM JUNE TO MAY
SITE:GUNUPUR RIVER:VAMSADHARA
DISCHARGE IN CUMECS
350.000
300.000
250.000
200.000
150.000
100.000
50.000
0.000
June
July
August
September
October
November
December
January
February
March
April
May
75% Dep
50% Dep
25% Dep


MAXIMUM-MINIMUM FLOW FROM JUNE TO MAY
SITE:GUNUPUR RIVER:VAMSADHARA
DISCHARGE IN CUMECS
800.000
700.000
600.000
500.000
400.000
300.000
200.000
100.000
0.000
June
July
August
September
October
November
December
January
February
March
April
May
Maximum
Minimum


Monsoon Load
SITE:GUNUPUR RIVER:VAMSADHARA
LOAD IN M.T.
4000000
3500000
3000000
2500000
2000000
1500000
1000000
500000
0
2013-2014
2014-2015
2015-2016
2016-2017
2017-2018
Monsoon Load


NonMonsoon Load
SITE:GUNUPUR RIVER:VAMSADHARA
LOAD IN M.T.
200000
180000
160000
140000
120000
100000
80000
60000
40000
20000
0
2013-2014
2014-2015
2015-2016
2016-2017
2017-2018
NonMonsoon Load


Annual Load
SITE:GUNUPUR RIVER:VAMSADHARA
LOAD IN M.T.
4000000
3500000
3000000
2500000
2000000
1500000
1000000
500000
0
2013-2014
2014-2015
2015-2016
2016-2017
2017-2018
Annual Load

HISTORY SHEET

Water Year : 2017-2018

Site	:	**KASHINAGAR**	**Code**	:	**AV000J4**
State	:	Orissa	District		Gajapati
Basin	:	EFR B Mahanadi-Godavari	Independent River	:	Vamsadhara
Tributary	:		Sub Tributary	:	
Sub-Sub Tributary	:		Local River	:	Vamsadhara
Division	:	E.E., Bhubaneswar	Sub-Division	:	Behrampur
Drainage Area	:	7820 Sq. Km.	Bank	:	Left
Latitude	:	18°50'49"	Longitude	:	83°57'04"
Zero of Gauge (m)	:	50 (m.s.l) 51 (m.s.l)	3/20/1971 6/1/1985	-	5/31/1985 12/31/2999
		Opening Date	Closing Date		
Gauge	:	3/20/1971			
Discharge	:	4/28/1971			
Sediment	:	10/13/1972			
Water Quality	:	9/1/1972			

Annual Maximum / Minimum discharge with corresponding Water Level (m.s.l)

	Maximum			Minimum		
Year	**Q (cumecs)**	**WL (m)**	**Date**	**Q (cumecs)**	**WL (m)**	**Date**
1971-1972	3348	55.565	9/5/1971	0.100	53.095	5/29/1972
1972-1973	6589	56.303	9/23/1972	0.100	53.080	6/8/1972
1973-1974	763.3	53.735	8/23/1973	0.300	51.760	4/21/1974
1974-1975	1081	54.160	6/17/1974	0.100	52.125	4/20/1975
1975-1976	867.1	53.985	6/27/1975	0.500	52.268	5/10/1976
1976-1977	1611	54.370	9/4/1976	0.400	51.835	4/6/1977
1977-1978	2148	54.770	9/12/1977	1.000	51.825	5/31/1978
1978-1979	1292	54.565	8/28/1978	0.400	52.150	4/13/1979
1979-1980	1158	54.415	8/8/1979	0.200	52.230	5/27/1980
1980-1981	1901	53.980	9/17/1980	2.000	52.415	6/1/1980
1981-1982	1160	54.500	8/9/1981	2.000	51.000	5/9/1982
1982-1983	2001	53.790	8/30/1982	0.865	51.450	5/6/1983
1983-1984	765.3	53.820	10/7/1983	0.261	51.570	5/25/1984
1984-1985	850.0	54.460	6/13/1984	0.016	51.510	5/6/1985
1985-1986	928.9	54.790	8/7/1985	0.520	52.595	6/1/1985
1986-1987	1006	54.985	7/22/1986	1.036	52.680	4/15/1987
1987-1988	327.3	54.340	10/17/1987	0.020	52.530	4/15/1988
1988-1989	1100	54.950	10/2/1988	0.040	52.660	4/12/1989
1989-1990	1499	55.755	5/11/1990	0.484	52.690	6/1/1989
1990-1991	3217	55.928	10/12/1990	5.000	53.325	5/22/1991
1991-1992	3246	56.250	7/29/1991	2.450	53.015	4/25/1992

Annual Maximum / Minimum discharge with corresponding Water Level (m.s.l)

	Maximum			Minimum		
Year	**Q (cumecs)**	**WL (m)**	**Date**	**Q (cumecs)**	**WL (m)**	**Date**
1992-1993	3078	56.190	7/28/1992	2.210	52.955	5/12/1993
1993-1994	294.5	54.620	8/20/1993	0.870	53.035	4/2/1994
1994-1995	2486	56.045	9/4/1994	2.130	53.100	6/3/1994
1995-1996	1640	55.595	8/31/1995	2.590	53.345	5/17/1996
1996-1997	529.0	55.140	8/23/1996	1.000	53.330	3/23/1997
1997-1998	2052	55.885	8/21/1997	0.380	53.230	6/11/1997
1998-1999	278.6	54.815	11/17/1998	0.065	53.495	4/24/1999
1999-2000	326.8	54.895	7/29/1999	2.233	53.495	4/18/2000
2000-2001	465.0	54.975	8/27/2000	0.568	53.480	5/5/2001
2001-2002	1235	55.685	7/7/2001	1.060	53.425	5/14/2002
2002-2003	457.3	55.060	8/29/2002	0.000	51.000	5/17/2003
2003-2004	4268	56.480	10/7/2003	0.000	51.000	6/10/2003
2004-2005	1040	55.535	8/11/2004	0.950	53.275	5/23/2005
2005-2006	1624	55.880	9/19/2005	1.531	53.300	6/18/2005
2006-2007	4062	56.560	7/3/2006	5.796	53.375	4/10/2007
2007-2008	7322	57.850	8/7/2007	4.731	53.040	5/22/2008
2008-2009	5399	56.955	9/18/2008	1.500	52.735	5/3/2009
2009-2010	1553	55.542	7/20/2009	1.344	52.885	4/23/2010
2010-2011	1563	55.545	8/5/2010	2.417	52.870	6/10/2010
2011-2012	1948	55.725	9/2/2011	1.118	53.115	4/8/2012
2012-2013	729.3	55.215	8/6/2012	0.862	53.215	6/16/2012
2013-2014	1999	55.688	10/25/2013	4.584	53.160	5/2/2014
2014-2015	4250	56.605	9/7/2014	7.600	53.505	5/31/2015
2015-2016	572.5	55.110	9/16/2015	0.700	53.220	5/1/2016
2016-2017	541.6	55.100	8/6/2016	0.826	53.060	4/29/2017
2017-2018	1340	55.780	7/19/2017	3.963	53.150	3/31/2018

Stage-Discharge Data for the period 2017 - 2018

Station Name : KASHINAGAR (AV000J4) **Division : E.E., Bhubaneswar**

Local River : Vamsadhara **Sub-Division : Behrampur**

Day	Jun		Jul		Aug		Sep		Oct		Nov	
	W.L	Q	W.L	Q	W.L	Q	W.L	Q	W.L	Q	W.L	Q
1	53.230	6.609	53.790	91.04	53.670	59.55	54.370	232.6	54.370	250.0 *	54.240	198.2
2	53.220	5.857	54.020	110.0 *	53.890	97.29	54.360	240.0 *	54.360	245.0 *	54.200	182.6
3	53.210	5.321	53.720	66.00	53.900	99.20	54.290	200.0 *	54.240	185.8	54.140	161.7
4	53.235		53.660	49.59	53.880	95.34	54.130	160.9	54.230	197.4	54.030	134.7 *
5	53.220	5.679	53.680	52.04	53.770	76.92	54.030	133.9	54.330	223.4	53.920	107.6 *
6	53.240	7.432	53.650	48.06	53.770	76.92 *	53.990	127.1	54.260	203.9	53.900	102.6
7	53.240	7.432	53.575	39.08	53.715	95.44	54.110	161.0	54.625	341.6	53.870	94.87
8	53.230	6.575	53.520	33.81	53.900	102.1	54.220	199.1	54.960	463.0 *	53.850	90.30
9	53.290	13.62	53.400	23.70 *	53.715	69.11	54.040	128.1	54.440	276.4	53.810	77.42
10	53.275	11.81	53.480	38.28	53.910	102.7	54.205	191.9 *	54.500	306.1	53.780	74.50
11	53.285	12.87 *	53.765	75.52	53.920	160.9	54.020	133.6	54.350	250.7	53.760	69.51
12	53.370	21.84	53.660	50.18	54.000	130.7	53.900	103.9	54.200	173.3	53.730	65.45 *
13	53.475	39.33	53.570	39.98	53.995	130.0 *	53.920	115.5	54.230	189.4	53.720	64.07
14	53.450	34.26	53.610	44.27	54.050	139.1	54.030	136.3	54.185	170.4	53.710	61.59
15	53.420	29.75	53.690	53.14	54.300	180.0 *	54.210	194.9	54.270	179.0 *	53.700	59.81
16	53.400	27.17	53.725	74.30 *	53.930	104.3	54.065	146.4	54.140	166.2	53.730	64.84
17	53.380	24.52	55.600	1208	54.470	242.8	53.970	119.2 *	54.050	142.3	53.920	108.6
18	53.450	34.26 *	55.375	901.6	54.250	199.3	54.260	202.4	53.830	92.44	54.100	150.4
19	53.400	25.31	55.780	1340	54.570	283.8	54.160	170.0	53.800	86.00 *	53.920	108.0 *
20	53.620	46.40	55.045	666.6	54.490	267.0 *	54.075	147.2	53.925	110.9	54.210	178.6
21	53.610	45.07	54.345	250.2	54.355	239.1	54.550	315.5	55.090	744.9	53.970	121.6
22	53.620	46.09	54.160	174.0	54.210	184.6	54.250	191.9	54.850	531.8 *	53.940	113.0
23	54.250	129.1	54.020	137.4 *	54.295	207.1	54.070	144.2	54.640	345.5	53.820	79.19
24	53.835	95.10	53.940	116.5	54.380	248.6	54.035	141.7 *	54.620	340.8	53.750	68.40
25	53.715	67.10 *	53.865	162.6	54.550	315.8	54.070	147.9	54.625	342.3	53.740	65.06
26	53.615	43.77 *	53.810	85.90	54.350	239.2	54.140	162.1	54.600	339.0	53.750	65.00 *
27	53.620	44.94	53.860	96.08	54.450	251.0 *	54.340	226.6	54.450	279.7	53.700	58.02
28	53.680	52.05	54.050	138.7	54.510	259.5	54.310	220.4	54.510	310.5	53.660	51.47
29	53.630	46.09	53.955	121.7	55.140	716.7	54.200	195.8 *	54.390	256.0 *	53.640	47.78
30	53.590	42.03	53.760	81.31 *	54.600	351.1	54.140	162.1 *	54.310	221.1	53.620	45.53
31			53.710	70.95	54.410	272.0			54.280	210.1		
Ten-Daily Mean												
I Ten-Daily	53.239	7.815	53.649	55.16	53.812	87.46	54.174	177.5	54.431	269.3	53.974	122.5
II Ten-Daily	53.425	29.57	54.382	445.4	54.197	183.8	54.061	146.9	54.098	156.1	53.850	93.08
III Ten-Daily	53.716	61.13	53.952	130.5	54.477	298.6	54.210	190.8	54.579	356.5	53.759	71.51
Monthly												
Min.	53.210	5.321	53.400	23.70	53.670	59.55	53.900	103.9	53.800	86.00	53.620	45.53
Max.	54.250	129.1	55.780	1340	55.140	716.7	54.550	315.5	55.090	744.9	54.240	198.2
Mean	53.460	33.7	53.993	207.8	54.172	193.5	54.149	171.7	54.376	263.7	53.861	95.68

Annual Runoff in MCM = 2768 Annual Runoff in mm = 354

Peak Observed Discharge = 1340 cumecs on 19-Jul-17 Corres. Water Level :55.78 m

Lowest Observed Discharge = 3.963 cumecs on 31-Mar-18 Corres. Water Level :53.15 m

Q: Observed/Computed Discharge in cumecs WL:Corresponding Mean Water Level(m.s.l) in m *:Computed Discharge

Note:Missing values ignored while arriving at Annual Runoff

Stage-Discharge Data for the period 2017 - 2018

Station Name : KASHINAGAR (AV000J4) **Division : E.E., Bhubaneswar**

Local River : Vamsadhara **Sub-Division : Behrampur**

Day	Dec		Jan		Feb		Mar		Apr		May	
	W.L	Q	WL	Q	WL	Q	WL	Q	WL	Q	WL	Q
1	53.610	44.09	53.430	21.32	53.230	8.078	53.190	6.181	53.150	4.000 *	53.230	7.857
2	53.600	43.00 *	53.430	21.12	53.230	7.998	53.190	6.180 *	53.185	5.759	53.220	7.480
3	53.640	48.00 *	53.420	19.66	53.220	7.515	53.190	6.175	53.165	5.091	53.210	7.130
4	53.590	42.17	53.410	19.76	53.220	7.600 *	53.190	6.100 *	53.190	5.958	53.220	7.598
5	53.580	41.71	53.390	19.28	53.220	7.738	53.185	5.876	53.170	5.254	53.210	7.153
6	53.570	40.21	53.380	18.84	53.220	7.627	53.185	5.889	53.170	5.297	53.210	7.161
7	53.550	37.09	53.370	18.00 *	53.210	7.177	53.185	5.700	53.165	5.073	53.200	6.719
8	53.540	36.14	53.350	17.15	53.210	7.304	53.185	5.499	53.240	8.500 *	53.200	6.631
9	53.540	37.24	53.340	16.38	53.210	7.141	53.180	5.418	53.270	9.572	53.190	6.271
10	53.590	44.00 *	53.340	16.11	53.210	7.006	53.180	5.395	53.330	12.57	53.170	5.538
11	53.540	36.75	53.330	15.33	53.210	7.000 *	53.180	5.400 *	53.420	21.07	53.150	4.926
12	53.530	35.99	53.330	15.22	53.210	7.047	53.180	5.529	53.430	21.92	53.150	4.790
13	53.530	36.52	53.320	14.64	53.200	6.851	53.180	5.484	53.560	38.91	53.150	5.000 *
14	53.530	36.64	53.320	15.00 *	53.200	6.782	53.175	5.426	53.500	34.93	53.200	7.497
15	53.520	35.57	53.320	14.56	53.200	6.651	53.175	5.342	53.540	36.50 *	53.190	7.130
16	53.520	35.33	53.310	14.07	53.200	6.874	53.170	5.435	53.430	22.92	53.170	7.235
17	53.520	35.00 *	53.310	13.97	53.200	6.742	53.170	5.472	53.360	19.20	53.170	6.623
18	53.510	32.98	53.300	13.47	53.200	6.700 *	53.170	5.400 *	53.330	12.48	53.200	7.237
19	53.500	32.43	53.300	13.22	53.190	6.608	53.170	5.399	53.300	10.21	53.190	6.963
20	53.500	32.33	53.300	13.15	53.190	6.306	53.165	5.132	53.280		53.180	6.800 *
21	53.480	30.05	53.290	13.00 *	53.210	7.108	53.165	5.099	53.270	8.943	53.200	7.182
22	53.470	28.03	53.280	11.25	53.210	7.013	53.160	4.789	53.260	9.000 *	53.180	6.582
23	53.470	28.01	53.270	10.62	53.210	6.943	53.160	4.616	53.260	9.223	53.230	8.077
24	53.460	27.00 *	53.270	10.53	53.205	6.854	53.160		53.260	9.360	53.220	7.421
25	53.460	27.00 *	53.260	9.866	53.205	6.800 *	53.160	4.500 *	53.280	9.983	53.210	6.942
26	53.460	26.83	53.260	9.800 *	53.205	6.888	53.160	4.397	53.270	9.094	53.200	6.588
27	53.460	26.24	53.250	9.259	53.200	6.726	53.160	4.371	53.260	8.844	53.190	6.000 *
28	53.460	26.24	53.250	9.190 *	53.200	6.623	53.150	4.001	53.260	8.808	53.180	5.825
29	53.450	24.51	53.250	9.117			53.150	4.000 *	53.260	8.800 *	53.180	5.513
30	53.440	23.06	53.240	8.535			53.150	4.000 *	53.250	8.200 *	53.170	5.208
31	53.440	23.00 *	53.240	8.279			53.150	3.963			53.170	5.183
Ten-Daily Mean												
I Ten-Daily	53.581	41.37	53.386	18.76	53.218	7.518	53.186	5.841	53.203	6.707	53.206	6.954
II Ten-Daily	53.520	34.96	53.314	14.26	53.200	6.756	53.173	5.402	53.415	24.24	53.175	6.420
III Ten-Daily	53.459	26.36	53.260	9.950	53.206	6.870	53.157	4.374	53.263	9.026	53.194	6.411
Monthly												
Min.	53.440	23.00	53.240	8.279	53.190	6.306	53.150	3.963	53.150	4.000	53.150	4.790
Max.	53.640	48.00	53.430	21.32	53.230	8.078	53.190	6.181	53.560	38.91	53.230	8.077
Mean	53.518	33.97	53.318	14.18	53.208	7.061	53.172	5.206	53.294	12.95	53.192	6.589

Peak Computed Discharge = 531.8 cumecs on 22-Oct-17 Corres. Water Level :54.85 m

Lowest Computed Discharge = 4.000 cumecs on 29-Mar-18 Corres. Water Level :53.15 m

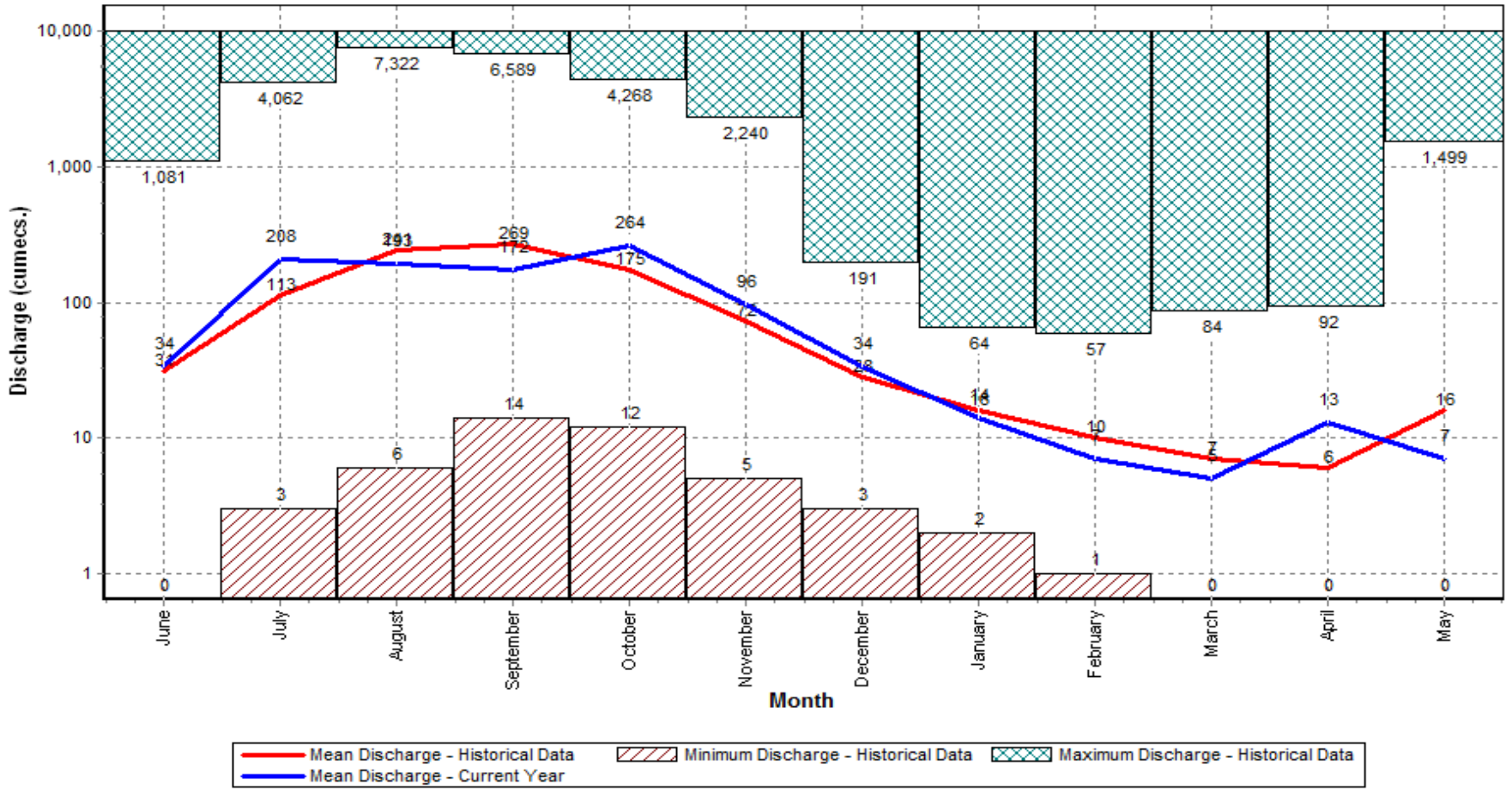
Q: Observed/Computed Discharge in cumecs WL:Corresponding Mean Water Level(m.s.l) in m *:Computed Discharge

Note:Missing values ignored while arriving at Annual Runoff

HISTOGRAM - HYDROGRAPH for Water Year : 2017-2018

Station Name : KASHINAGAR (AV000J4) | **Data considered : 1971-2018** | **Division : E.E., Bhubaneswar**

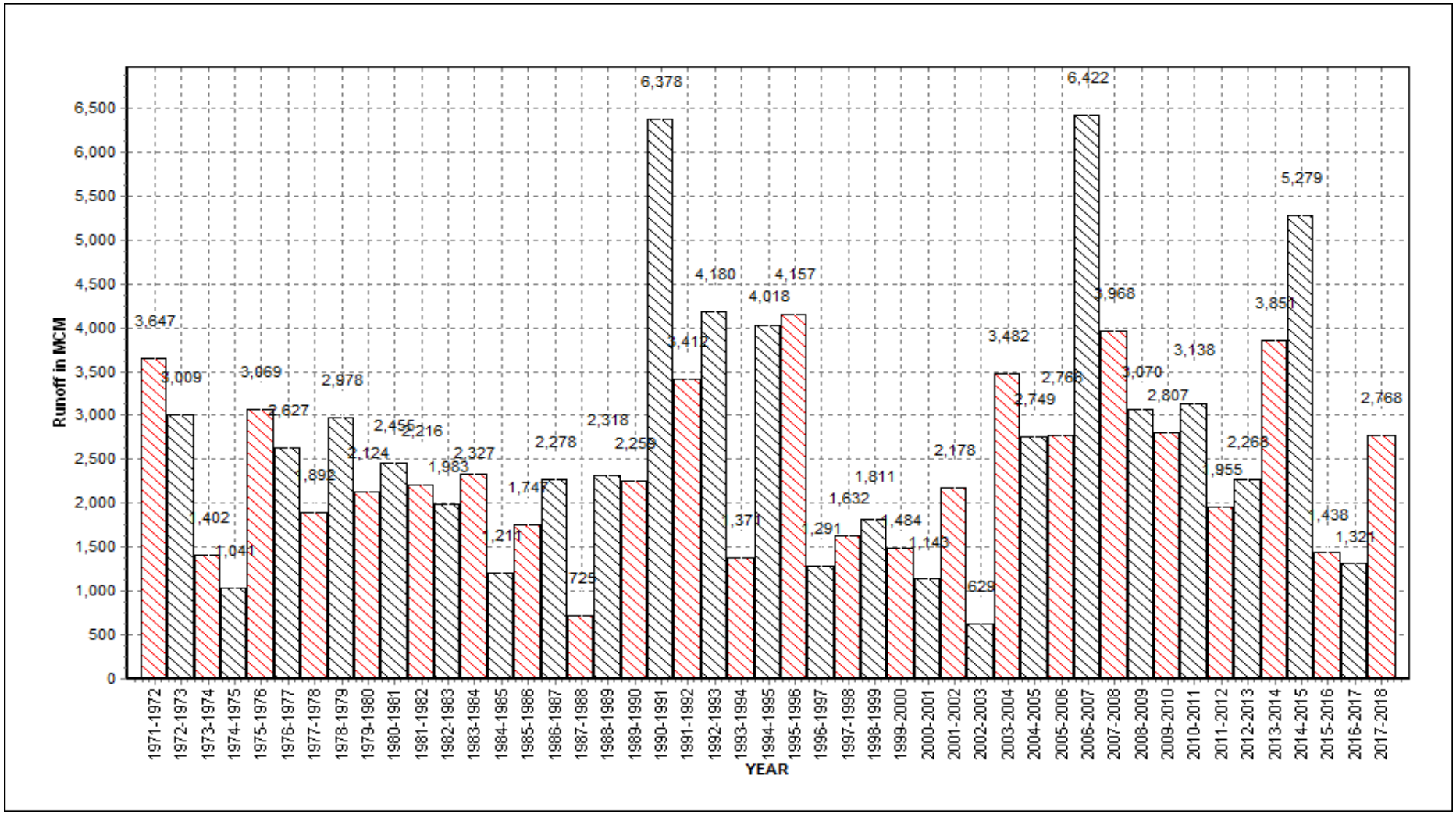
Local River : Vamsadhara | **Sub-Division : Behrampur**



Annual Runoff Values for the period: 1971 - 2018

Station Name : KASHINAGAR (AV000J4) **Division : E.E., Bhubaneswar**

Local River : Vamsadhara **Sub-Division : Behrampur**

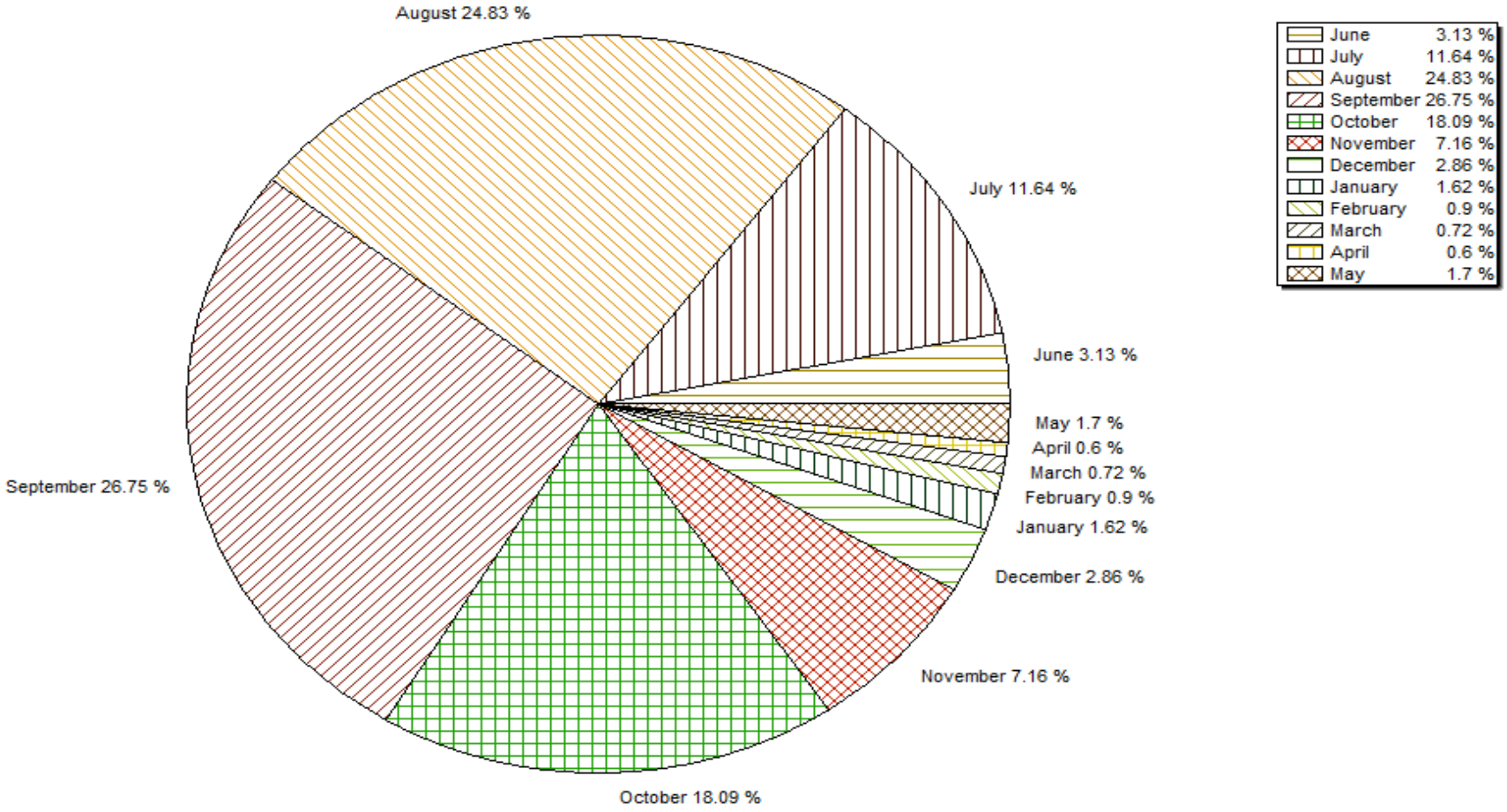


Note: Missing values have not been considered while arriving at Annual Runoff

Monthly Average Runoff based on period : 1971-2017

Station Name : KASHINAGAR (AV000J4) **Division : E.E., Bhubaneswar**

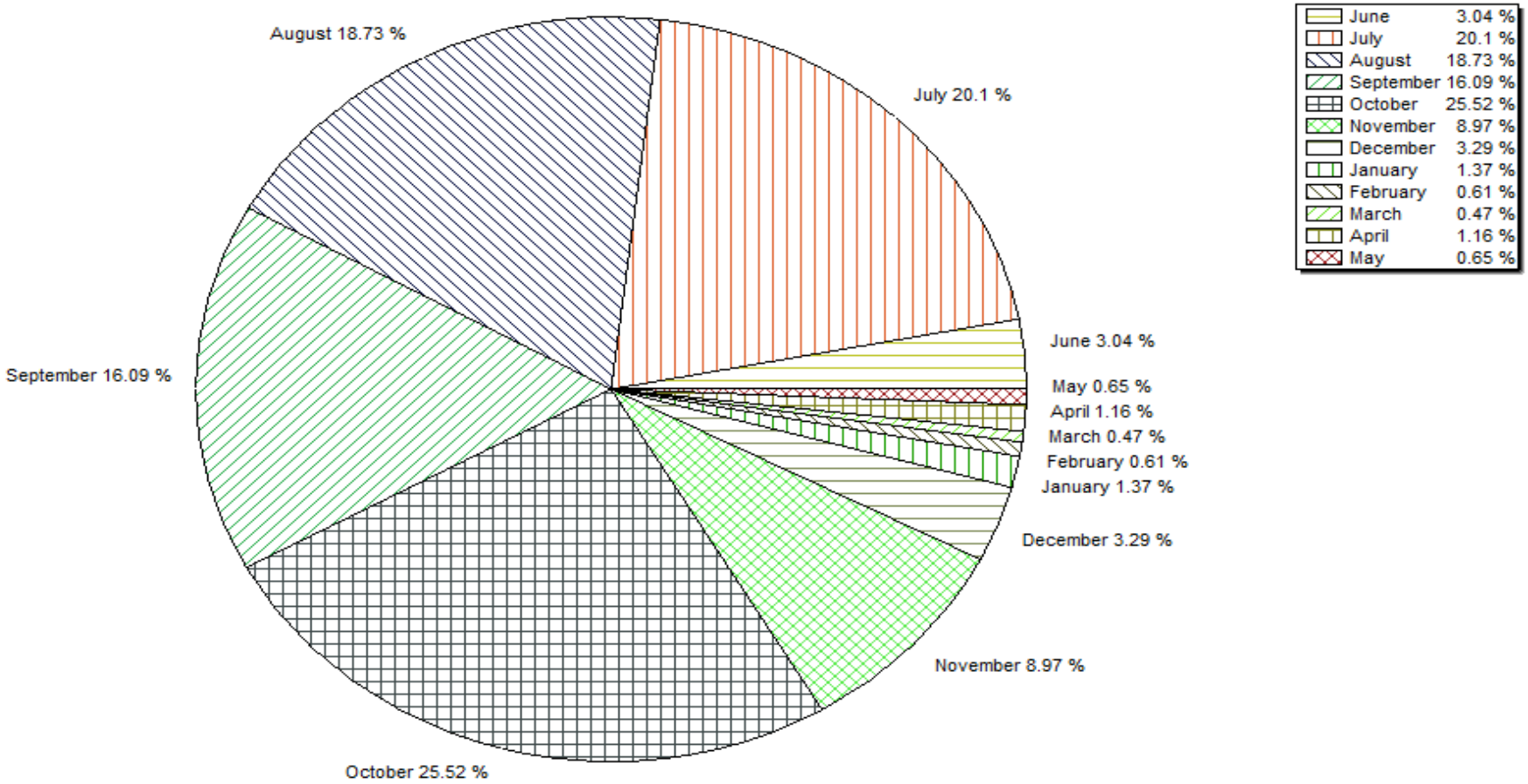
Local River : Vamsadhara **Sub-Division : Behrampur**



Monthly Runoff for the Year : 2017-2018

Station Name : KASHINAGAR (AV000J4) **Division : E.E., Bhubaneswar**

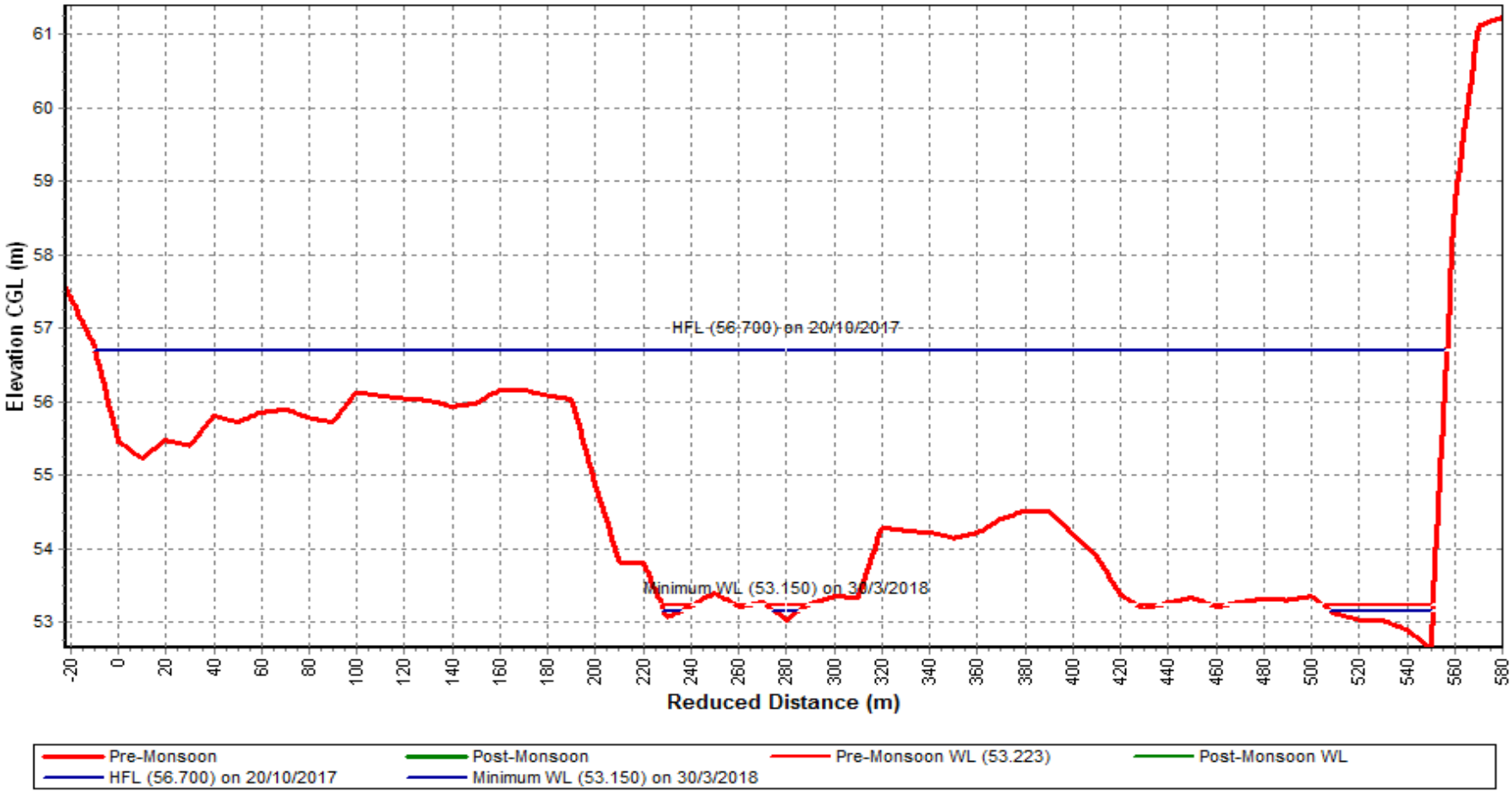
Local River : Vamsadhara **Sub-Division : Behrampur**



Pre-Monsoon & Post-Monsoon X-Section for Water Year : 2017-2018

Station Name : KASHINAGAR (AV000J4) **Division : E.E., Bhubaneswar**

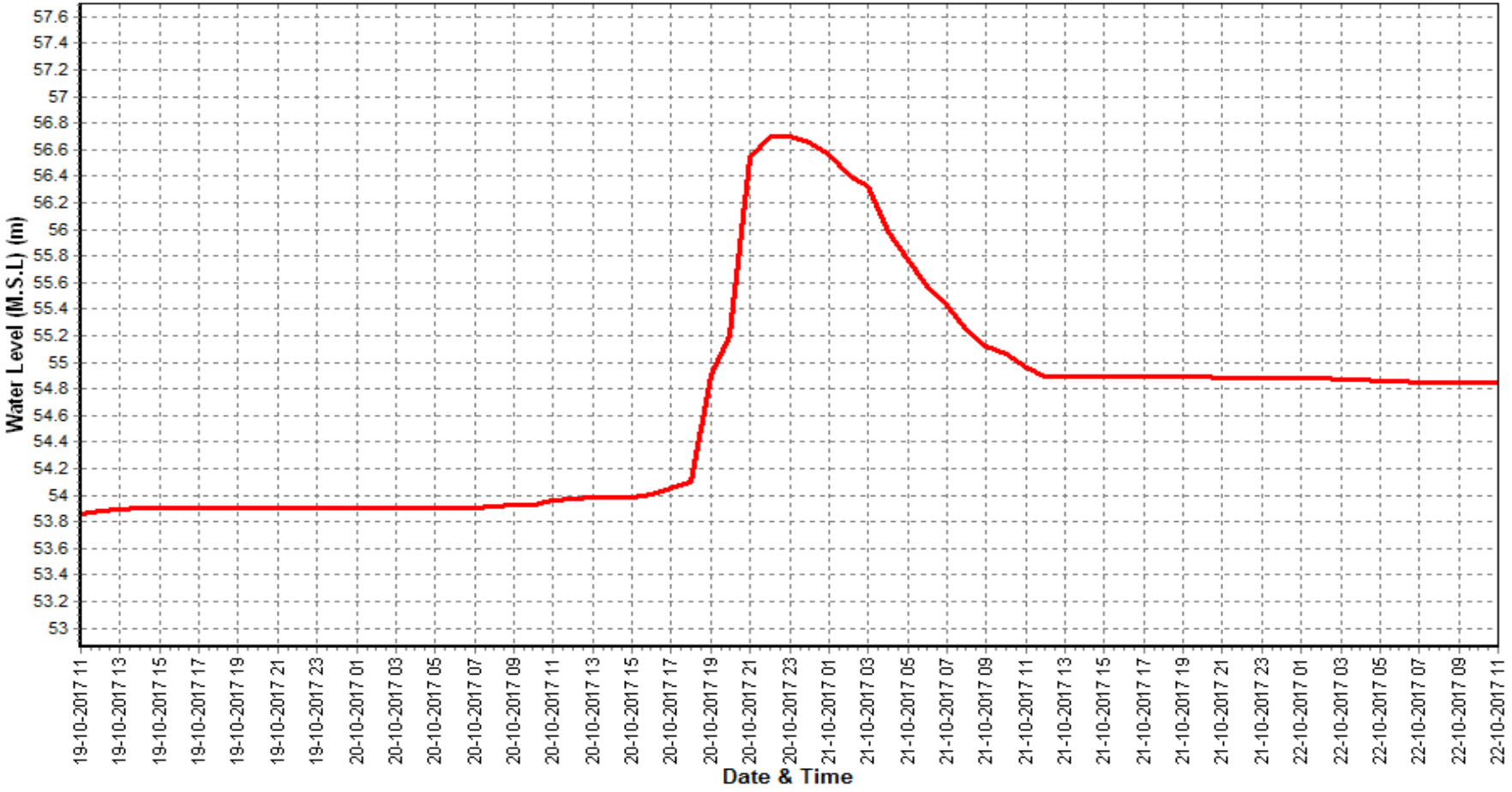
Local River : Vamsadhara **Sub-Division : Behrampur**



Water Level vs. Time - Graph of Highest Flood Peak during the Year : 2017-2018

Station Name : KASHINAGAR (AV000J4) **Division : E.E., Bhubaneswar**

Local River : Vamsadhara **Sub-Division : Behrampur**

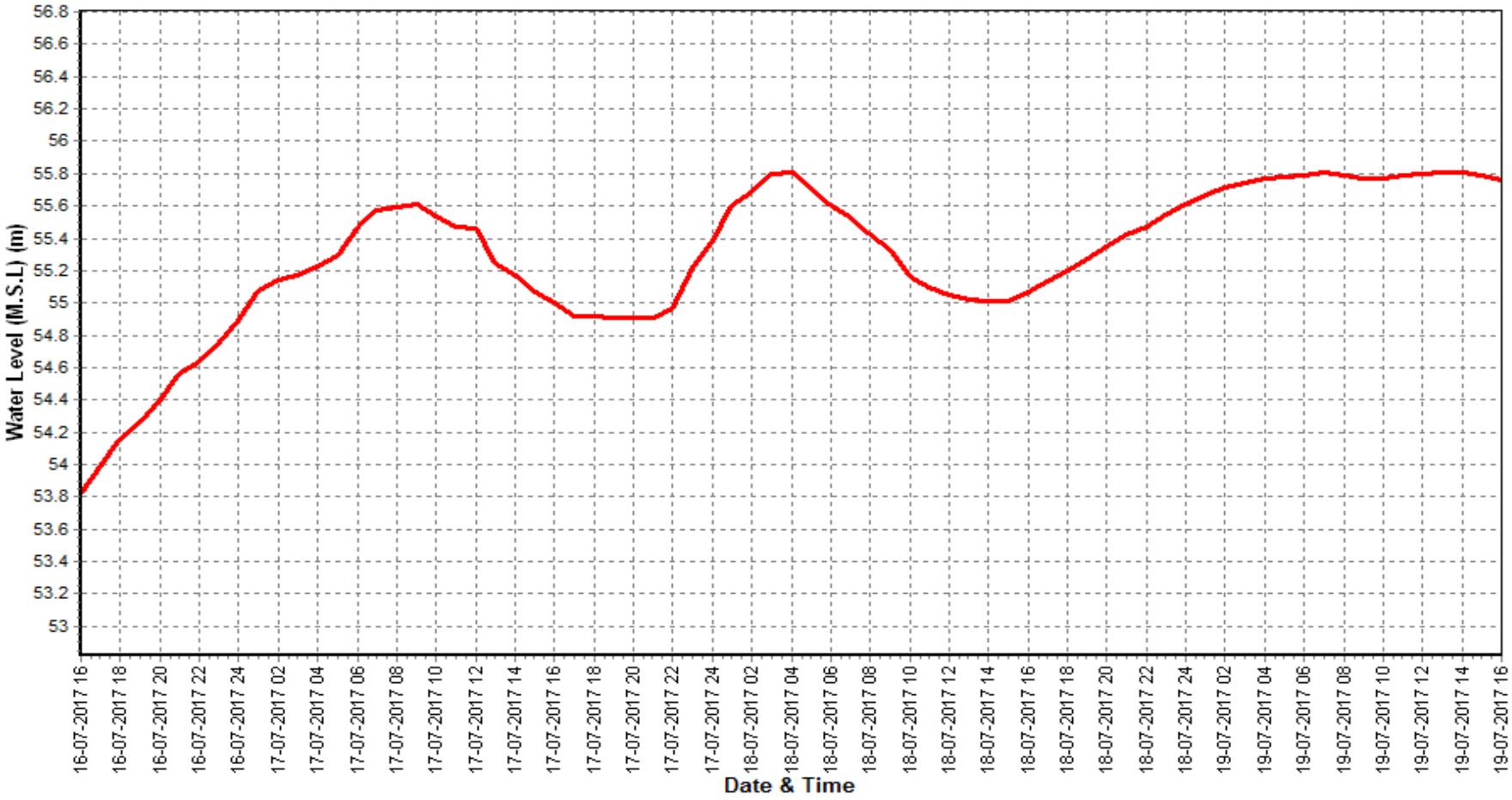


Time Span: 72 Hrs

Water Level vs. Time - Graph of 2nd Highest Flood Peak during the Year : 2017-2018

Station Name : KASHINAGAR (AV000J4) **Division : E.E., Bhubaneswar**

Local River : Vamsadhara **Sub-Division : Behrampur**

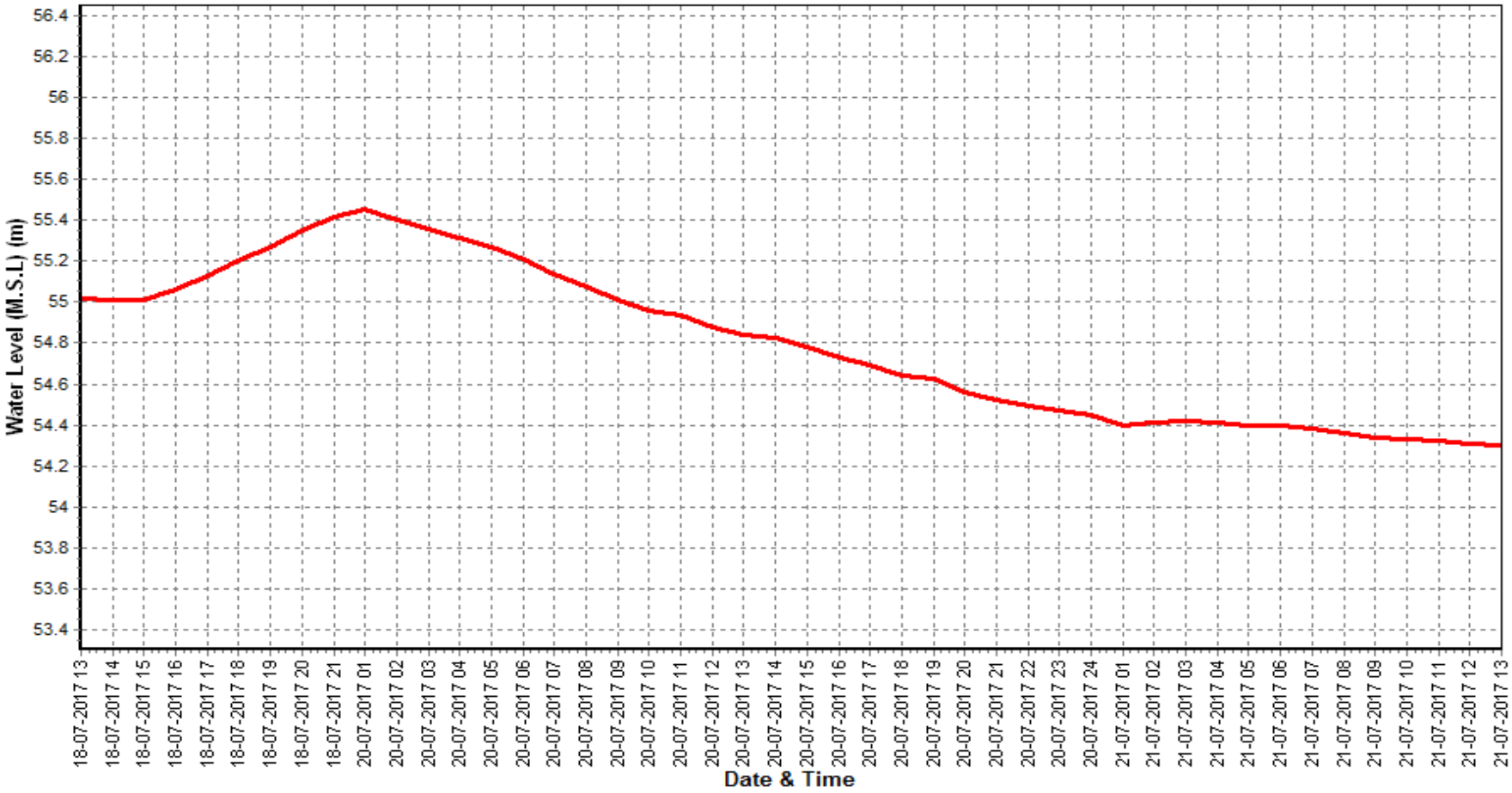


Time Span: 72 Hrs

Water Level vs. Time - Graph of 3rd Highest Flood Peak during the Year : 2017-2018

Station Name : KASHINAGAR (AV000J4) **Division : E.E., Bhubaneswar**

Local River : Vamsadhara **Sub-Division : Behrampur**



Time Span: 72 Hrs

Daily Observed Sediment Datasheet for period : 2017-2018

Station Name : KASHINAGAR (AV000J4) **Division : E.E., Bhubaneswar**

Local River : Vamsadhara **Sub-Division : Behrampur**

Day	Jun						Jul						Aug					
	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day
1	6.609						91.04	0.000	0.000	0.765	0.765	6020	59.55	0.000	0.000	0.171	0.171	880
2	5.857						110.0	0.011	0.020	0.925	0.956	9081	97.29	0.008	0.120	0.200	0.328	2754
3	5.321						66.00	0.000	0.000	0.525	0.525	2991	99.20	0.008	0.124	0.204	0.336	2878
4		0.000	0.000	0.043	0.043		49.59	0.000	0.000	0.297	0.297	1272	95.34	0.007	0.112	0.193	0.312	2572
5	5.679						52.04	0.000	0.000	0.372	0.372	1672	76.92	0.000	0.000	0.147	0.147	979
6	7.432						48.06	0.000	0.000	0.256	0.256	1062	76.92	0.000	0.000	0.147	0.147	979
7	7.432						39.08	0.000	0.000	0.185	0.185	623	95.44	0.006	0.010	0.148	0.164	1351
8	6.575						33.81	0.000	0.000	0.215	0.215	629	102.1	0.008	0.013	0.211	0.232	2044
9	13.62						23.70	0.000	0.000	0.151	0.151	309	69.11	0.000	0.000	0.146	0.146	874
10	11.81	0.000	0.000	0.197	0.197	201	38.28	0.000	0.000	0.292	0.292	964	102.7	0.008	0.013	0.215	0.237	2099
11	12.87	0.000	0.000	0.214	0.214	238	75.52	0.000	0.000	0.908	0.908	5927	160.9	0.011	0.019	0.623	0.653	9082
12	21.84	0.000	0.000	0.576	0.576	1087	50.18	0.000	0.000	0.656	0.656	2846	130.7	0.008	0.015	0.712	0.736	8308
13	39.33	0.000	0.000	0.290	0.290	987	39.98	0.000	0.000	0.314	0.314	1086	130.0	0.008	0.015	0.708	0.732	8220
14	34.26	0.000	0.000	1.094	1.094	3238	44.27	0.000	0.000	0.375	0.375	1435	139.1	0.009	0.017	0.293	0.319	3837
15	29.75	0.000	0.000	0.372	0.372	955	53.14	0.000	0.000	0.530	0.530	2435	180.0	0.008	0.016	0.263	0.287	4462
16	27.17	0.000	0.000	0.376	0.376	883	74.30	0.000	0.000	0.742	0.742	4761	104.3	0.006	0.011	0.254	0.271	2443
17	24.52	0.000	0.000	0.748	0.748	1584	1208	0.117	0.221	1.941	2.279	237810	242.8	0.016	0.028	0.980	1.024	21490
18	34.26	0.000	0.000	1.045	1.045	3092	901.6	0.087	0.165	0.984	1.236	96282	199.3	0.014	0.027	0.959	1.000	17218
19	25.31	0.000	0.000	0.664	0.664	1452	1340	0.130	0.245	0.525	0.900	104152	283.8	0.018	0.033	0.667	0.718	17601
20	46.40	0.000	0.000	1.033	1.033	4142	666.6	0.065	0.122	0.974	1.161	66838	267.0	0.017	0.032	0.630	0.678	15636
21	45.07	0.000	0.000	1.770	1.770	6891	250.2	0.026	0.049	0.455	0.530	11446	239.1	0.015	0.032	0.363	0.411	8480
22	46.09	0.000	0.000	1.257	1.257	5006	174.0	0.015	0.030	0.341	0.386	5800	184.6	0.011	0.024	0.290	0.325	5184
23	129.1	0.000	0.000	3.520	3.520	39258	137.4	0.012	0.024	0.269	0.305	3616	207.1	0.012	0.025	0.352	0.389	6964
24	95.10	0.000	0.000	1.299	1.299	10672	116.5	0.009	0.017	0.146	0.172	1732	248.6	0.014	0.028	0.421	0.463	9949
25	67.10	0.000	0.000	0.916	0.916	5313	162.6	0.007	0.013	0.197	0.217	3042	315.8	0.018	0.034	0.307	0.359	9793
26	43.77	0.000	0.000	0.598	0.598	2261	85.90	0.000	0.000	0.206	0.206	1532	239.2	0.013	0.025	0.414	0.451	9327
27	44.94	0.000	0.000	1.004	1.004	3900	96.08	0.007	0.012	0.165	0.184	1528	251.0	0.014	0.026	0.436	0.475	10308
28	52.05	0.000	0.000	0.607	0.607	2728	138.7	0.013	0.024	0.312	0.349	4179	259.5	0.014	0.027	0.283	0.324	7269
29	46.09	0.000	0.000	0.483	0.483	1924	121.7	0.009	0.017	0.262	0.289	3037	716.7	0.039	0.074	0.724	0.837	51823
30	42.03	0.000	0.000	0.412	0.412	1498	81.31	0.000	0.000	0.175	0.175	1231	351.1	0.020	0.037	0.181	0.238	7214
31							70.95	0.000	0.000	0.174	0.174	1067	272.0	0.015	0.029	0.123	0.167	3925
Ten Daily Mean																		
Ten Daily I	7.815	0.000	0.000	0.120	0.120	201	55.16	0.001	0.002	0.398	0.401	2462	87.46	0.004	0.039	0.178	0.222	1741
Ten Daily II	29.57	0.000	0.000	0.641	0.641	1766	445.4	0.040	0.075	0.795	0.910	52357	183.8	0.012	0.021	0.609	0.642	10830
Ten Daily III	61.13	0.000	0.000	1.187	1.187	7945	130.5	0.009	0.017	0.246	0.271	3474	298.6	0.017	0.033	0.354	0.404	11840
Monthly Total						97311						586403						255940

Annual Sediment Load (Metric Tonnes) : 1397694

Daily Observed Sediment Datasheet for period : 2017-2018

Station Name : KASHINAGAR (AV000J4) **Division : E.E., Bhubaneswar**

Local River : Vamsadhara **Sub-Division : Behrampur**

Day	Sep						Oct						Nov					
	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day
1	232.6	0.012	0.023	0.201	0.236	4741	250.0	0.007	0.013	0.025	0.045	976	198.2	0.006	0.011	0.076	0.092	1576
2	240.0	0.012	0.022	0.197	0.232	4800	245.0	0.008	0.014	0.282	0.304	6433	182.6	0.006	0.010	0.037	0.053	831
3	200.0	0.011	0.020	0.180	0.211	3637	185.8	0.008	0.014	0.341	0.362	5811	161.7	0.005	0.009	0.035	0.049	690
4	160.9	0.008	0.015	0.178	0.200	2780	197.4	0.009	0.015	0.428	0.452	7707	134.7	0.004	0.007	0.030	0.041	478
5	133.9	0.006	0.011	0.174	0.192	2221	223.4	0.010	0.018	0.400	0.428	8253	107.6	0.003	0.006	0.024	0.033	306
6	127.1	0.006	0.010	0.119	0.135	1487	203.9	0.008	0.016	0.458	0.482	8493	102.6	0.004	0.007	0.062	0.073	645
7	161.0	0.008	0.016	0.398	0.422	5873	341.6	0.012	0.024	0.535	0.571	16850	94.87	0.000	0.000	0.055	0.055	449
8	199.1	0.009	0.017	0.647	0.673	11574	463.0	0.023	0.042	0.939	1.004	40143	90.30	0.000	0.000	0.049	0.049	384
9	128.1	0.007	0.012	0.228	0.247	2736	276.4	0.011	0.021	0.309	0.341	8134	77.42	0.000	0.000	0.075	0.075	500
10	191.9	0.092	0.017	0.313	0.422	6998	306.1	0.012	0.024	0.292	0.328	8669	74.50	0.000	0.000	0.044	0.044	281
11	133.6	0.006	0.011	0.214	0.231	2665	250.7	0.010	0.018	0.321	0.349	7562	69.51	0.000	0.000	0.010	0.010	58
12	103.9	0.004	0.008	0.204	0.217	1946	173.3	0.007	0.012	0.225	0.244	3659	65.45	0.000	0.000	0.009	0.009	51
13	115.5	0.005	0.009	0.211	0.226	2256	189.4	0.007	0.014	0.247	0.268	4391	64.07	0.000	0.000	0.005	0.005	25
14	136.3	0.007	0.012	0.245	0.263	3097	170.4	0.006	0.012	0.279	0.297	4377	61.59	0.000	0.000	0.005	0.005	24
15	194.9	0.008	0.015	0.716	0.739	12437	179.0	0.008	0.014	0.340	0.362	5592	59.81	0.000	0.000	0.004	0.004	20
16	146.4	0.007	0.013	0.362	0.382	4831	166.2	0.006	0.012	0.236	0.254	3652	64.84	0.000	0.000	0.069	0.069	387
17	119.2	0.006	0.011	0.295	0.311	3203	142.3	0.005	0.010	0.230	0.245	3011	108.6	0.003	0.005	0.172	0.181	1693
18	202.4	0.008	0.016	1.052	1.077	18822	92.44	0.000	0.000	0.189	0.189	1510	150.4	0.004	0.007	0.228	0.239	3110
19	170.0	0.007	0.014	0.686	0.708	10394	86.00	0.000	0.000	0.178	0.178	1323	108.0	0.003	0.005	0.164	0.172	1604
20	147.2	0.007	0.014	0.525	0.545	6934	110.9	0.004	0.007	0.195	0.205	1966	178.6	0.005	0.008	0.431	0.444	6850
21	315.5	0.017	0.033	0.501	0.551	15022	744.9	0.024	0.047	0.482	0.553	35559	121.6	0.004	0.006	0.431	0.441	4628
22	191.9	0.009	0.019	0.298	0.326	5404	531.8	0.017	0.034	0.344	0.395	18126	113.0	0.003	0.005	0.127	0.135	1315
23	144.2	0.007	0.014	0.186	0.207	2578	345.5	0.013	0.024	0.147	0.184	5493	79.19	0.000	0.000	0.068	0.068	462
24	141.7	0.007	0.013	0.183	0.203	2490	340.8	0.013	0.023	0.154	0.189	5571	68.40	0.000	0.000	0.065	0.065	384
25	147.9	0.008	0.015	0.361	0.384	4901	342.3	0.012	0.023	0.233	0.268	7935	65.06	0.000	0.000	0.063	0.063	352
26	162.1	0.009	0.016	0.357	0.382	5351	339.0	0.012	0.021	0.200	0.233	6822	65.00	0.000	0.000	0.065	0.065	366
27	226.6	0.011	0.020	0.365	0.396	7745	279.7	0.010	0.018	0.168	0.196	4739	58.02	0.000	0.000	0.033	0.033	164
28	220.4	0.010	0.018	0.359	0.387	7367	310.5	0.011	0.020	0.192	0.223	5969	51.47	0.000	0.000	0.059	0.059	263
29	195.8	0.009	0.016	0.320	0.344	5823	256.0	0.009	0.016	0.159	0.184	4070	47.78	0.000	0.000	0.035	0.035	146
30	162.1	0.007	0.013	0.265	0.285	3992	221.1	0.007	0.013	0.152	0.172	3282	45.53	0.000	0.000	0.032	0.032	127
31							210.1	0.007	0.012	0.149	0.168	3042						
Ten Daily Mean																		
Ten Daily I	177.5	0.017	0.016	0.263	0.297	4685	269.3	0.011	0.020	0.401	0.432	11147	122.5	0.003	0.005	0.049	0.056	614
Ten Daily II	146.9	0.007	0.012	0.451	0.470	6658	156.1	0.005	0.010	0.244	0.259	3704	93.08	0.002	0.003	0.109	0.114	1382
Ten Daily III	190.8	0.009	0.018	0.319	0.346	6067	356.5	0.012	0.023	0.216	0.251	9146	71.51	0.001	0.001	0.098	0.100	821
Monthly																		
Total						174104						249120						28171

Annual Sediment Load (Metric Tonnes) : 1397694

Daily Observed Sediment Datasheet for period : 2017-2018

Station Name : KASHINAGAR (AV000J4) **Division : E.E., Bhubaneswar**

Local River : Vamsadhara **Sub-Division : Behrampur**

Day	Dec						Jan						Feb					
	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day
1	44.09	0.000	0.000	0.032	0.032	120	21.32	0.000	0.000	0.010	0.010	17	8.078	0.000	0.000	0.002	0.002	1
2	43.00	0.000	0.000	0.030	0.030	113	21.12	0.000	0.000	0.010	0.010	17	7.998	0.000	0.000	0.002	0.002	1
3	48.00	0.000	0.000	0.034	0.034	141	19.66	0.000	0.000	0.009	0.009	15	7.515	0.000	0.000	0.002	0.002	1
4	42.17	0.000	0.000	0.029	0.029	106	19.76	0.000	0.000	0.009	0.009	15	7.600	0.000	0.000	0.002	0.002	1
5	41.71	0.000	0.000	0.029	0.029	103	19.28	0.000	0.000	0.009	0.009	14	7.738	0.000	0.000	0.002	0.002	1
6	40.21	0.000	0.000	0.028	0.028	96	18.84	0.000	0.000	0.008	0.008	14	7.627	0.000	0.000	0.002	0.002	1
7	37.09	0.000	0.000	0.026	0.026	82	18.00	0.000	0.000	0.008	0.008	12	7.177	0.000	0.000	0.002	0.002	1
8	36.14	0.000	0.000	0.025	0.025	78	17.15	0.000	0.000	0.006	0.006	9	7.304	0.000	0.000	0.002	0.002	1
9	37.24	0.000	0.000	0.026	0.026	83	16.38	0.000	0.000	0.006	0.006	8	7.141	0.000	0.000	0.002	0.002	1
10	44.00	0.000	0.000	0.032	0.032	121	16.11	0.000	0.000	0.006	0.006	8	7.006	0.000	0.000	0.002	0.002	1
11	36.75	0.000	0.000	0.026	0.026	84	15.33	0.000	0.000	0.005	0.005	7	7.000	0.000	0.000	0.003	0.003	2
12	35.99	0.000	0.000	0.026	0.026	80	15.22	0.000	0.000	0.005	0.005	7	7.047	0.000	0.000	0.003	0.003	2
13	36.52	0.000	0.000	0.026	0.026	82	14.64	0.000	0.000	0.005	0.005	6	6.851	0.000	0.000	0.003	0.003	2
14	36.64	0.000	0.000	0.026	0.026	84	15.00	0.000	0.000	0.005	0.005	7	6.782	0.000	0.000	0.003	0.003	2
15	35.57	0.000	0.000	0.026	0.026	78	14.56	0.000	0.000	0.005	0.005	6	6.651	0.000	0.000	0.002	0.002	1
16	35.33	0.000	0.000	0.025	0.025	77	14.07	0.000	0.000	0.004	0.004	5	6.874	0.000	0.000	0.002	0.002	1
17	35.00	0.000	0.000	0.025	0.025	76	13.97	0.000	0.000	0.004	0.004	5	6.742	0.000	0.000	0.002	0.002	1
18	32.98	0.000	0.000	0.015	0.015	41	13.47	0.000	0.000	0.004	0.004	5	6.700	0.000	0.000	0.002	0.002	1
19	32.43	0.000	0.000	0.014	0.014	40	13.22	0.000	0.000	0.004	0.004	5	6.608	0.000	0.000	0.002	0.002	1
20	32.33	0.000	0.000	0.014	0.014	40	13.15	0.000	0.000	0.004	0.004	5	6.306	0.000	0.000	0.002	0.002	1
21	30.05	0.000	0.000	0.013	0.013	34	13.00	0.000	0.000	0.004	0.004	5	7.108	0.000	0.000	0.002	0.002	1
22	28.03	0.000	0.000	0.012	0.012	30	11.25	0.000	0.000	0.004	0.004	4	7.013	0.000	0.000	0.002	0.002	1
23	28.01	0.000	0.000	0.012	0.012	30	10.62	0.000	0.000	0.003	0.003	3	6.943	0.000	0.000	0.002	0.002	1
24	27.00	0.000	0.000	0.012	0.012	28	10.53	0.000	0.000	0.003	0.003	3	6.854	0.000	0.000	0.002	0.002	1
25	27.00	0.000	0.000	0.012	0.012	28	9.866	0.000	0.000	0.003	0.003	3	6.800	0.000	0.000	0.002	0.002	1
26	26.83	0.000	0.000	0.009	0.009	21	9.800	0.000	0.000	0.003	0.003	3	6.888	0.000	0.000	0.002	0.002	1
27	26.24	0.000	0.000	0.009	0.009	20	9.259	0.000	0.000	0.003	0.003	2	6.726	0.000	0.000	0.002	0.002	1
28	26.24	0.000	0.000	0.009	0.009	20	9.190	0.000	0.000	0.003	0.003	2	6.623	0.000	0.000	0.002	0.002	1
29	24.51	0.000	0.000	0.008	0.008	18	9.117	0.000	0.000	0.004	0.004	3						
30	23.06	0.000	0.000	0.008	0.008	16	8.535	0.000	0.000	0.003	0.003	3						
31	23.00	0.000	0.000	0.008	0.008	15	8.279	0.000	0.000	0.003	0.003	2						
Ten Daily Mean																		
Ten Daily I	41.37	0.000	0.000	0.029	0.029	104	18.76	0.000	0.000	0.008	0.008	13	7.518	0.000	0.000	0.002	0.002	1
Ten Daily II	34.96	0.000	0.000	0.022	0.022	68	14.26	0.000	0.000	0.005	0.005	6	6.756	0.000	0.000	0.002	0.002	1
Ten Daily III	26.36	0.000	0.000	0.010	0.010	24	9.950	0.000	0.000	0.003	0.003	3	6.870	0.000	0.000	0.002	0.002	1
Monthly																		
Total						1982						220						36

Annual Sediment Load (Metric Tonnes) : 1397694

Daily Observed Sediment Datasheet for period : 2017-2018

Station Name : KASHINAGAR (AV000J4) **Division : E.E., Bhubaneswar**

Local River : Vamsadhara **Sub-Division : Behrampur**

Day	Mar						Apr						May					
	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day
1	6.181	0.000	0.000	0.002	0.002	1	4.000	0.000	0.000	0.002	0.002	1	7.857	0.000	0.000	0.076	0.076	51
2	6.180	0.000	0.000	0.002	0.002	1	5.759	0.000	0.000	0.003	0.003	1	7.480	0.000	0.000	0.071	0.071	46
3	6.175	0.000	0.000	0.002	0.002	1	5.091	0.000	0.000	0.003	0.003	1	7.130	0.000	0.000	0.068	0.068	42
4	6.100	0.000	0.000	0.002	0.002	1	5.958	0.000	0.000	0.003	0.003	2	7.598	0.000	0.000	0.072	0.072	47
5	5.876	0.000	0.000	0.002	0.002	1	5.254	0.000	0.000	0.003	0.003	1	7.153	0.000	0.000	0.068	0.068	42
6	5.889	0.000	0.000	0.002	0.002	1	5.297	0.000	0.000	0.003	0.003	1	7.161	0.000	0.000	0.068	0.068	42
7	5.700	0.000	0.000	0.002	0.002	1	5.073	0.000	0.000	0.003	0.003	1	6.719	0.000	0.000	0.054	0.054	31
8	5.499	0.000	0.000	0.002	0.002	1	8.500	0.000	0.000	0.004	0.004	3	6.631	0.000	0.000	0.054	0.054	31
9	5.418	0.000	0.000	0.002	0.002	1	9.572	0.000	0.000	0.004	0.004	3	6.271	0.000	0.000	0.050	0.050	27
10	5.395	0.000	0.000	0.002	0.002	1	12.57	0.000	0.000	0.005	0.005	5	5.538	0.000	0.000	0.046	0.046	22
11	5.400	0.000	0.000	0.002	0.002	1	21.07	0.000	0.000	0.008	0.008	15	4.926	0.000	0.000	0.040	0.040	17
12	5.529	0.000	0.000	0.002	0.002	1	21.92	0.000	0.000	0.009	0.009	16	4.790	0.000	0.000	0.039	0.039	16
13	5.484	0.000	0.000	0.002	0.002	1	38.91	0.000	0.000	0.015	0.015	50	5.000	0.000	0.000	0.040	0.040	17
14	5.426	0.000	0.000	0.002	0.002	1	34.93	0.000	0.000	0.014	0.014	41	7.497	0.000	0.000	0.040	0.040	26
15	5.342	0.000	0.000	0.002	0.002	1	36.50	0.000	0.000	0.014	0.014	44	7.130	0.000	0.000	0.039	0.039	24
16	5.435	0.000	0.000	0.002	0.002	1	22.92	0.000	0.000	0.642	0.642	1272	7.235	0.000	0.000	0.034	0.034	21
17	5.472	0.000	0.000	0.002	0.002	1	19.20	0.000	0.000	0.538	0.538	893	6.623	0.000	0.000	0.035	0.035	20
18	5.400	0.000	0.000	0.002	0.002	1	12.48	0.000	0.000	0.350	0.350	377	7.237	0.000	0.000	0.038	0.038	24
19	5.399	0.000	0.000	0.002	0.002	1	10.21	0.000	0.000	0.286	0.286	253	6.963	0.000	0.000	0.037	0.037	22
20	5.132	0.000	0.000	0.002	0.002	1		0.000	0.000	0.264	0.264		6.800	0.000	0.000	0.036	0.036	21
21	5.099	0.000	0.000	0.002	0.002	1	8.943	0.000	0.000	0.251	0.251	194	7.182	0.000	0.000	0.044	0.044	27
22	4.789	0.000	0.000	0.002	0.002	1	9.000	0.000	0.000	0.252	0.252	196	6.582	0.000	0.000	0.040	0.040	23
23	4.616	0.000	0.000	0.002	0.002	1	9.223	0.000	0.000	0.029	0.029	23	8.077	0.000	0.000	0.050	0.050	35
24							9.360	0.000	0.000	0.029	0.029	23	7.421	0.000	0.000	0.046	0.046	29
25	4.500	0.000	0.000	0.002	0.002	1	9.983	0.000	0.000	0.030	0.030	26	6.942	0.000	0.000	0.043	0.043	25
26	4.397	0.000	0.000	0.002	0.002	1	9.094	0.000	0.000	0.028	0.028	22	6.588	0.000	0.000	0.040	0.040	23
27	4.371	0.000	0.000	0.002	0.002	1	8.844	0.000	0.000	0.028	0.028	21	6.000	0.000	0.000	0.037	0.037	19
28	4.001	0.000	0.000	0.002	0.002	1	8.808	0.000	0.000	0.027	0.027	21	5.825	0.000	0.000	0.034	0.034	17
29	4.000	0.000	0.000	0.002	0.002	1	8.800	0.000	0.000	0.028	0.028	21	5.513	0.000	0.000	0.034	0.034	16
30	4.000	0.000	0.000	0.002	0.002	1	8.200	0.000	0.000	0.026	0.026	19	5.208	0.000	0.000	0.030	0.030	14
31	3.963	0.000	0.000	0.002	0.002	1							5.183	0.000	0.000	0.030	0.030	14
Ten Daily Mean																		
Ten Daily I	5.841	0.000	0.000	0.002	0.002	1	6.707	0.000	0.000	0.003	0.003	2	6.954	0.000	0.000	0.063	0.063	38
Ten Daily II	5.402	0.000	0.000	0.002	0.002	1	24.24	0.000	0.000	0.214	0.214	329	6.420	0.000	0.000	0.038	0.038	21
Ten Daily III	4.374	0.000	0.000	0.002	0.002	1	9.026	0.000	0.000	0.073	0.073	57	6.411	0.000	0.000	0.039	0.039	22
Monthly																		
Total						25						3547						833

Annual Sediment Load (Metric Tonnes) : 1397694

Annual Sediment Load for period : 1973-2018

Station Name : KASHINAGAR (AV000J4) **Division : E.E., Bhubaneswar**

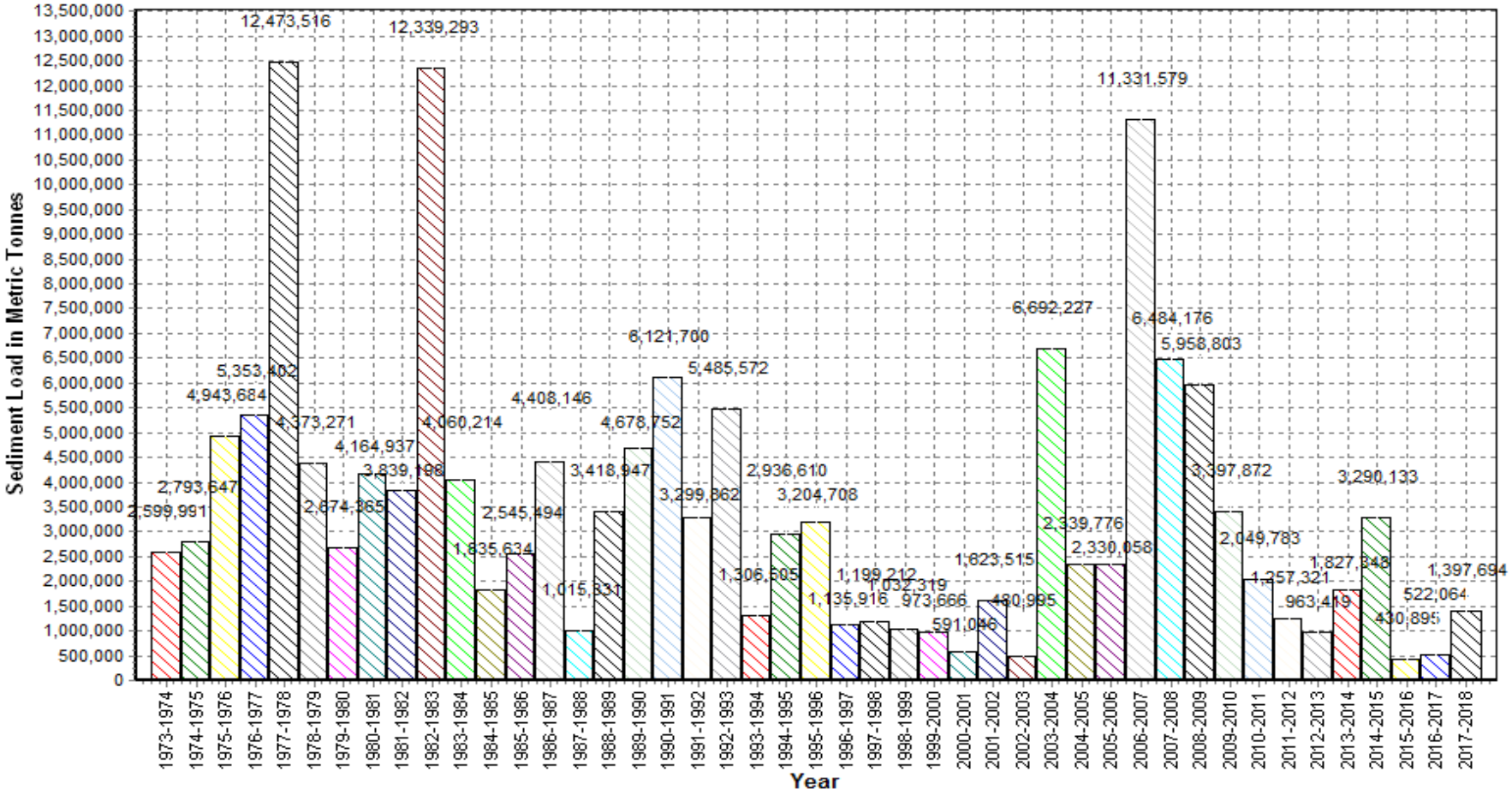
Local River : Vamsadhara **Sub-Division : Behrampur**

Year	Monsoon (M.T.)	Non-Monsoon (M.T.)	Annual Load (M.T.)	Annual Run Off (MCM)
1973-1974	2569538	30454	2599991	1402
1974-1975	2790025	3622	2793647	1041
1975-1976	4882208	61477	4943684	3069
1976-1977	5188944	164458	5353402	2627
1977-1978	12453545	19972	12473516	1892
1978-1979	4358146	15125	4373271	2978
1979-1980	2669363	5001	2674365	2124
1980-1981	4004290	160647	4164937	2455
1981-1982	3786144	53054	3839198	2216
1982-1983	12299387	39905	12339293	1983
1983-1984	4025441	34774	4060214	2327
1984-1985	1807576	28058	1835634	1211
1985-1986	2518690	26804	2545494	1747
1986-1987	4398063	10083	4408146	2278
1987-1988	960277	55054	1015331	725
1988-1989	3414346	4601	3418947	2318
1989-1990	2865627	1813125	4678752	2259
1990-1991	6062374	59325	6121700	6378
1991-1992	3242905	56957	3299862	3412
1992-1993	5469000	16572	5485572	4180
1993-1994	1294039	12467	1306505	1371
1994-1995	2225060	711550	2936610	4018
1995-1996	3158582	46126	3204708	4157
1996-1997	1121950	13966	1135916	1291
1997-1998	1111565	87647	1199212	1632
1998-1999	1017652	14667	1032319	1811
1999-2000	931830	41836	973666	1484
2000-2001	590826	221	591046	1143
2001-2002	1621344	2171	1623515	2158
2002-2003	480891	104	480995	629
2003-2004	6647555	44672	6692227	3482
2004-2005	2332260	7516	2339776	2749
2005-2006	2315377	14681	2330058	2650
2006-2007	11315384	16195	11331579	6422
2007-2008	6433261	50916	6484176	3968
2008-2009	5955785	3018	5958803	3070
2009-2010	3385979	11893	3397872	2807
2010-2011	2026336	23447	2049783	3138
2011-2012	1243490	13831	1257321	1955
2012-2013	956305	7114	963419	2268
2013-2014	1767458	59890	1827348	3849
2014-2015	3289200	933	3290133	5279
2015-2016	426732	4163	430895	1438
2016-2017	520010	2054	522064	1321
2017-2018	1391048	6645	1397694	2768

Annual Sediment Load for the period: 1973-2018

Station Name : KASHINAGAR (AV000J4) **Division : E.E., Bhubaneswar**

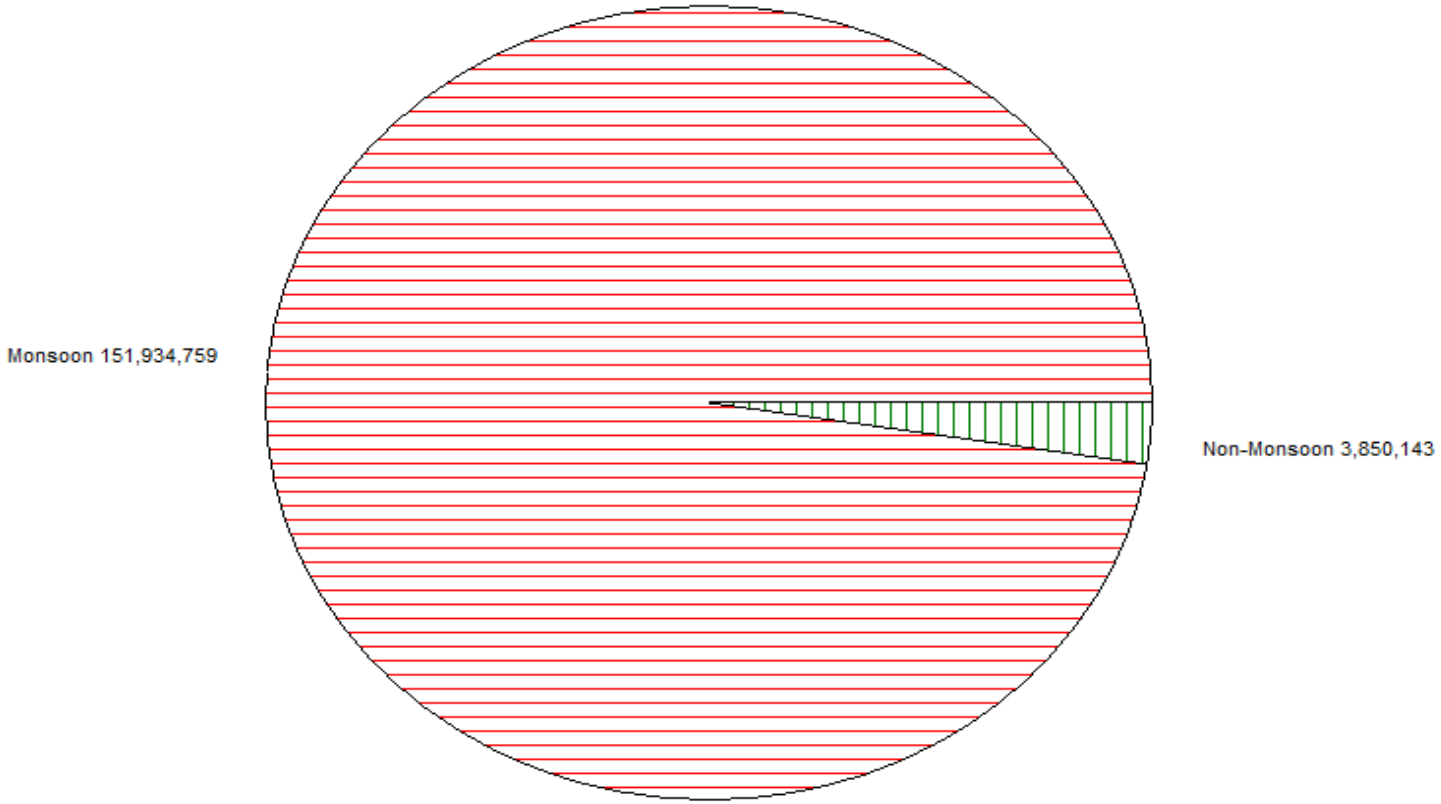
Local River : Vamsadhara **Sub-Division : Behrampur**



Seasonal Sediment Load for the period : 1973-2017

Station Name : KASHINAGAR (AV000J4)
Local River : Vamsadhara

Division : E.E., Bhubaneswar
Sub-Division : Behrampur



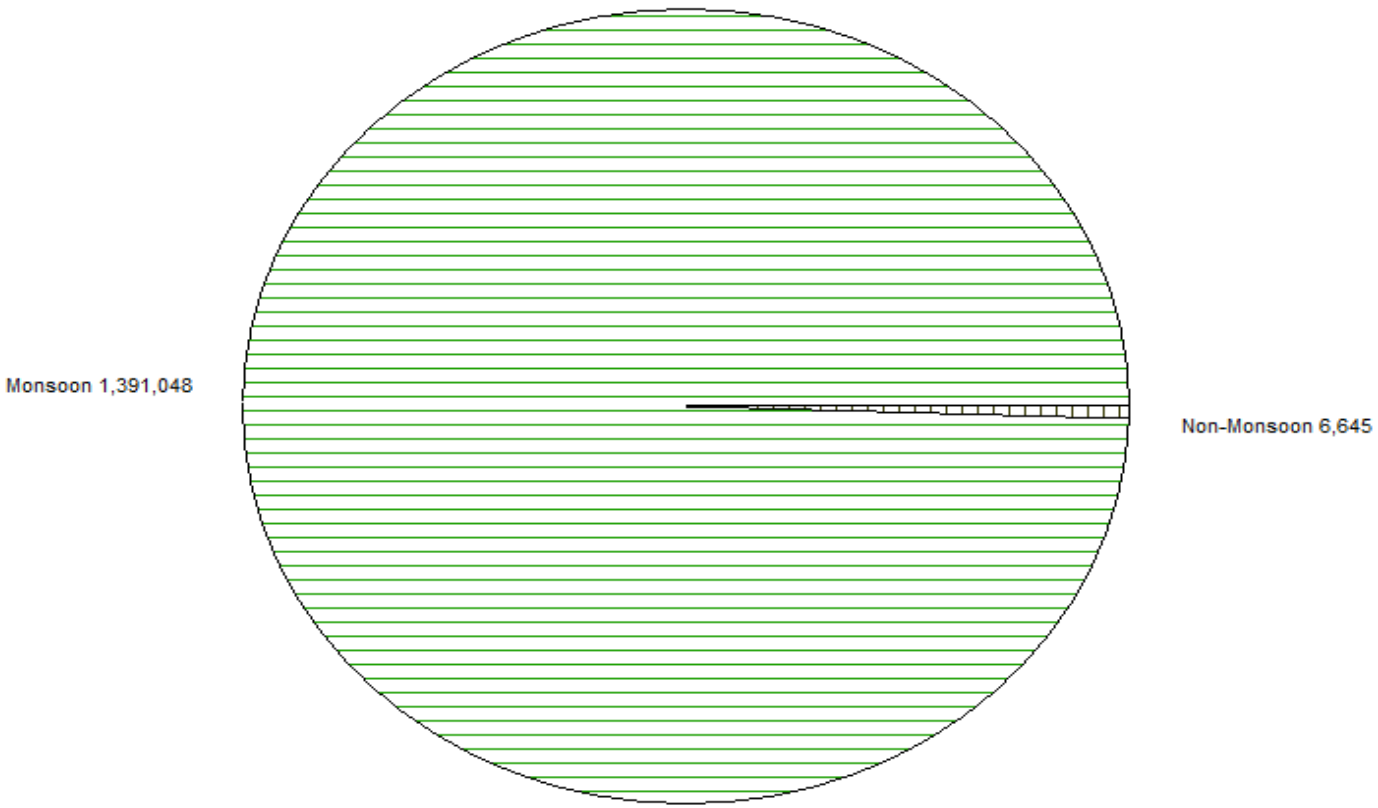
Seasonal Sediment Load for the Year: 2017-2018

Station Name : KASHINAGAR (AV000J4)

Local River : Vamsadhara

Division : E.E., Bhubaneswar

Sub-Division : Behrampur



Water Quality Datasheet for the period : 2017-2018

Station Name : KASHINAGAR (AV000J4) **Division : E.E., Bhubaneswar**

Local River : Vamsadhara **River Water Analysis** **Sub-Division : Behrampur**

S.No	Parameters	01/06/2017	01/07/2017	01/08/2017	01/09/2017	03/10/2017	01/11/2017	01/12/2017	01/01/2018	01/02/2018	01/03/2018	02/04/2018	01/05/2018
		B	A	A	A	A	A	A	A	A	A	B	A
	PHYSICAL												
1	Q (cumec)												
2	Colour_Cod (-)	Clear	Light Brown	Light Brown	Light Brown	Light Brown	Clear	Clear	Clear	Clear	Clear	Clear	Clear
3	EC_FLD (µmho/cm)	360	158	240	235	196	156	239	320	379	378	310	370
4	EC_GEN (µmho/cm)	365	148	235	230	192	146	233	315	370	370	300	366
5	Odour_Code (-)	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free
6	pH_FLD (pH units)	7.6	7.4	7.8	7.7	7.7	7.7	7.7	8.0	8.4	8.3	7.8	8.2
7	pH_GEN (pH units)	7.7	7.3	7.7	7.6	7.6	7.6	7.8	8.0	8.3	8.2	7.7	8.1
8	Temp (deg C)	30.7	30.5	30.5	35.0	35.0	29.5	22.7	21.0	20.7	22.7	25.2	28.2
	CHEMICAL												
1	Alk-Phen (mgCaCO3/L)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	8.0	0.0	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	157	60	79	69	69		102	106	118	139	157	139
3	B (mg/L)	0.01	0.01	0.02	0.01	0.01	0.02	0.03	0.01	0.02	0.01	0.02	0.03
4	Ca (mg/L)	58	51	53	58	22	25	43	35	41	44	43	35
5	Cl (mg/L)	20.8	13.2	15.1	7.5	10.4	10.4	13.8	15.6	13.8	15.6	19.0	17.3
6	CO3 (mg/L)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.6	0.0	0.0	0.0
7	F (mg/L)	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
8	Fe (mg/L)	0.5	0.5	0.4	0.4	0.4	0.4	0.5	0.4	0.4	0.4	0.3	0.5
9	HCO3 (mg/L)	192	73	96	85	85	85	124	130	124	169	192	169
10	K (mg/L)	4.1	2.9	2.8	2.9	3.1	3.6	3.9	4.0	0.9	1.2	1.7	3.4
11	Mg (mg/L)	18.5	38.9	29.2	26.2	10.3	10.3	22.2	12.7	19.1	16.7	20.6	12.7
12	Na (mg/L)	33.5	4.2	8.0	8.6	9.0	9.8	10.2	10.6	13.0	13.8	18.2	20.3
13	NO2+NO3 (mg N/L)	1.13	1.15	1.16	1.15	1.12	1.21	1.25	1.12	1.18	1.23	1.25	1.22
14	NO2-N (mgN/L)	0.01	0.03	0.01	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	NO3-N (mgN/L)	1.12	1.12	1.15	1.12	1.12	1.21	1.25	1.12	1.18	1.23	1.25	1.22
16	P-Tot (mgP/L)	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
17	SiO2 (mg/L)	9.0	8.0	7.8	9.1	7.5	8.6	7.4	9.9	8.2	6.5	7.9	8.8
18	SO4 (mg/L)	33.6	1.9	2.1	5.3	8.4	8.5	8.8	9.0	9.4	3.0	8.0	10.3
	BIOLOGICAL/BACTERIOLOGICAL												
	TRACE & TOXIC												
	CHEMICAL INDICES												
1	HAR_Ca (mgCaCO3/L)	144	128	132	144	56	62	108	88	101	111	108	88
2	HAR_Total (mgCaCO3/L)	221	290	254	254	99	105	200	141	181	181	194	141
3	Na% (%)	24	3	6	7	16	16	10	14	14	14	17	23
4	RSC (-)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	SAR (-)	1.0	0.1	0.2	0.2	0.4	0.4	0.3	0.4	0.4	0.4	0.6	0.7
	PESTICIDES												

Water Quality Summary for the period : 2017-2018

Station Name : KASHINAGAR (AV000J4) **Division : E.E., Bhubaneswar**

Local River : Vamsadhara **Sub-Division : Behrampur**

River Water Summary

S.No	Parameters	Number of Observations	Maximum	Minimum	Mean
	PHYSICAL				
1	Q (cumec)				
2	EC_FLD (µmho/cm)	12	379	156	278
3	EC_GEN (µmho/cm)	12	370	146	273
4	pH_FLD (pH units)	12	8.4	7.4	7.8
5	pH_GEN (pH units)	12	8.3	7.3	7.8
6	Temp (deg C)	12	35.0	20.7	27.6
	CHEMICAL				
1	Alk-Phen (mgCaCO3/L)	11	8.0	0.0	0.7
2	ALK-TOT (mgCaCO3/L)	11	157	60	109
3	B (mg/L)	12	0.03	0.01	0.02
4	Ca (mg/L)	12	58	22	42
5	Cl (mg/L)	12	20.8	7.5	14.4
6	CO3 (mg/L)	12	9.6	0.0	0.8
7	F (mg/L)	12	0.05	0.05	0.05
8	Fe (mg/L)	12	0.5	0.3	0.4
9	HCO3 (mg/L)	12	192	73	127
10	K (mg/L)	12	4.1	0.9	2.9
11	Mg (mg/L)	12	38.9	10.3	19.8
12	Na (mg/L)	12	33.5	4.2	13.3
13	NO2+NO3 (mg N/L)	12	1.25	1.12	1.18
14	NO2-N (mgN/L)	12	0.03	0.00	0.01
15	NO3-N (mgN/L)	12	1.25	1.12	1.17
16	P-Tot (mgP/L)	12	0.001	0.001	0.001
17	SiO2 (mg/L)	12	9.9	6.5	8.2
18	SO4 (mg/L)	12	33.6	1.9	9
	BIOLOGICAL/BACTERIOLOGICAL				
	TRACE & TOXIC				
	CHEMICAL INDICES				
1	HAR_Ca (mgCaCO3/L)	12	144	56	106
2	HAR_Total (mgCaCO3/L)	12	290	99	188
3	Na% (%)	12	24	3	14
4	RSC (-)	12	0.0	0.0	0
5	SAR (-)	12	1.0	0.1	0.4
	PESTICIDES				

Water Quality Seasonal Average for the period: 2003-2018

Station Name : KASHINAGAR (AV000J4) **Division : E.E., Bhubaneswar**

Local River : Vamsadhara **River Water** **Sub-Division : Behrampur**

S.No	Parameters	Flood																
		Jun - Oct																
		2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2003-2004	2004-2005
	PHYSICAL																	
1	Q (cumec)																	
2	EC_FLD (µmho/cm)	207	212			275		352	275	229	218	250	250	405	578	238	177	222
3	EC_GEN (µmho/cm)	207	211			270		352	270	229	218	250	250	403	581	234	197	210
4	pH_FLD (pH units)	7.2	7.6			7.9		7.7	7.9	7.8	7.7	7.5	7.7	7.3	7.1	7.6	7.4	7.9
5	pH_GEN (pH units)	7.2	7.6			7.9		7.7	7.9	7.8	7.7	7.5	7.7	7.3	7.1	7.6	7.4	8.1
6	Temp (deg C)	29.2	31.3			28.3		29.0	29.5	29.3	26.6	26.3	27.3	24.3	32.2	32.3	22.4	21.5
	CHEMICAL																	
1	Alk-Phen (mgCaCO3/L)					0.0		2.0		0.0	0.0		0.0	0.0	0.0	0.0		
2	ALK-TOT (mgCaCO3/L)					86		88		125	81		82	77	220	87		
3	B (mg/L)	0.00	0.00			0.00		0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00
4	Ca (mg/L)	20	19			27		26	27	17	26	16	22	21	152	48	19	21
5	Cl (mg/L)	15.5	17.5			21.4		35.9	19.5	15.7	18.9	17.8	11.0	12.6	10.7	13.4	13.6	15.5
6	CO3 (mg/L)	0.0	0.0			0.0		2.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	F (mg/L)	0.06	0.21			0.00		0.07	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.02	0.51
8	Fe (mg/L)	0.1	0.2			0.1		0.3	0.2	0.0	2.2	0.0	0.7	0.5	0.6	0.4	0.1	0.3
9	HCO3 (mg/L)	85	94			109		102	102	152	110	81	100	94	269	106	80	99
10	K (mg/L)	3.0	3.7			3.4		10.7	4.3	2.5	3.0	1.1	2.4	2.7	6.8	3.2	2.4	2.3
11	Mg (mg/L)	5.5	7.2			6.5		9.2	7.8	10.0	10.9	4.2	11.2	13.6	54.4	24.6	3.0	6.8
12	Na (mg/L)	11.8	11.7			15.7		24.9	12.8	9.8	12.1	11.5	20.6	7.8	19.1	12.7	10.9	9.9
13	NO2+NO3 (mg N/L)	0.60	0.36			1.63		0.44	0.81	0.38	0.73	0.53	1.63	0.85	1.28	1.14	0.25	0.04
14	NO2-N (mgN/L)	0.00	0.00			0.00		0.01	0.00	0.07	0.00	0.00	0.00	0.01	0.01	0.02	0.00	0.00
15	NO3-N (mgN/L)	0.60	0.36			1.63		0.43	0.81	0.31	0.73	0.52	1.63	0.84	1.27	1.13	0.25	0.04
16	o-PO4-P (mg P/L)		0.024			0.055		0.090										
17	P-Tot (mgP/L)	0.083	0.003			0.017		0.010	0.001	0.010	0.001	0.001	0.001	0.004	0.010	0.001	0.072	0.001
18	SiO2 (mg/L)	19.7	30.9			10.9		9.8	10.0	14.0	17.9	9.1	5.3	5.7	6.3	8.3	18.3	28.7
19	SO4 (mg/L)	4.2	3.2			7.3		17.6	21.8	22.4	18.9	21.5	6.9	16.3	8.1	10.2	1.7	1.8
	BIOLOGICAL/BACTERIOLOGICAL																	
	TRACE & TOXIC																	
	CHEMICAL INDICES																	
1	HAR_Ca (mgCaCO3/L)	50	48			67		66	68	41	64	41	56	52	379	121	48	52
2	HAR_Total (mgCaCO3/L)	73	79			98		105	101	83	110	58	103	109	606	223	60	80
3	Na% (%)	26	23			26		27	21	20	17	30	30	13	7	11	29	21
4	RSC (-)	0.0	0.0			0.0		0.0	0.0	0.8	0.2	0.2	0.0	0.0	0.0	0.0	0.1	0.0
5	SAR (-)	0.6	0.6			0.7		0.9	0.6	0.5	0.5	0.7	0.9	0.3	0.4	0.4	0.7	0.5
	PESTICIDES																	

Water Quality Seasonal Average for the period: 2003-2018

Station Name : KASHINAGAR (AV000J4) | **Division : E.E., Bhubaneswar**

Local River : Vamsadhara | **River Water** | **Sub-Division : Behrampur**

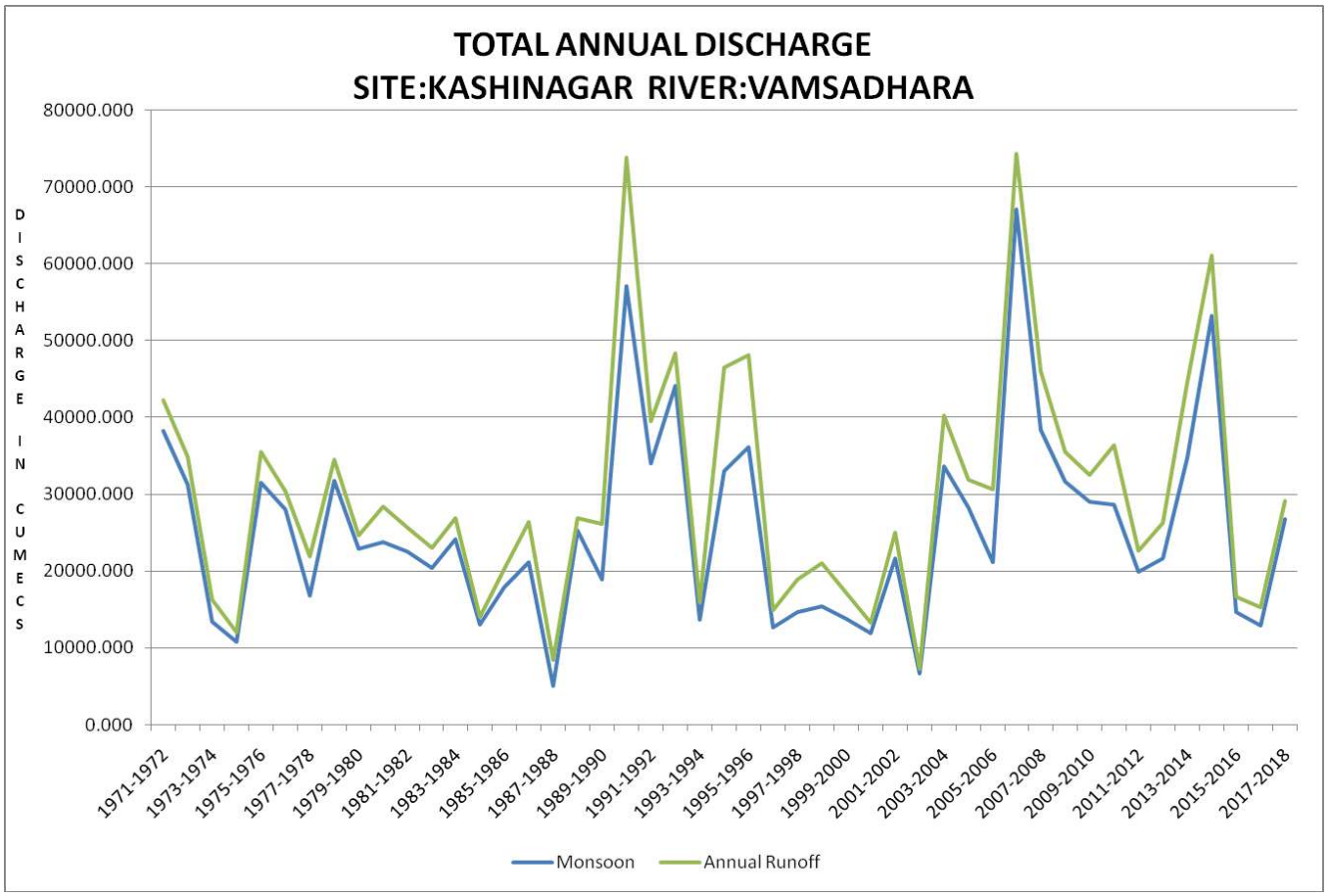
S.No	Parameters	Winter																
		Nov - Feb																
		2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2004	2005	2006	2007
	PHYSICAL																	
1	Q (cumec)																	
2	EC_FLD (µmho/cm)			232		240	300	265	192	190	418	575	444	274	308			
3	EC_GEN (µmho/cm)			225		240	300	265	192	190	418	624	447	266	295			
4	pH_FLD (pH units)			7.8		7.7	7.7	7.8	7.7	8.0	7.4	8.1	8.1	7.9	7.5			
5	pH_GEN (pH units)			7.7		7.7	7.7	7.8	7.7	8.0	7.4	8.0	8.1	7.9	7.4			
6	Temp (deg C)			19.1		18.8	22.9	21.5	27.6		23.8	26.0	25.0	23.5	27.5			
	CHEMICAL																	
1	Alk-Phen (mgCaCO3/L)			0.0		0.0	0.0	0.0	0.0		0.0	23.0	0.0	2.7				
2	ALK-TOT (mgCaCO3/L)			80		76	88	132	115		110	194	62	109				
3	B (mg/L)			0.00		0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.02	0.00			
4	Ca (mg/L)			23		22	29	34	20	15	34	19	72	36	25			
5	Cl (mg/L)			18.1		17.5	18.7	14.1	16.8	18.5	15.1	14.1	12.3	13.4	24.3			
6	CO3 (mg/L)			0.0		0.0	0.0	0.0	0.0	0.0	0.0	27.7	0.0	2.4	0.0			
7	F (mg/L)			0.04		0.09	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.00			
8	Fe (mg/L)			0.3		0.2	0.1	0.0	2.0	0.0	0.2	0.4	0.5	0.4	0.0			
9	HCO3 (mg/L)			98		93	108	161	129	90	135	180	76	116	129			
10	K (mg/L)			3.3		2.7	2.7	2.2	3.2	1.4	2.3	3.2	12.8	3.1	3.8			
11	Mg (mg/L)			5.6		8.8	9.7	17.5	11.0	3.5	4.2	10.7	30.7	16.1	9.7			
12	Na (mg/L)			12.7		11.6	12.4	13.6	14.5	10.6	15.6	21.1	40.2	10.9	17.9			
13	NO2+NO3 (mg N/L)			0.39		0.22	0.86	0.36	0.95	0.95	0.98	0.99	1.16	1.19	0.28			
14	NO2-N (mgN/L)			0.00		0.00	0.00	0.07	0.00	0.00	0.00	0.01	0.00	0.00	0.00			
15	NO3-N (mgN/L)			0.39		0.22	0.86	0.29	0.95	0.95	0.98	0.98	1.16	1.19	0.28			
16	o-PO4-P (mg P/L)			0.041		0.070												
17	P-Tot (mgP/L)			0.001		0.010	0.001	0.010	0.005	0.001	0.001	0.010	0.010	0.001	0.001			
18	SiO2 (mg/L)			9.6		9.0	11.7	8.0	19.2	11.2	6.5	6.0	6.5	8.5	23.3			
19	SO4 (mg/L)			10.5		13.0	12.5	1.4	3.8	21.4	15.5	2.7	17.7	9.0	2.5			
	BIOLOGICAL/BACTERIOLOGICAL																	
	TRACE & TOXIC																	
	CHEMICAL INDICES																	
1	HAR_Ca (mgCaCO3/L)			58		54	72	85	51	38	84	48	180	90	63			
2	HAR_Total (mgCaCO3/L)			81		91	113	158	96	53	102	93	308	157	104			
3	Na% (%)			25		22	20	16	24	30	25	32	23	13	27			
4	RSC (-)			0.0		0.0	0.0	0.3	0.2	0.4	0.2	2.0	0.0	0.0	0.1			
5	SAR (-)			0.6		0.5	0.5	0.5	0.6	0.6	0.7	1.0	1.1	0.4	0.8			
	PESTICIDES																	

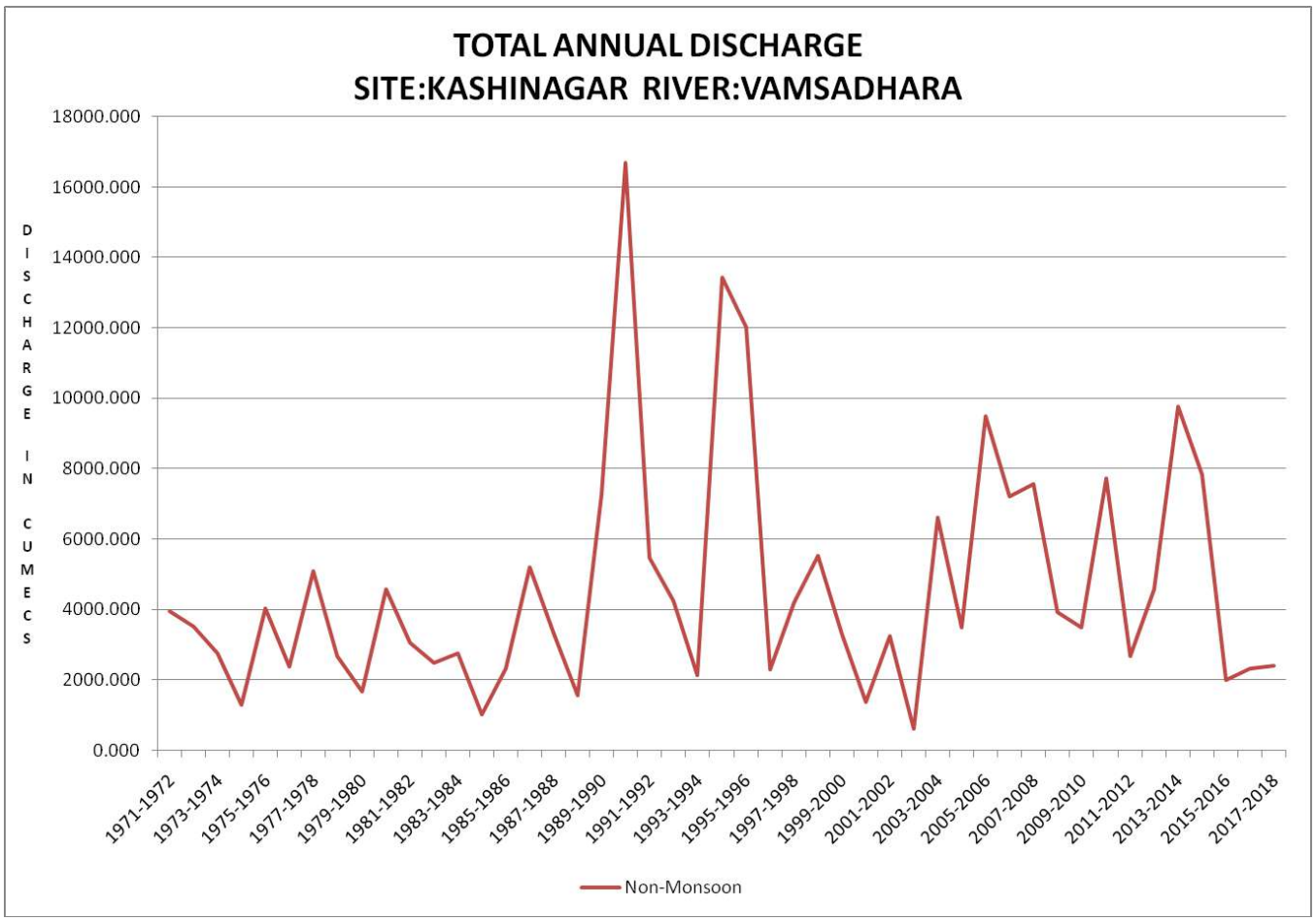
Water Quality Seasonal Average for the period: 2003-2018

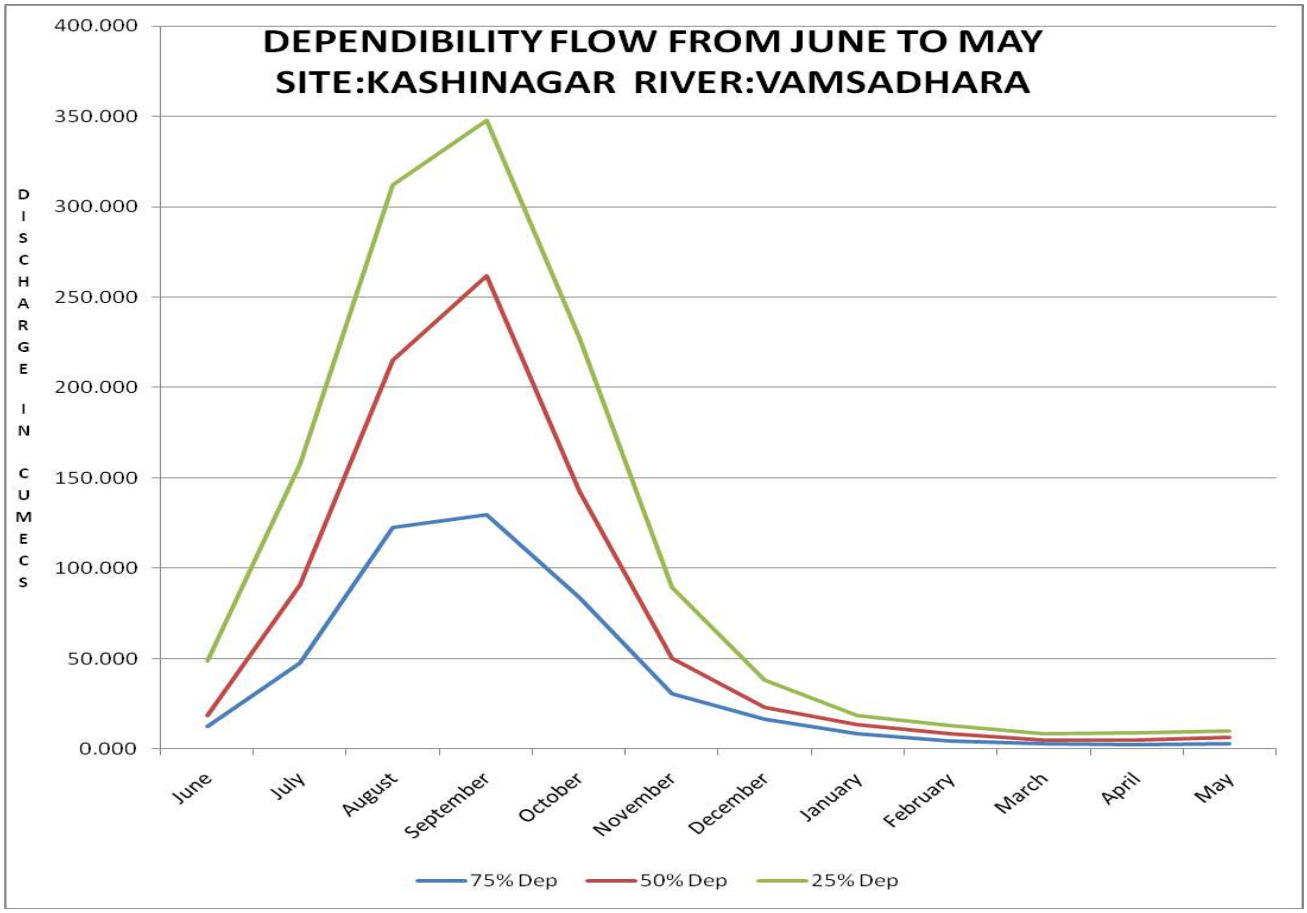
Station Name : KASHINAGAR (AV000J4) **Division : E.E., Bhubaneswar**

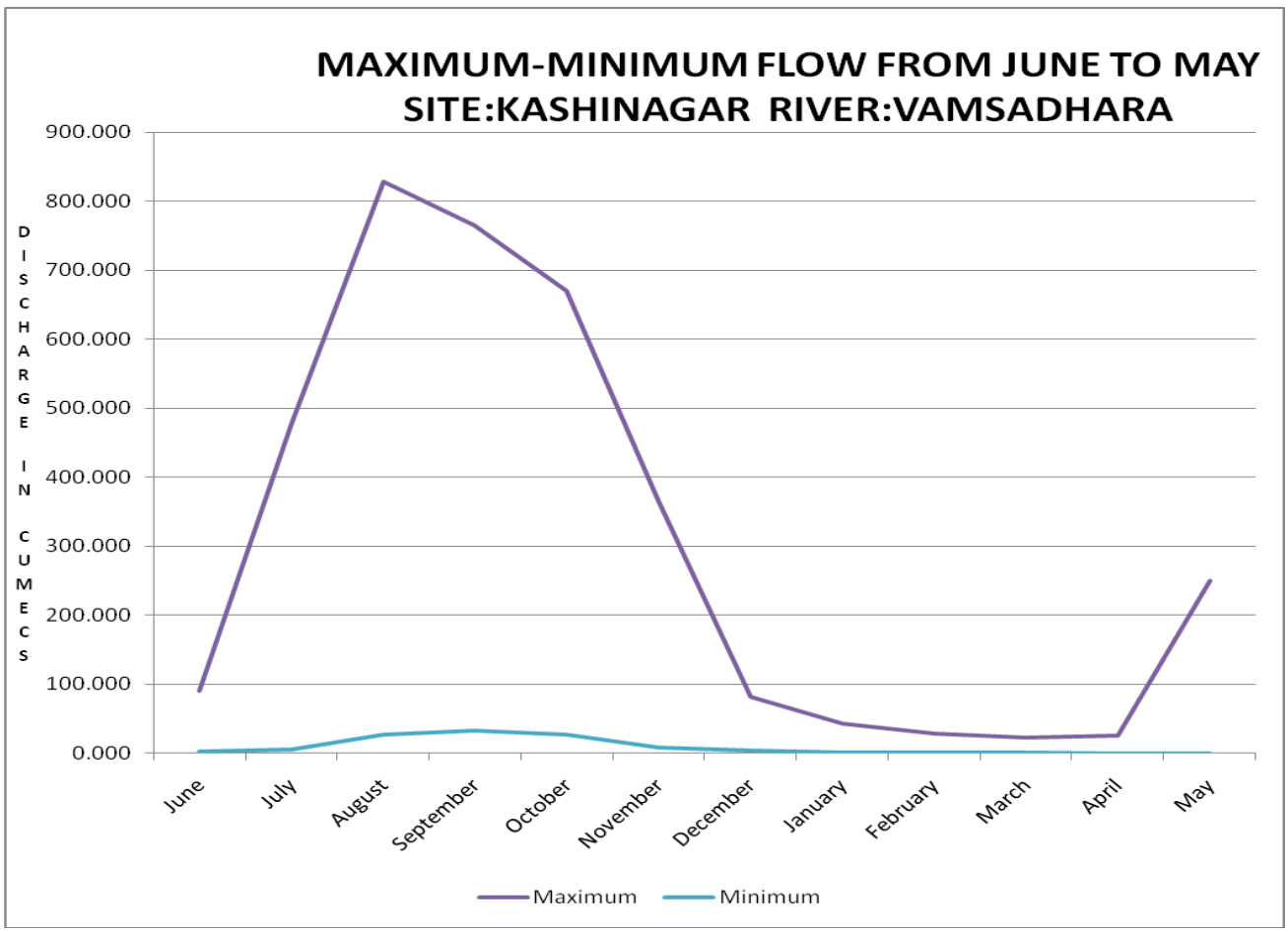
Local River : Vamsadhara **River Water** **Sub-Division : Behrampur**

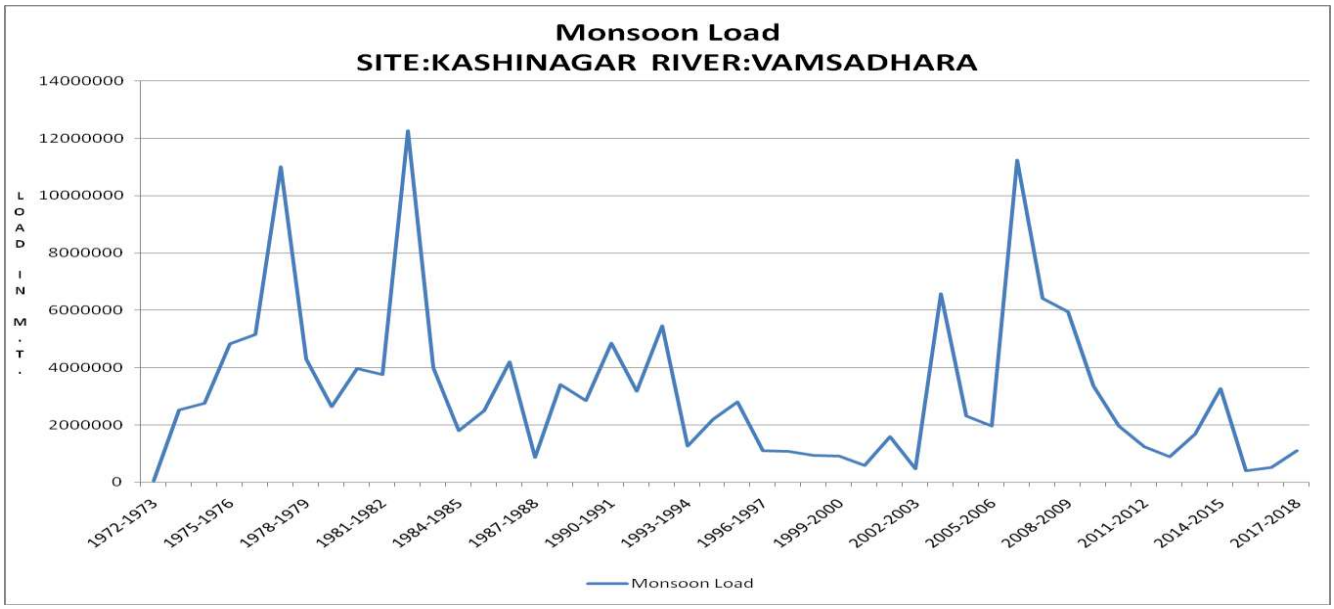
S.No	Parameters	Summer										
		Mar - May										
		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
	PHYSICAL											
1	Q (cumec)											
2	EC_FLD (µmho/cm)	230		380	400	310	145	200	430	582	435	353
3	EC_GEN (µmho/cm)	230		380	400	310	145	200	430	599	438	345
4	pH_FLD (pH units)	8.2		8.4	7.9	7.9	7.4	8.0	7.9	8.1	8.0	8.1
5	pH_GEN (pH units)	8.2		8.4	7.9	7.9	7.4	8.0	7.9	8.1	8.1	8.0
6	Temp (deg C)	25.0		28.0	27.0		28.3	25.8	24.5	24.0	28.7	25.4
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)	0.0		0.0		0.0			0.0	9.2	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	79		123		148			149	226	69	145
3	B (mg/L)	0.00		0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.02	0.02
4	Ca (mg/L)	24		26	32	35	22	16	42	26	48	41
5	Cl (mg/L)	18.8		33.4	22.6	22.6	23.8	22.3	22.6	17.0	18.9	17.3
6	CO3 (mg/L)	0.0		0.0	0.0	0.0	0.0	0.0	0.0	11.1	0.0	0.0
7	F (mg/L)	0.05		0.00	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
8	Fe (mg/L)	0.0		0.1	1.9	0.0	2.2	0.1	0.2	0.5	0.4	0.4
9	HCO3 (mg/L)	96		150	172	180	114	103	181	254	85	177
10	K (mg/L)	3.6		3.5	2.9	2.7	4.6	1.1	2.6	2.4	18.1	2.1
11	Mg (mg/L)	5.4		16.5	17.5	11.7	8.3	2.4	11.2	11.7	22.4	16.7
12	Na (mg/L)	12.8		24.6	16.9	20.2	12.6	10.4	20.1	24.8	60.2	17.4
13	NO2+NO3 (mg N/L)	0.22		0.34	1.16	0.36	1.04	1.15	0.91	0.70	1.15	1.23
14	NO2-N (mgN/L)	0.00		0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00
15	NO3-N (mgN/L)	0.22		0.34	1.16	0.29	1.04	1.15	0.91	0.70	1.15	1.23
16	o-PO4-P (mg P/L)			0.000								
17	P-Tot (mgP/L)	0.002		0.010	0.001	0.010	0.001	0.001	0.001	0.010	0.010	0.001
18	SiO2 (mg/L)	9.7		9.6	8.6	18.0	16.4	8.5	7.0	5.0	7.5	7.7
19	SO4 (mg/L)	10.2		12.2	12.8	2.8	5.6	25.6	18.0	2.8	18.0	7.1
	BIOLOGICAL/BACTERIOLOGICAL											
	TRACE & TOXIC											
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	60		64	80	88	56	41	105	64	120	102
2	HAR_Total (mgCaCO3/L)	83		133	153	137	90	51	152	113	213	172
3	Na% (%)	24		28	19	24	22	30	22	32	36	18
4	RSC (-)	0.0		0.0	0.0	0.2	0.1	0.7	0.0	2.3	0.0	0.0
5	SAR (-)	0.6		0.9	0.6	0.8	0.6	0.6	0.7	1.0	1.8	0.6
	PESTICIDES											

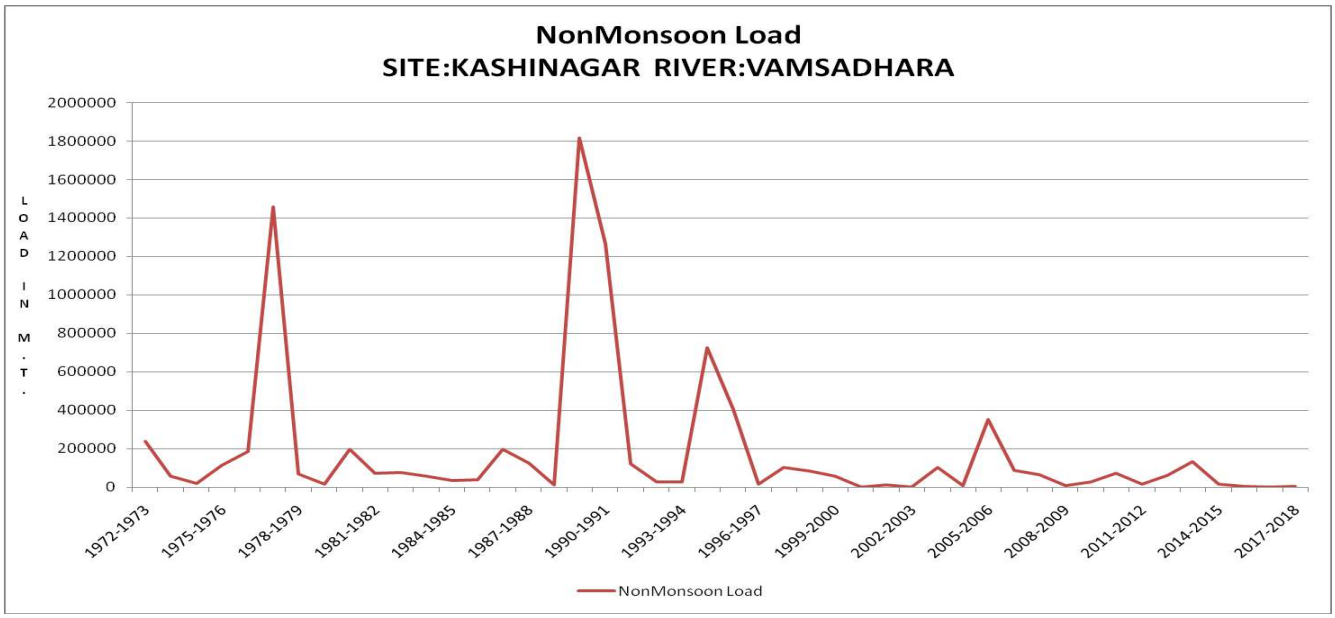

TOTAL ANNUAL DISCHARGE
SITE:KASHINAGAR RIVER:VAMSADHARA
DISCHARGE IN CUMECS
80000.000
70000.000
60000.000
50000.000
40000.000
30000.000
20000.000
10000.000
0.000
1971-1972
1973-1974
1975-1976
1977-1978
1979-1980
1981-1982
1983-1984
1985-1986
1987-1988
1989-1990
1991-1992
1993-1994
1995-1996
1997-1998
1999-2000
2001-2002
2003-2004
2005-2006
2007-2008
2009-2010
2011-2012
2013-2014
2015-2016
2017-2018
Monsoon
Annual Runoff

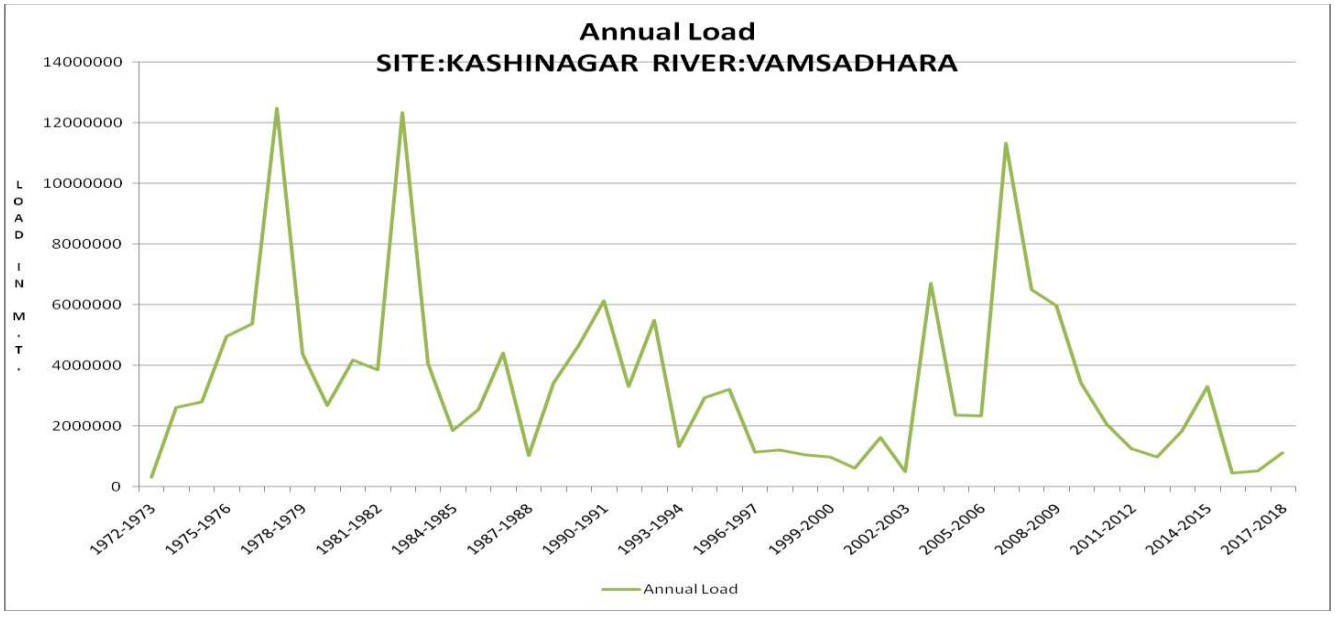

TOTAL ANNUAL DISCHARGE
SITE:KASHINAGAR RIVER:VAMSADHARA
DISCHARGE IN CUMECS
18000.000
16000.000
14000.000
12000.000
10000.000
8000.000
6000.000
4000.000
2000.000
0.000
1971-1972
1973-1974
1975-1976
1977-1978
1979-1980
1981-1982
1983-1984
1985-1986
1987-1988
1989-1990
1991-1992
1993-1994
1995-1996
1997-1998
1999-2000
2001-2002
2003-2004
2005-2006
2007-2008
2009-2010
2011-2012
2013-2014
2015-2016
2017-2018
Non-Monsoon

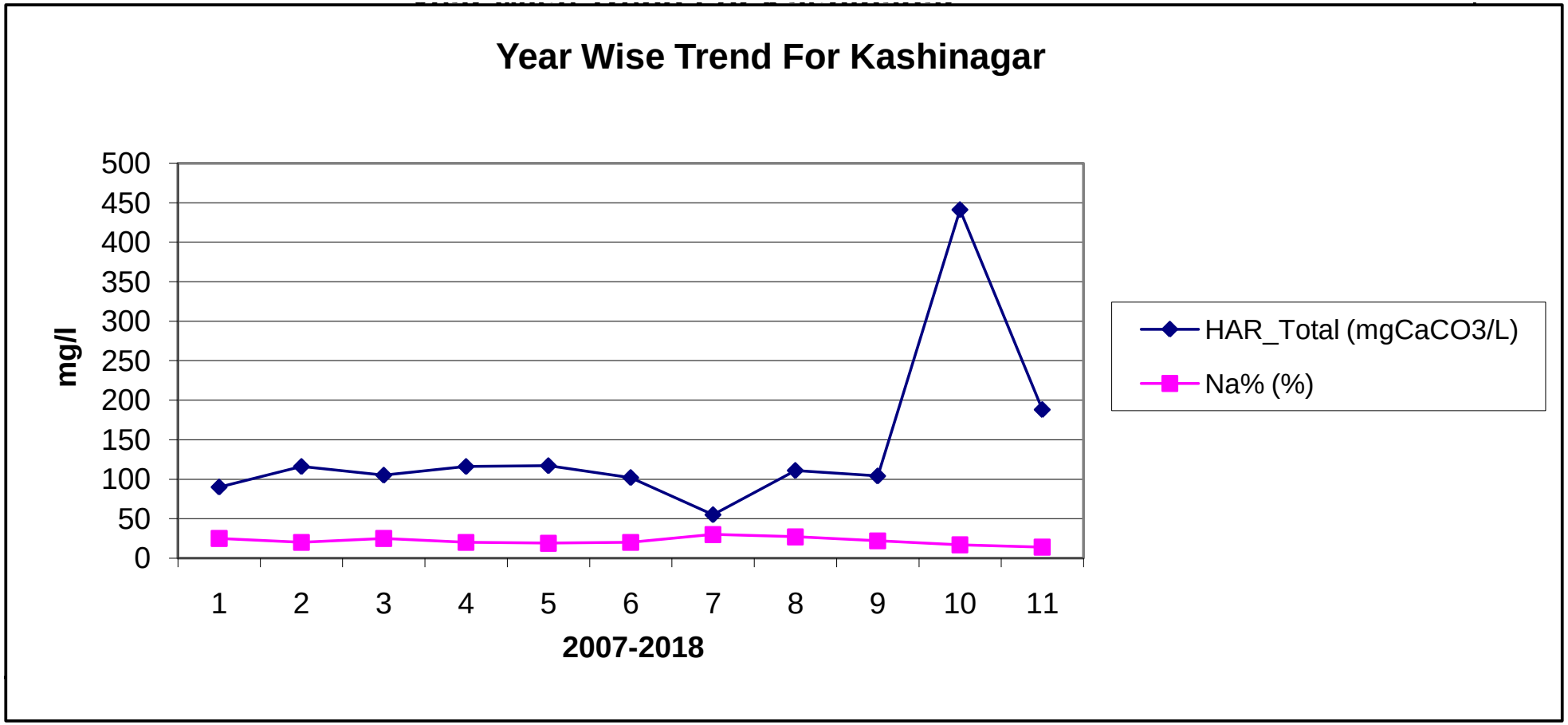

DEPENDIBILITY FLOW FROM JUNE TO MAY
SITE:KASHINAGAR RIVER:VAMSADHARA
DISCHARGE IN CUMECS
400.000
350.000
300.000
250.000
200.000
150.000
100.000
50.000
0.000
June
July
August
September
October
November
December
January
February
March
April
May
75% Dep
50% Dep
25% Dep

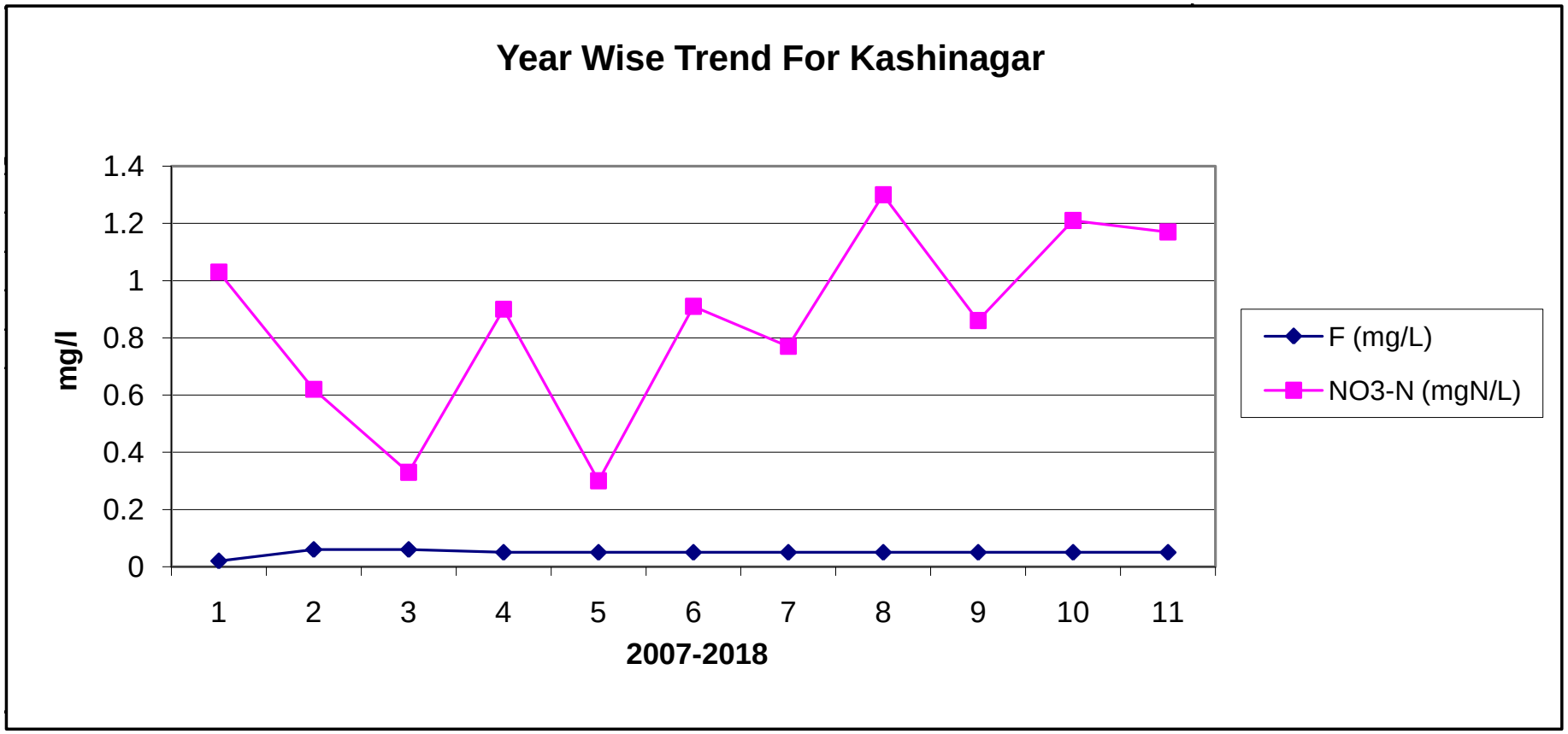

MAXIMUM-MINIMUM FLOW FROM JUNE TO MAY
SITE:KASHINAGAR RIVER:VAMSADHARA
DISCHARGE IN CUMECS
900.000
800.000
700.000
600.000
500.000
400.000
300.000
200.000
100.000
0.000
June
July
August
September
October
November
December
January
February
March
April
May
Maximum
Minimum

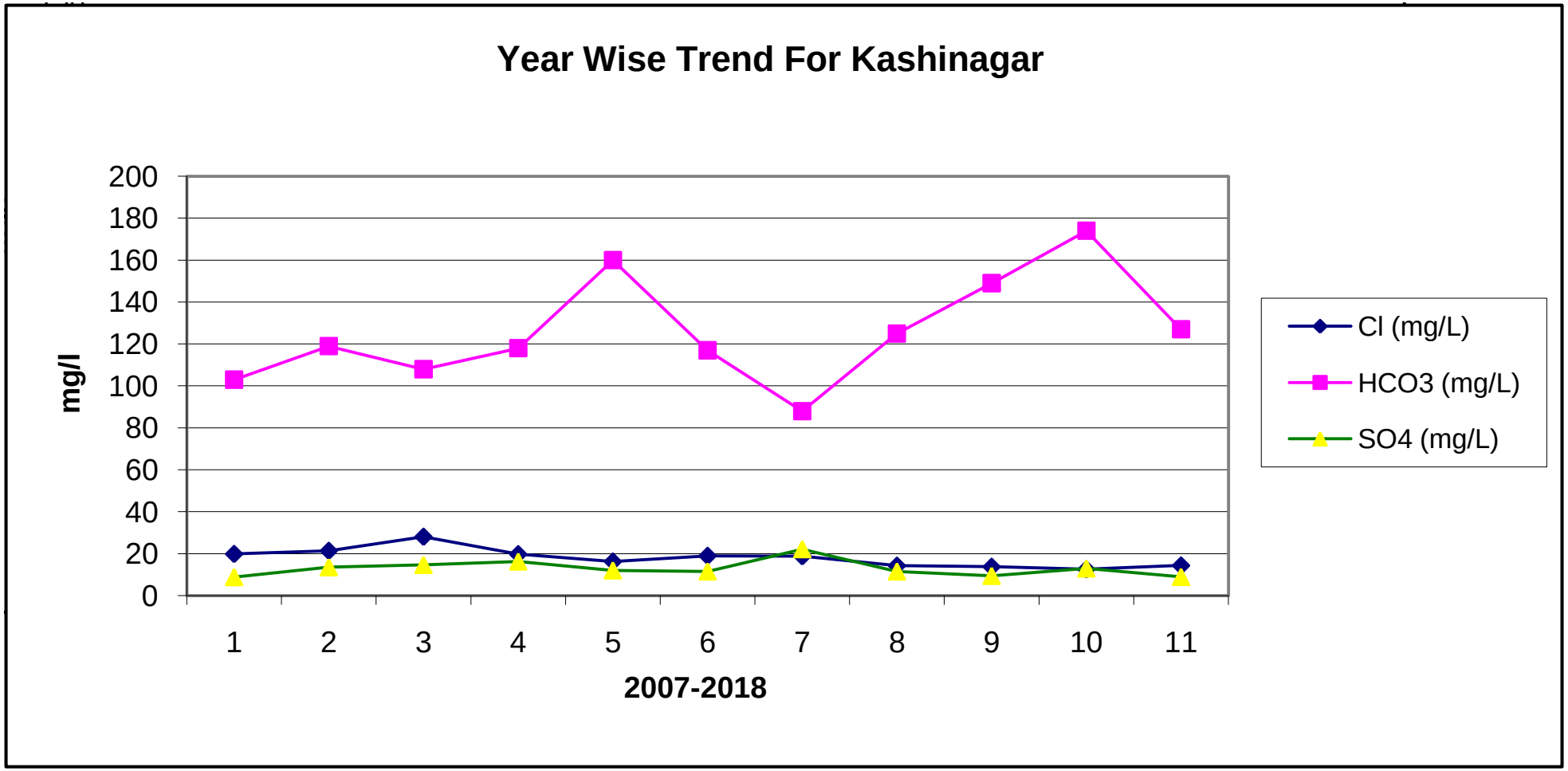

Monsoon Load
SITE:KASHINAGAR RIVER:VAMSADHARA
LOAD IN M.T.
14000000
12000000
10000000
8000000
6000000
4000000
2000000
0
1972-1973
1975-1976
1978-1979
1981-1982
1984-1985
1987-1988
1990-1991
1993-1994
1996-1997
1999-2000
2002-2003
2005-2006
2008-2009
2011-2012
2014-2015
2017-2018
Monsoon Load

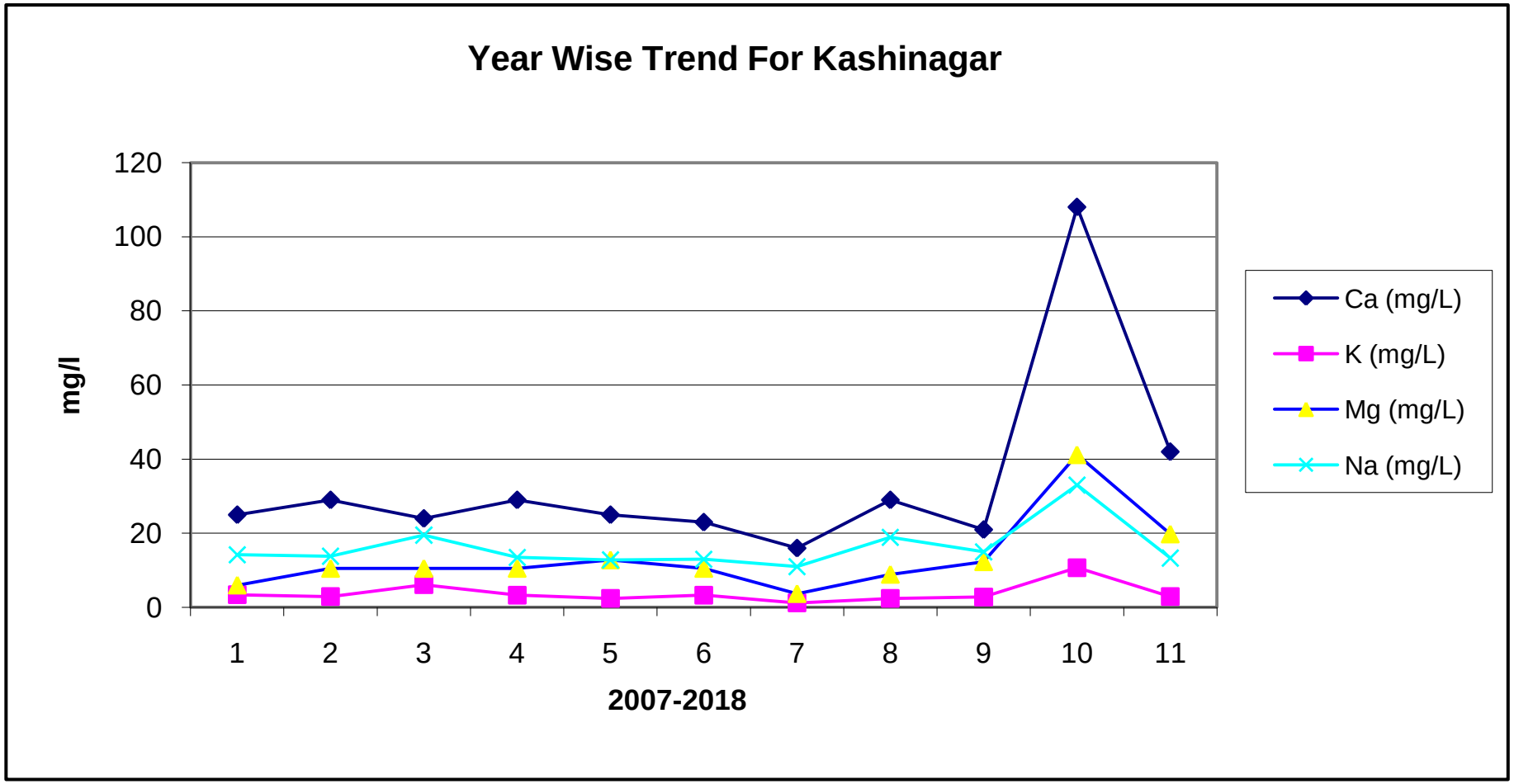

NonMonsoon Load
SITE:KASHINAGAR RIVER:VAMSADHARA
LOAD IN M.T.
2000000
1800000
1600000
1400000
1200000
1000000
800000
600000
400000
200000
0
1972-1973
1975-1976
1978-1979
1981-1982
1984-1985
1987-1988
1990-1991
1993-1994
1996-1997
1999-2000
2002-2003
2005-2006
2008-2009
2011-2012
2014-2015
2017-2018
NonMonsoon Load


Annual Load
SITE:KASHINAGAR RIVER:VAMSADHARA
LOAD IN M.T.
14000000
12000000
10000000
8000000
6000000
4000000
2000000
0
1972-1973
1975-1976
1978-1979
1981-1982
1984-1985
1987-1988
1990-1991
1993-1994
1996-1997
1999-2000
2002-2003
2005-2006
2008-2009
2011-2012
2014-2015
2017-2018
Annual Load


Year Wise Trend For Kashinagar
500
450
400
350
300
250
200
150
100
50
0
mg/l
1
2
3
4
5
6
7
8
9
10
11
2007-2018
HAR_Total (mgCaCO3/L)
Na% (%)


Year Wise Trend For Kashinagar
1.4
1.2
1
0.8
0.6
0.4
0.2
0
mg/l
1
2
3
4
5
6
7
8
9
10
11
2007-2018
F (mg/L)
NO3-N (mgN/L)


Year Wise Trend For Kashinagar
mg/l
200
180
160
140
120
100
80
60
40
20
0
1
2
3
4
5
6
7
8
9
10
11
2007-2018
Cl (mg/L)
HCO3 (mg/L)
SO4 (mg/L)


Year Wise Trend For Kashinagar
120
100
80
60
40
20
0
mg/l
1
2
3
4
5
6
7
8
9
10
11
2007-2018
Ca (mg/L)
K (mg/L)
Mg (mg/L)
Na (mg/L)

RUSHIKULYA BASIN

RUSHIKULYA BASIN

1. GENERAL

1.1 Introduction

River Rushikulya is one of the East flowing river in Odisha. The river Rushikulya originates at an elevation of about 1000 m near Matabarhi village of Kandhamal district of Odisha State and lies within the geographical co-ordinates of 19° 07′ to 20° 19′ North latitude and 84° 01′ to 85° 06′ East longitude. The river flows through Purushottampur, Pratapur and joins with the Bay of Bengal at Ganjam district (Odisha). The total catchment area is 7700 sq.km., entirely in the districts of Kandhamal and Ganjam (Odisha).

The entire basin is grouped into flat plains and valleys with isolated hills. The coastal plains of the basin contain fertile and irrigated lands. The basin is continuously sloping towards main valley and hence no drainage congestion is anticipated.

Basin Map of Rushikulya river system showing the various hydrological and hydro-meteorological observation stations maintained by CWC and State Government and India Meteorological Department is enclosed herewith.

1.2 River system

The catchment is of a leaf shape and the basin is considerably harnessed by inter linking canal network among its tributaries. The details of the principal tributaries joining the river on both the banks are given below:

Name of River	River/Tributary	Length (km)	Catchment area (sq.km)	Percentage of total catchment area
Rushikulya	Main Stream	162	2798	36.3
Baghua	Left Tributary	68	736	9.6
Badanadi	Left Tributary	93	2353	30.6
Pathama	Right Tributary	43	663	8.6
Ghodahada	Right Tributary	83	1150	14.9
		Total	7700	100.0

1.3 Climatic Characteristics

The South West monsoon is normally active from June to October/November. The average annual rainfall is around 1360 mm. Very heavy rainfall occurs at several places in some years, which causes severe floods. In certain years, serious drought also occurs due to inadequate rainfall.

1.4 Geology

The catchment mostly comprises of Khondolite and Charcolite groups of rock formation. Ground water is available in the region of alluvium in confined and unconfined aquifers below 250 m. The basin is rich in mineral wealth. The major economic minerals are Lime Stone, Manganese, Sand Talc, black sand, Clay and grinding materials

1.5 Site Details

The basin is developed with an integrated canal system, which includes Jayamangal, Ghodahada, Daha dam and a few diversion weirs/ anicuts and number of Minor Irrigation Projects.

Details of water storage/ diversion structures in the Baitarani Basin are as below:

Sl.No.	Name of Project	River	Status
1.	Bhanjanagar Reservoir	Boringanalla	Existing
2.	Sorada Reservoir	Padma	Existing
3.	Ghodahada Reservoir	Ghodahad	Existing
4.	Baghua Reservoir	Baghua	Ongoing
5.	Daha Reservoir	Daha & Kalinga	Existing
6.	Hiradharbhati Barrage	Rushikulya	Existing
7.	Jagamangal weir	Rushikulya	Existing

2. STREAM FLOW DATA

2.1 Methodology

Area-velocity method is generally adopted for measuring discharge at sites. Cup type current meter is used to measure the velocity of the flow and the depth is measured by using sounding rod for depths upto 3 m and by log line beyond 3 m. Discharge by area velocity method is being observed once in a day starting at 0800 Hrs. at all the sites except on Sundays and holidays. Besides, silt and water quality observation are also being carried out at the sites of CWC as list above.

The observed stage and discharge figures for each season (monsoon and non-monsoon) are plotted and a mean Stage V/s. Discharge curve is drawn, giving due attention to the scattered points with reference to area, velocity etc.

The factors responsible for the shifting of the curves are also taken care of by studying the river cross section at regular intervals and with super imposition of previous years' Stage V/s. Discharge curves. Accordingly, the trend of the current curve is finalised. Finally, the discharges of the non observed days are computed from these Stage V/s. Discharge Curves.

2.2 Data Availability

Sl. No.	Code No.	Station Name	Type	Data available From	To
1.	ER000U5	Purushottampur	G & D	G - 14.07.1978	Continuing
				D - 14.06.1989	-do-
				S - 15.01.2001	-do-
				WQ- 08.10.2001	-do-
2	MADHABARIDA	Madhabarida	G	G - 09.08.1978	Continuing
3	SORADA	Sorada	G	G - 12.07.1978	Continuing

2.3 Explanatory Notes on Water Year Book

SWDES (Surface Water Data Entry Software), a custom made software for processing hydrological data, has been used for preparation of this volume. The explanatory notes described below can be used for interpretation of data presented in this volume.

i) Water Year ranges from June 1st of one calendar year to May 31st of the next calendar year and covers one complete hydrological cycle.

ii) Discharge is given in cubic meters per second.

iii) Discharges are expressed as 0.000 when river bed is dry and 0.000 N.F. when velocity is observed as 'NIL'.

iv) The zero R.L. of gauge is a datum level fixed for given site, which is kept 1 or 2 m lower than the lowest water level recorded in a perennial stream. In a non-perennial stream, it is kept 1 or 2 m lower than the lowest bed level of the stream.

v) Discharges are rounded off as per standard practice.

vi) Runoff in mm is the notional depth of water in millimeters over the catchment, equivalent to annual runoff volume calculated at the discharge measurement station. It is computed using the relation:

$$\text{Runoff (mm)} = \frac{\text{Annual runoff } (Mm^3) \times 1000}{\text{Catchment area } (km^2)}$$

vii) Peak and lowest flow correspond to the highest and lowest water levels recorded from 'SWDES' entered data.

viii) Measuring Authority refers to the field division of Central Water Commission (Eastern Rivers Division) responsible for the operation of the gauging station.

ix) The gauging station code number is a unique seven column alphanumeric reference number which facilitates storage and retrieval of flow data in data base. The first column is identifier of either an integral river basin or, for the sake of convenience, a region having several contiguous river catchments. This is followed by a column which identifies an independent river system which either has one or more outlets to the sea or crosses international border to enter another country. The third, fourth and fifth column spaces denote first, second and third order tributaries, respectively, from the mouth upstream. The sixth and seventh column spaces indicate the location of the gauging station in one of the 225 slots earmarked on the river. The blank column spaces are filled by zero.

3. HYDROLOGICAL DATA

This volume contains the following information for each site stated above:

i. History Sheet: Site Name, State, District, River Basin, Tributary, Sub-Tributary, Catchment Area, Latitude / Longitude, Opening / Closing date for various types of data.

ii. Annual maximum/minimum discharge since period of observation.

iii. Daily Water level and observed/ computed discharge data including 10-daily, monthly and annual totals etc.

iv. Histogram and Hydrograph showing current year monthly mean discharges, Historical monthly mean discharges, historical monthly minimum and monthly maximum discharges.
v. Histogram showing Annual Run off volume since beginning of observation.
vi. Pie-Chart showing monthly mean run off (as percentage of Annual Run off) historical for the current year.
vii. Plot of Pre and Post Monsoon Cross-section of the rivers for current year.
viii. Water Level hydrograph for 3(three) major flood events of current year.

4. SEDIMENT DATA (In case of Sediment Observation sites)

The frequency of sediment observation is carried out daily during monsoon season and once in a week (on Monday) during the non-monsoon period. Data for non-observed days is estimated/ interpolated from the relationship of discharge v/s. sediment load, prepared on the basis of observed sediment concentration and weighted mean discharge of the same year.

Sediment samples are collected from 0.6 depth, using Punjab type bottle sampler, from all the verticals along the hydrological observation sections where velocity is observed for computation of discharge. The collected samples from all the segments are combined in 3 to 7 groups having compartments or groups of equal or nearly equal discharges for analysis. Quantum of suspended sediment load is estimated in three grades, viz. Coarse, Medium and Fine. Coarse and medium grades are separated by sieving process and the fine grade by filtration of left over samples after sieving through filter paper. Grade wise concentration is derived gravimetrically as per standard procedure. The following parameters are derived and recorded:

- Daily Observed suspended sediment (g/l).
- Corresponding discharge.
- Average sediment load in tonnes/day (10 daily & monthly basis).
- Annual sediment load for the current year.
- Annual & Seasonal sediment load and the corresponding volume of inflow for all the years since inception.
- Grain size distribution of bed load.

5. WATER QUALITY DATA (In case of Water Quality Observation sites)

The water samples are collected at a regular interval of once in a month for trend stations and once in two month for base stations (on 1st working day), from the main flowing segment of the stream just below the water surface (20 to 30 cm) on the Station Gauge line where depth of flow and velocity are maximum, preferably in the mid stream. The water samples are collected in the pre-rinsed and cleaned one-litre capacity polythene bottle having double stopper (inside and outside) facility. Sampling bottle is filled to its full capacity without entrapping air bubbles inside.

After sampling, the collected samples are sent to the Water Quality Laboratory (Level-II) based at Bhubaneswar (under the Eastern Rivers Division) and to Raipur laboratory (under Mahanadi Division, Burla), along with in-situ physical characteristics, for analysis. The samples received from the sites are preserved in a refrigerator in the water quality laboratories for analysis**.**

Analysis of parameters, namely pH, Electrical conductivity, Sodium, Potassium, Iron, Aluminum, Ammonia, Fluoride, Nitrate, Nitrite, Phosphate, Silicate, Boron, Sulphate, Calcium, Magnesium, Carbonate, Bi-carbonate, Chloride, Dissolved Oxygen, BOD and COD, are carried out at the Level II laboratory by using standard methodology. Micro biological parameters like total colliform and faecal colliform are also being analyzed. For analysis of trace and toxic elements, samples are sent to Level-II+ laboratory at Hyderabad once in a year, in the month of April.

The following parameters are analyzed and recorded:

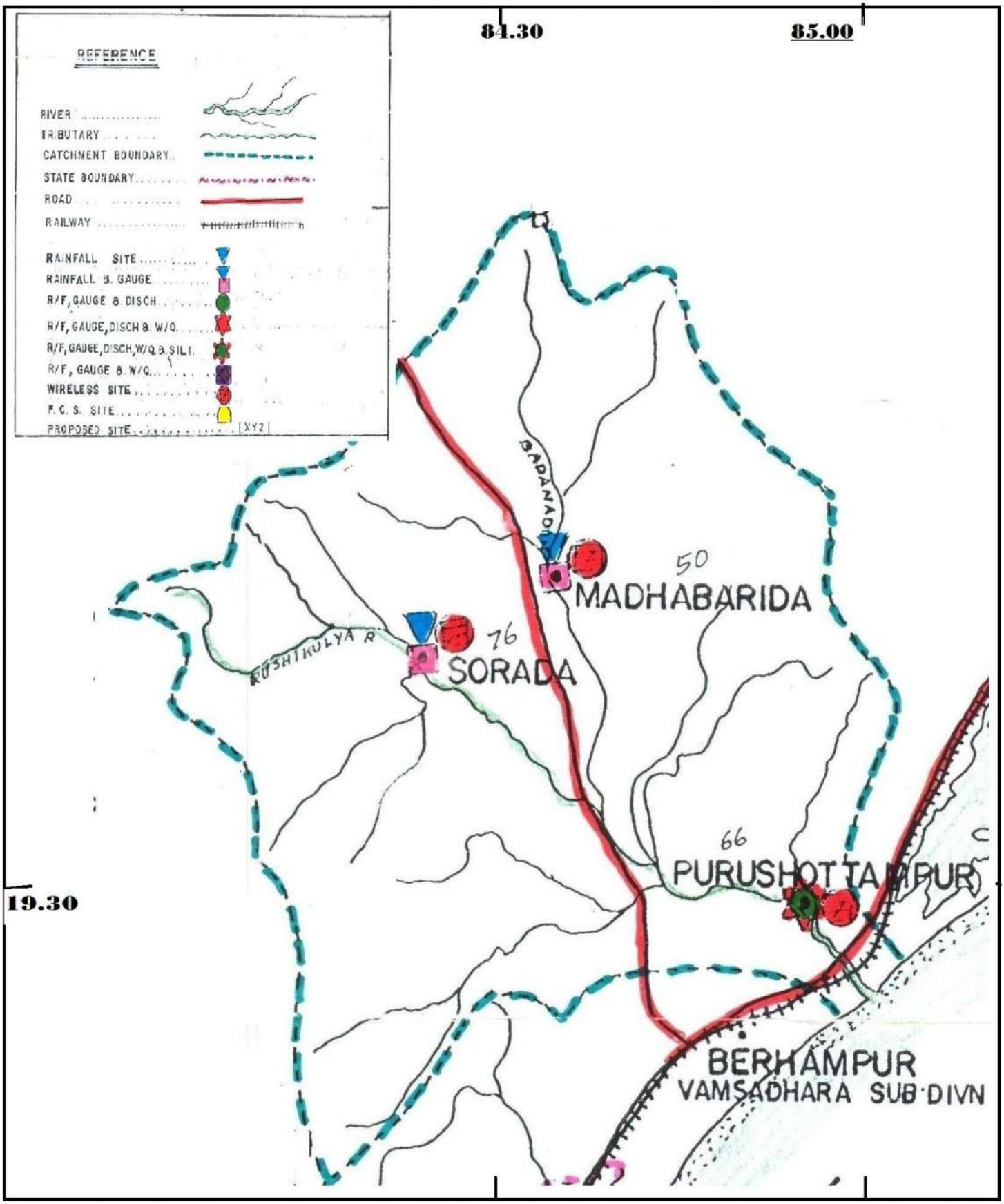
- Monthly Values: Physical; Chemical (mg/l); Biological (mg/l); Traces & Toxic (mg/l) and Chemical Indices.

- Average Values for the Year: 10 Years data to be given season wise averages:-

  - Average for Summer (March to June).
  - Average for Floods (July to October).
  - Average for Winter (November to February)

NAME OF THE SITES IN OPERATION UNDER RUSHIKULYA BASIN

Sl. No.	Station Name	River/ Tributary	Type	Latitude	Longitude	Max. Water Level & Discharge upto May,2018			
						WL	Date	Q.	Date
1.	Madhabarida	Badanadi	G	19° 55' 00"	84° 38' 00"	61.44	18/10/99	---	---
2.	Purushottampur	Rushikulya	GDSQ	19° 31' 00"	84° 53' 00"	19.655	04/11/90	3750	25/10/13
3.	Sorada	Rushikulya	G	19° 45' 30"	84° 38' 30"	83.21	04/11/90	---	---


REFERENCE
RIVER
TRIBUTARY
CATCHMENT BOUNDARY
STATE BOUNDARY
ROAD
RAILWAY
RAINFALL SITE
RAINFALL & GAUGE
R/F, GAUGE & DISCH
R/F, GAUGE, DISCH & W/Q
R/F, GAUGE, DISCH, W/Q & SILT
R/F, GAUGE & W/Q
WIRELESS SITE
F.C.S. SITE
PROPOSED SITE
XYZ
84.30
85.00
19.30
BADANADI
50
MADHABARIDA
RUSHIKULYA R
76
SORADA
66
PURUSHOTTAMPUR
BERHAMPUR
VAMSADHARA SUB-DIVN

HISTORY SHEET

Water Year : 2017-2018

Site	:	**PURUSHOTTAMPUR**	**Code**	:	**ER000U5**
State	:	Orissa	District		Ganjam
Basin	:	EFR B Mahanadi-Godavari	Independent River	:	Rushikulya
Tributary	:		Sub Tributary	:	
Sub-Sub Tributary	:		Local River	:	Rushikulya
Division	:	E.E., Bhubaneswar	Sub-Division	:	Behrampur
Drainage Area	:	7112 Sq. Km.	Bank	:	Right
Latitude	:	19°31'00"	Longitude	:	84°53'00"
Zero of Gauge (m)	:	12 (m.s.l)	7/14/1978	-	7/14/2078
		Opening Date	Closing Date		
Gauge	:	7/14/1978			
Discharge	:	6/14/1989			
Sediment	:	1/15/2001			
Water Quality	:	10/8/2001			

Annual Maximum / Minimum discharge with corresponding Water Level (m.s.l)

	Maximum			Minimum		
Year	**Q (cumecs)**	**WL (m)**	**Date**	**Q (cumecs)**	**WL (m)**	**Date**
1993-1994	800.0	14.990	8/1/1993	0.000	12.210	4/19/1994
1994-1995	2450	16.900	5/11/1995	0.000	12.120	4/2/1995
1995-1996	1910	17.120	11/10/1995	0.000	12.000	5/20/1996
1996-1997	758.1	15.460	10/3/1996	0.000	12.980	2/17/1997
1997-1998	2195	17.560	8/22/1997	0.000	12.000	6/15/1997
1998-1999	997.1	15.685	11/17/1998	0.000	13.070	4/13/1999
1999-2000	3020	17.760	10/19/1999	0.000	12.850	4/10/2000
2000-2001	609.8	15.345	8/29/2000	0.000	12.000	3/9/2001
2001-2002	1202	15.610	6/13/2001	0.000	12.990	4/22/2002
2002-2003	700.0	15.070	9/8/2002	0.000	12.000	5/7/2003
2003-2004	2279	17.940	10/8/2003	0.000	12.730	4/7/2004
2004-2005	1270	15.810	10/5/2004	0.000	12.000	4/2/2005
2005-2006	1648	16.530	9/13/2005	0.000	12.610	2/17/2006
2006-2007	2151	17.525	7/4/2006	0.000	12.730	2/27/2007
2007-2008	2086	17.500	8/7/2007	0.000	12.540	5/12/2008
2008-2009	1757	16.765	9/18/2008	0.328	12.770	2/17/2009
2009-2010	2260	17.250	7/20/2009	0.000	12.500	5/18/2010
2010-2011	2047	16.390	11/9/2010	0.000	12.570	6/22/2010
2011-2012	1004	15.360	9/1/2011	0.000	12.470	5/25/2012
2012-2013	1776	16.510	11/3/2012	0.000	12.270	5/16/2013
2013-2014	3750	18.640	10/25/2013	0.000	12.390	6/10/2013
2014-2015	1934	16.370	10/14/2014	0.561	12.040	6/23/2014
2015-2016	1225	15.190	9/16/2015	0.480	12.040	4/24/2016
2016-2017	798.2	14.310	10/8/2016	0.313	12.040	5/20/2017
2017-2018	1137	14.780	10/21/2017	0.302	12.020	4/4/2018

Q : Observed / Computed Discharge WL : Corresponding Water Level(m.s.l)

Stage-Discharge Data for the period 2017 - 2018

Station Name : PURUSHOTTAMPUR (ER000U5) **Division : E.E., Bhubaneswar**

Local River : Rushikulya **Sub-Division : Behrampur**

Day	Jun		Jul		Aug		Sep		Oct		Nov	
	W.L	Q	W.L	Q	W.L	Q	W.L	Q	W.L	Q	W.L	Q
1	12.110	1.232	12.415	39.03	12.920	174.2	12.920	174.0	12.920	180.0 *	12.480	80.07
2	12.100	1.069	12.290	30.00 *	13.070	230.0 *	13.070	230.0 *	12.840	155.0 *	12.450	70.28
3	12.100	1.044	12.250	22.60	13.210	285.0 *	13.210	285.0 *	12.890	178.5	12.410	60.97
4	12.100	1.718 *	12.220	22.33	13.250	300.8	13.260	300.8	13.080	236.4	12.400	55.00 *
5	12.160	5.189	12.200	20.74	12.960	198.2	12.960	198.2	13.075	235.1	12.380	45.00 *
6	12.140	3.931	12.180	17.90	12.830	140.9	12.830	140.9	13.055	229.2	12.350	37.80
7	12.120	3.316	12.160	16.78	12.750	125.7	12.750	125.7	14.485	939.1	12.300	33.77
8	12.110	2.931	12.160	16.35	12.680	110.7	12.680	110.7	14.160	700.0 *	12.300	32.96
9	12.110	2.737	12.210	25.00 *	12.755	127.0	12.755	127.0	13.480	386.8	12.300	32.72
10	12.140	3.854	12.610	97.54	13.130	235.0 *	13.130	235.0 *	13.250	302.2	12.270	26.37
11	12.170	19.00 *	12.450	60.67	13.125	220.7	12.890	160.3	13.130	240.1	12.250	22.86
12	12.405	35.54	12.340	29.69	12.760	123.3	12.620	100.0	13.070	229.1	12.250	22.70 *
13	12.370	32.20	12.230	24.36	12.600	100.0 *	12.510	75.05	13.080	234.1	12.240	22.54
14	12.250	21.51	12.695	107.7	13.070	215.2	12.910	165.7	12.940	185.5	12.240	22.32
15	12.230	20.83	12.860	142.0	13.200	250.0 *	12.960	196.6	12.830	150.0 *	12.390	47.45
16	12.300	28.40	12.880	144.0 *	12.960	171.1	12.845	144.4	12.970	196.5	12.955	195.5
17	12.200	19.30	13.325	302.3	12.800	119.8	12.660	115.0 *	12.700	128.7	13.310	308.8
18	12.170	17.00 *	13.840	518.3	13.060	205.3	12.865	154.5	12.620	103.8	13.100	234.5
19	12.150	15.41	14.430	844.3	12.950	164.7	13.230	294.1	12.610	97.40 *	12.980	190.0 *
20	12.390	35.08	13.900	555.4	13.010	180.0 *	13.520	390.8	12.905	187.8	13.500	384.6
21	12.295	26.46	13.200	256.1	13.075	230.9	13.875	552.3	14.780	1137	13.300	326.9
22	12.210	18.91	12.780	110.6	12.695	110.9	13.530	405.7	13.920	550.0 *	12.950	186.5
23	12.250	21.23	12.560	70.00 *	12.590	99.29	13.150	255.3	13.380	340.1	12.700	120.5
24	12.360	31.69	12.380	36.93	12.760	145.1	12.750	130.0 *	13.220	286.0	12.610	103.7
25	12.270	25.00 *	12.305	29.36	12.750	134.7	12.700	128.7	12.930	181.0	12.530	89.91
26	12.210	19.84 *	12.260	26.32	13.110	224.7	12.810	144.9	12.810	145.0	12.480	75.00 *
27	12.220	19.86	12.225	23.72	12.880	160.0 *	13.080	234.6	12.680	121.5	12.470	76.37
28	12.240	21.34	12.240	25.02	12.795	151.4	13.240	299.7	12.630	104.5	12.440	70.86
29	12.230	20.20	12.440	54.53	13.205	265.2	13.140	245.0 *	12.600	95.80 *	12.420	68.70
30	12.650	75.51	12.400	40.00 *	13.225	271.6	12.920	170.0 *	12.570	91.38	12.400	66.55
31			12.590	97.10	13.025	206.6			12.510	85.00		
Ten-Daily Mean												
I Ten-Daily	12.119	2.702	12.270	30.83	12.956	192.8	12.957	192.7	13.323	354.2	12.364	47.49
II Ten-Daily	12.263	24.43	13.095	272.9	12.953	175.0	12.901	179.6	12.885	175.3	12.721	145.1
III Ten-Daily	12.294	28.00	12.489	69.97	12.919	181.9	13.119	256.6	13.094	285.2	12.630	118.5
Monthly												
Min.	12.100	1.044	12.160	16.35	12.590	99.29	12.510	75.05	12.510	85.00	12.240	22.32
Max.	12.650	75.51	14.430	844.3	13.250	300.8	13.875	552.3	14.780	1137	13.500	384.6
Mean	12.225	18.38	12.614	122.8	12.942	183.2	12.992	209.7	13.101	272	12.572	103.7

Annual Runoff in MCM = 2540 Annual Runoff in mm = 357

Peak Observed Discharge = 1137 cumecs on 21-Oct-17 Corres. Water Level :14.78 m

Lowest Observed Discharge = 0.302 cumecs on 04-Apr-18 Corres. Water Level :12.02 m

Q: Observed/Computed Discharge in cumecs WL:Corresponding Mean Water Level(m.s.l) in m *:Computed Discharge

Note:Missing values ignored while arriving at Annual Runoff

Stage-Discharge Data for the period 2017 - 2018

Station Name : PURUSHOTTAMPUR (ER000U5) **Division : E.E., Bhubaneswar**

Local River : Rushikulya **Sub-Division : Behrampur**

Day	Dec		Jan		Feb		Mar		Apr		May	
	W.L	Q	WL	Q	WL	Q	WL	Q	WL	Q	WL	Q
1	12.360	39.93	12.130	11.09	12.060	5.340	12.080	7.982	12.030	0.450 *	12.060	5.560
2	12.380	38.00 *	12.120	10.57	12.050	4.674	12.080	7.959 *	12.020	0.315	12.050	2.667
3	12.360	37.00 *	12.120	10.48	12.050	4.682	12.080	7.937	12.020	0.311	12.050	2.679
4	12.340	35.91	12.120	10.51	12.050	4.600 *	12.050	4.500 *	12.020	0.302	12.050	2.670
5	12.330	34.42	12.110	9.925	12.050	4.556	12.040	1.156	12.020	0.307	12.050	2.700
6	12.330	33.23	12.110	9.315	12.050	4.535	12.040	1.301	12.020	0.308	12.050	2.710 *
7	12.340	33.20 *	12.090	9.000 *	12.050	4.706	12.040	1.327	12.060	2.488	12.050	3.013
8	12.330	35.33	12.090	8.765	12.050	4.542	12.040	1.322	12.060	2.900 *	12.050	2.927
9	12.330	33.46	12.090	8.357	12.050	4.617	12.030	1.209	12.070	3.092	12.050	2.835
10	12.290	31.07 *	12.080	7.988	12.050	4.545	12.030	1.184	12.060	2.943	12.050	2.835
11	12.290	30.53	12.100	9.370	12.040	3.500 *	12.040	1.700 *	12.050	2.635	12.050	2.667
12	12.280	29.76	12.100	9.143	12.040	2.593	12.050	2.234	12.050	2.624	12.050	2.699
13	12.260	24.91	12.100	9.238	12.040	2.541	12.060	2.452	12.050	2.533	12.260	24.00 *
14	12.250	24.00	12.090	8.500 *	12.040	2.491	12.060	2.578	12.050	2.439	12.180	21.43
15	12.250	23.60	12.090	8.233	12.040	2.386	12.060	2.563	12.060	5.600 *	12.100	10.64
16	12.240	22.78	12.070	6.201	12.040	2.359	12.060	2.631	12.090	8.880	12.080	9.014
17	12.240	22.30 *	12.070	6.103	12.040	2.301	12.060	2.576	12.080	8.256	12.070	8.920
18	12.250	22.30 *	12.070	6.046	12.070	6.000 *	12.060	2.500 *	12.080	7.085	12.060	7.895
19	12.220	21.32	12.070	6.008	12.090	8.509	12.070	2.262	12.060	5.025	12.060	7.573
20	12.220	21.09	12.060	5.798	12.090	8.216	12.070	2.371	12.060	5.114	12.080	9.000 *
21	12.210	20.25	12.080	7.500 *	12.090	8.189	12.060	2.294	12.060	5.036	12.110	12.74
22	12.210	20.08	12.080	6.845	12.080	7.817	12.060	2.172	12.060	5.200 *	12.080	9.648
23	12.190	17.36	12.080	6.706	12.080	8.010	12.060	2.136	12.050	2.386	12.070	9.698
24	12.170	15.00 *	12.080	7.123	12.090	8.121	12.040	0.697	12.050	2.378	12.060	9.136
25	12.140	13.00 *	12.080	6.969	12.090	8.300 *	12.040	0.690 *	12.040	2.095	12.060	9.235
26	12.130	11.54	12.080	7.000 *	12.090	8.102	12.040	0.678	12.080	8.376	12.050	8.549
27	12.120	9.942	12.070	6.124	12.080	7.935	12.050	0.769	12.080	8.483	12.050	8.400 *
28	12.120	9.236	12.070	6.330 *	12.080	7.953	12.040	0.675	12.060	5.358	12.030	4.977
29	12.110	8.436	12.060	5.447			12.040	0.670 *	12.060	5.300 *	12.030	4.784
30	12.100	7.910	12.060	5.374			12.040	0.670 *	12.060	5.200 *	12.030	4.643
31	12.120	7.800 *	12.060	5.377			12.030	0.590			12.030	4.289
Ten-Daily Mean												
I Ten-Daily	12.339	35.15	12.106	9.600	12.051	4.680	12.051	3.588	12.038	1.341	12.051	3.060
II Ten-Daily	12.250	24.26	12.082	7.464	12.053	4.089	12.059	2.387	12.063	5.019	12.099	10.38
III Ten-Daily	12.147	12.78	12.073	6.436	12.085	8.054	12.045	1.095	12.060	4.981	12.055	7.827
Monthly												
Min.	12.100	7.800	12.060	5.374	12.040	2.301	12.030	0.590	12.020	0.302	12.030	2.667
Max.	12.380	39.93	12.130	11.09	12.090	8.509	12.080	7.982	12.090	8.880	12.260	24.00
Mean	12.242	23.7	12.086	7.788	12.061	5.433	12.052	2.316	12.054	3.781	12.068	7.114

Peak Computed Discharge = 700.0 cumecs on 08-Oct-17 Corres. Water Level :14.16 m

Lowest Computed Discharge = 0.450 cumecs on 01-Apr-18 Corres. Water Level :12.03 m

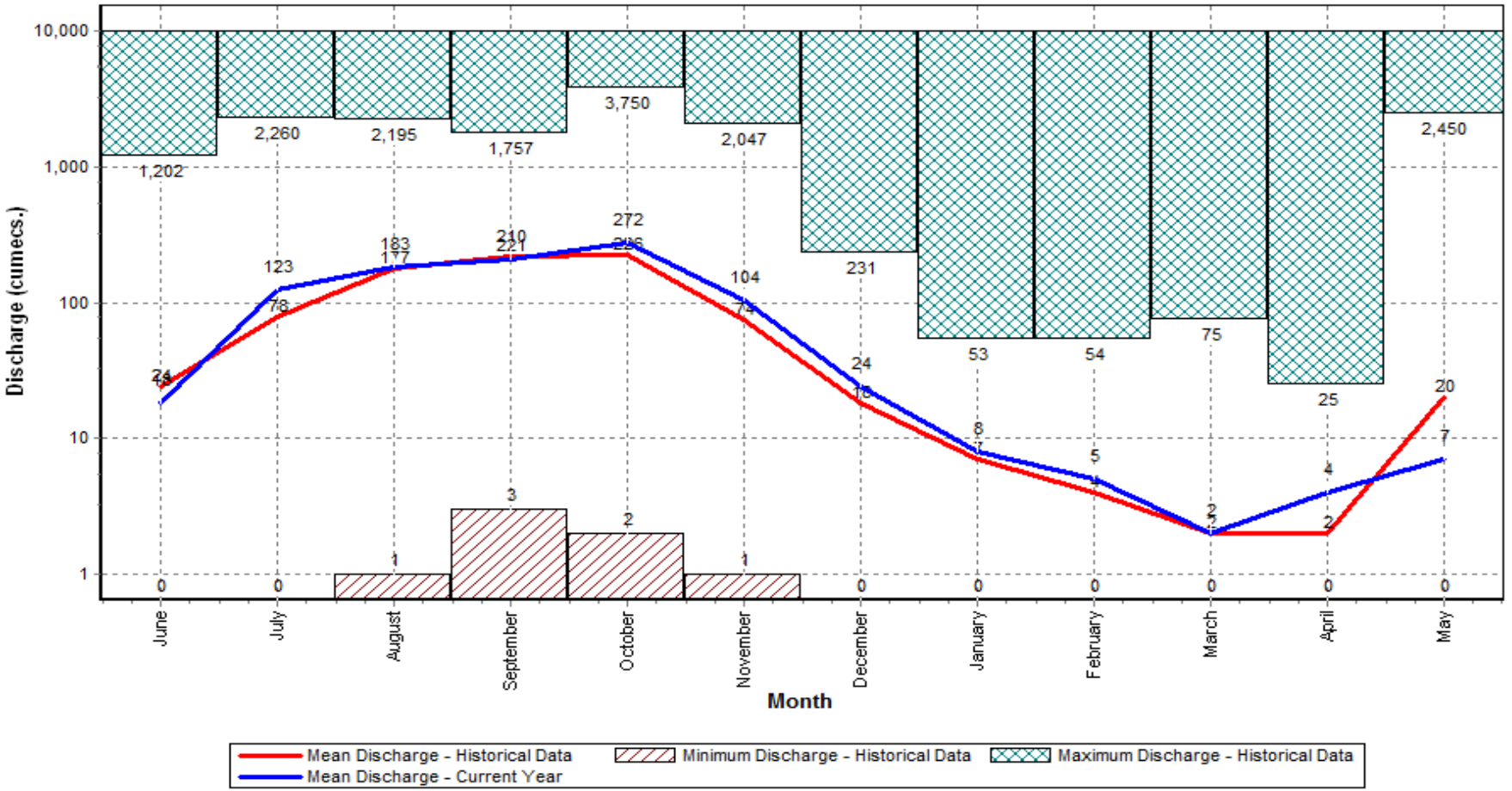
Q: Observed/Computed Discharge in cumecs WL:Corresponding Mean Water Level(m.s.l) in m *:Computed Discharge

Note:Missing values ignored while arriving at Annual Runoff

HISTOGRAM - HYDROGRAPH for Water Year : 2017-2018

Station Name : PURUSHOTTAMPUR (ER000U5) | **Data considered : 1993-2018** | **Division : E.E., Bhubaneswar**

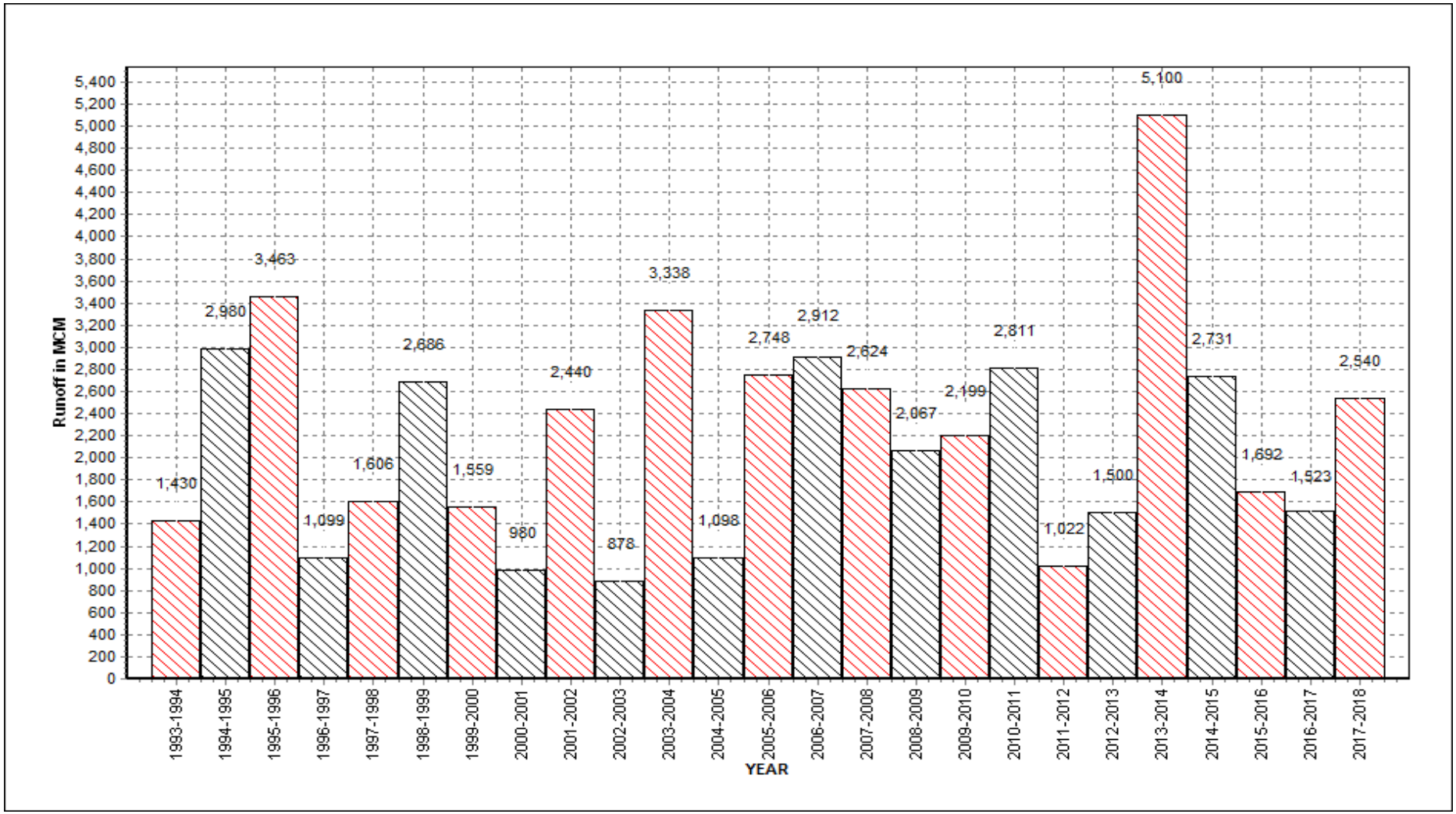
Local River : Rushikulya | **Sub-Division : Behrampur**



Annual Runoff Values for the period: 1993 - 2018

Station Name : PURUSHOTTAMPUR (ER000U5) **Division : E.E., Bhubaneswar**

Local River : Rushikulya **Sub-Division : Behrampur**

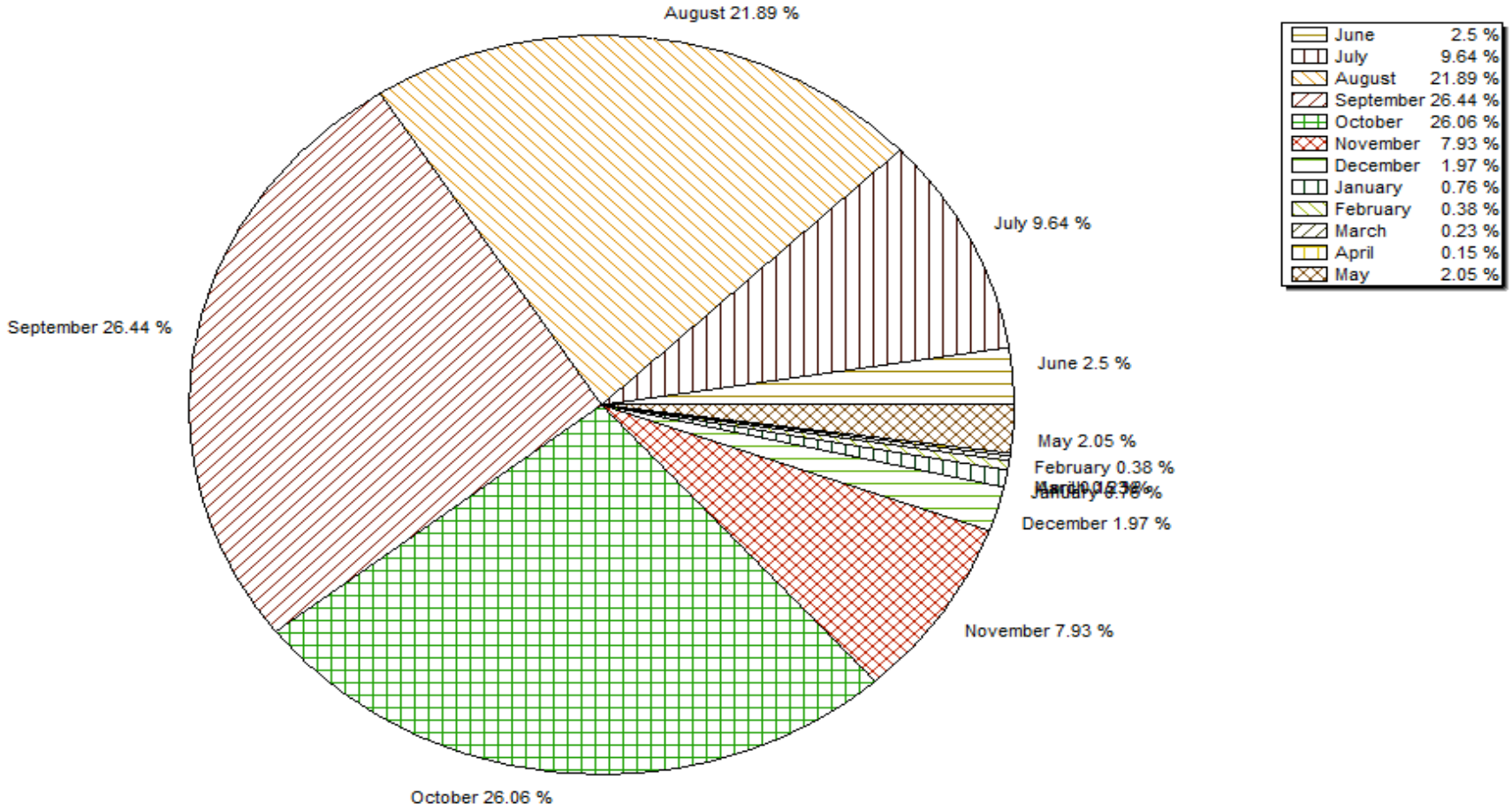


Note: Missing values have not been considered while arriving at Annual Runoff

Monthly Average Runoff based on period : 1993-2017

Station Name : PURUSHOTTAMPUR (ER000U5) **Division : E.E., Bhubaneswar**

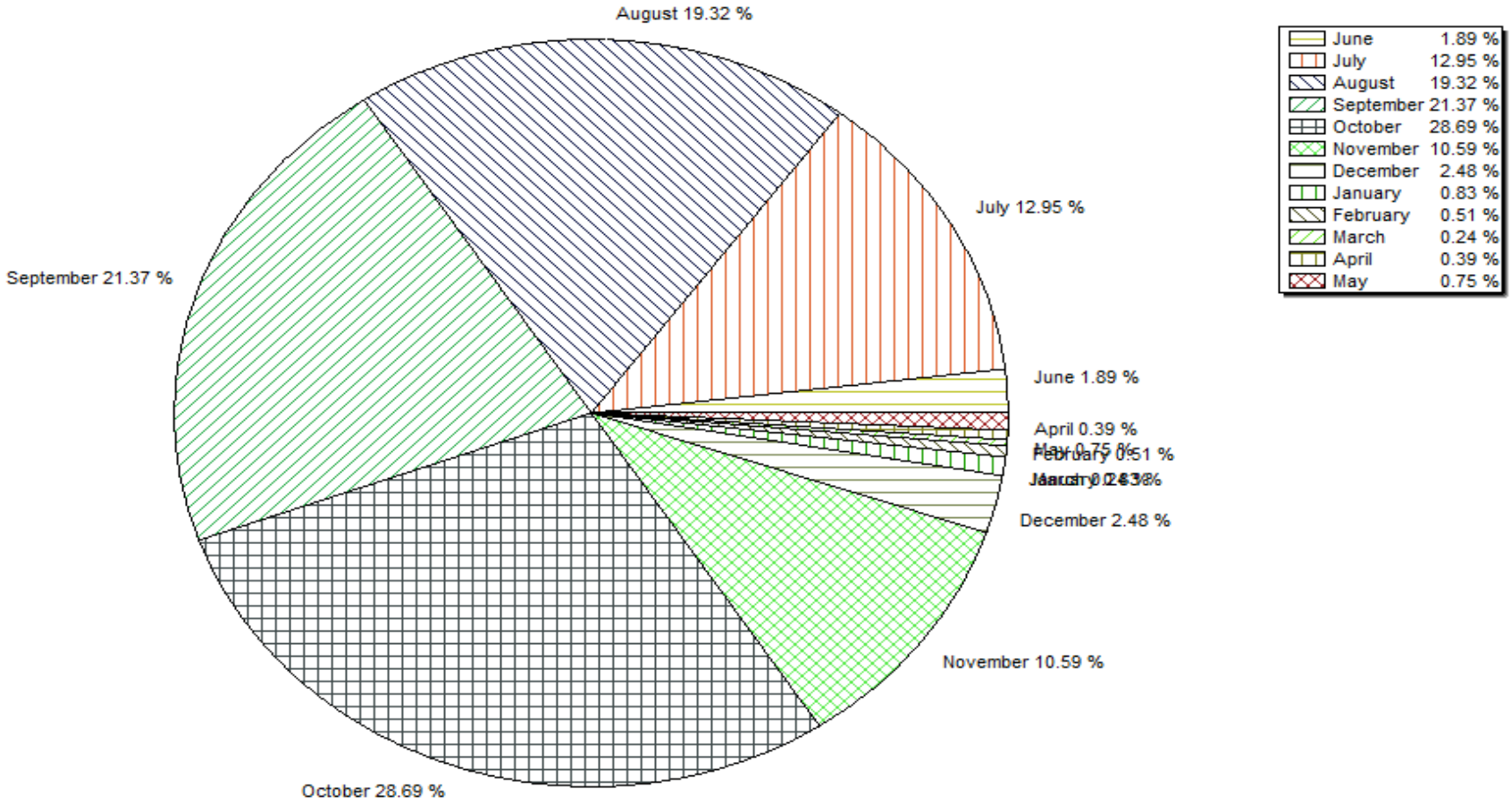
Local River : Rushikulya **Sub-Division : Behrampur**



Monthly Runoff for the Year : 2017-2018

Station Name : PURUSHOTTAMPUR (ER000U5) **Division : E.E., Bhubaneswar**

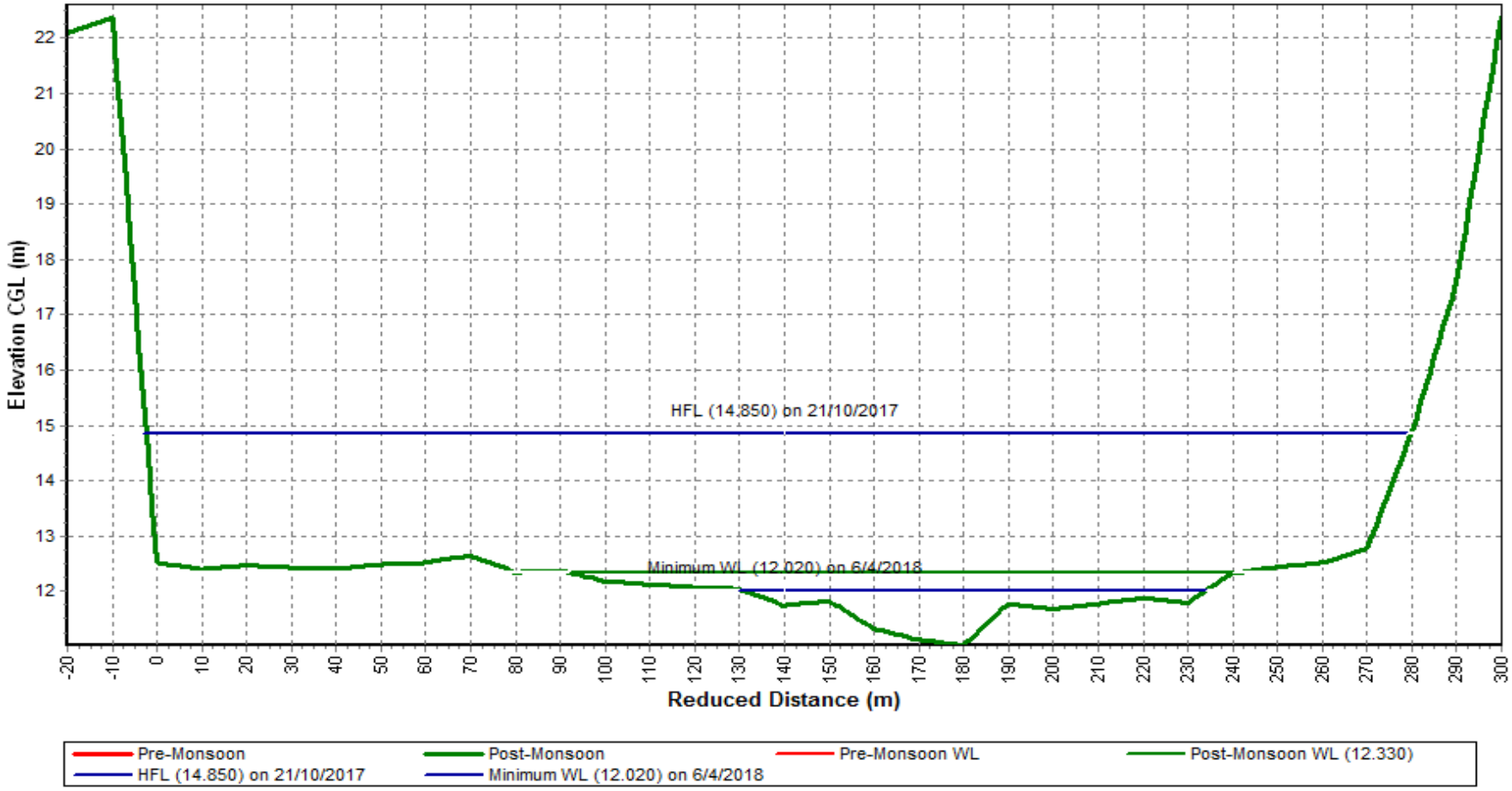
Local River : Rushikulya **Sub-Division : Behrampur**



Pre-Monsoon & Post-Monsoon X-Section for Water Year : 2017-2018

Station Name : PURUSHOTTAMPUR (ER000U5) **Division : E.E., Bhubaneswar**

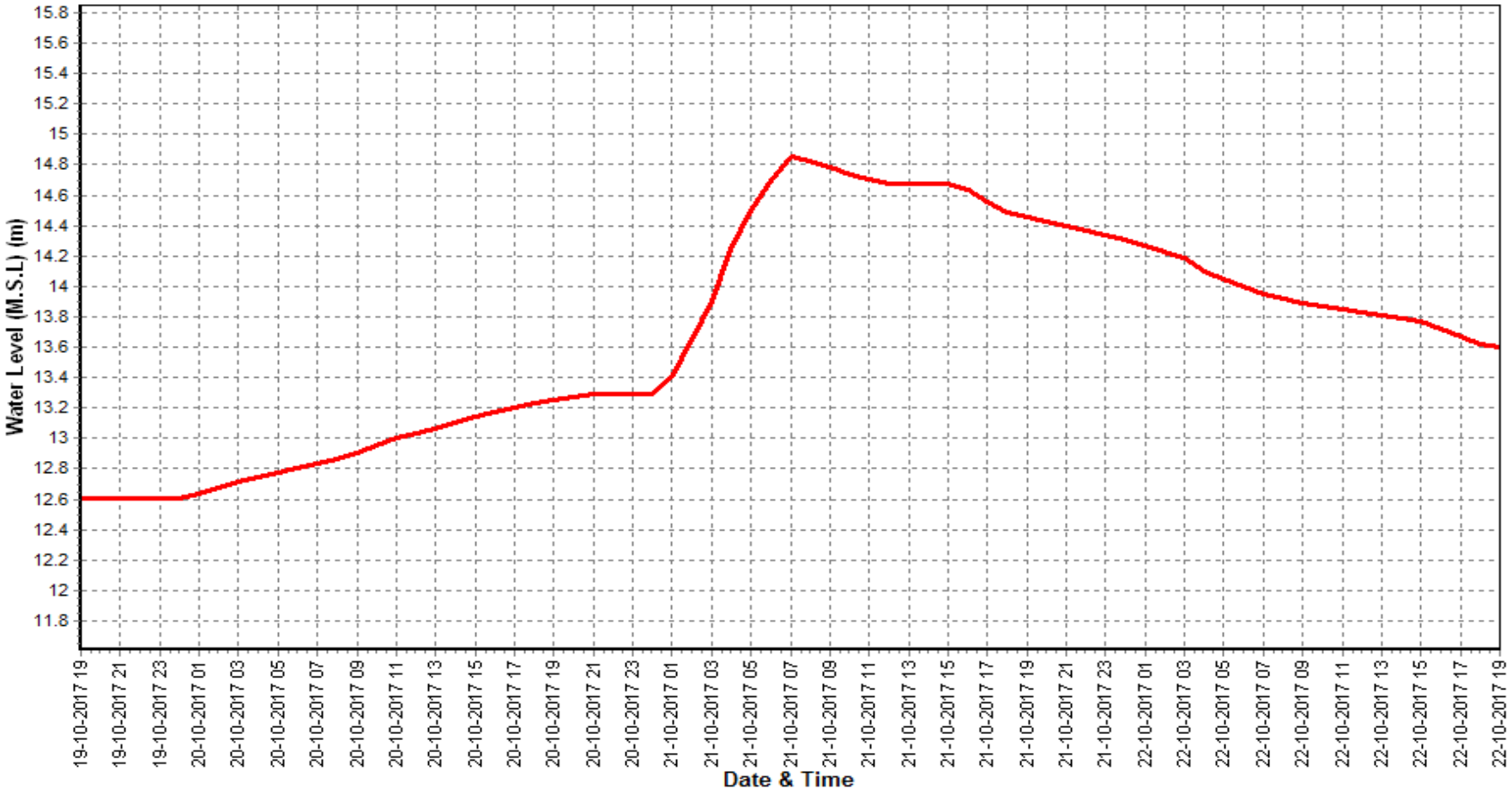
Local River : Rushikulya **Sub-Division : Behrampur**



Water Level vs. Time - Graph of Highest Flood Peak during the Year : 2017-2018

Station Name : PURUSHOTTAMPUR (ER000U5) **Division : E.E., Bhubaneswar**

Local River : Rushikulya **Sub-Division : Behrampur**

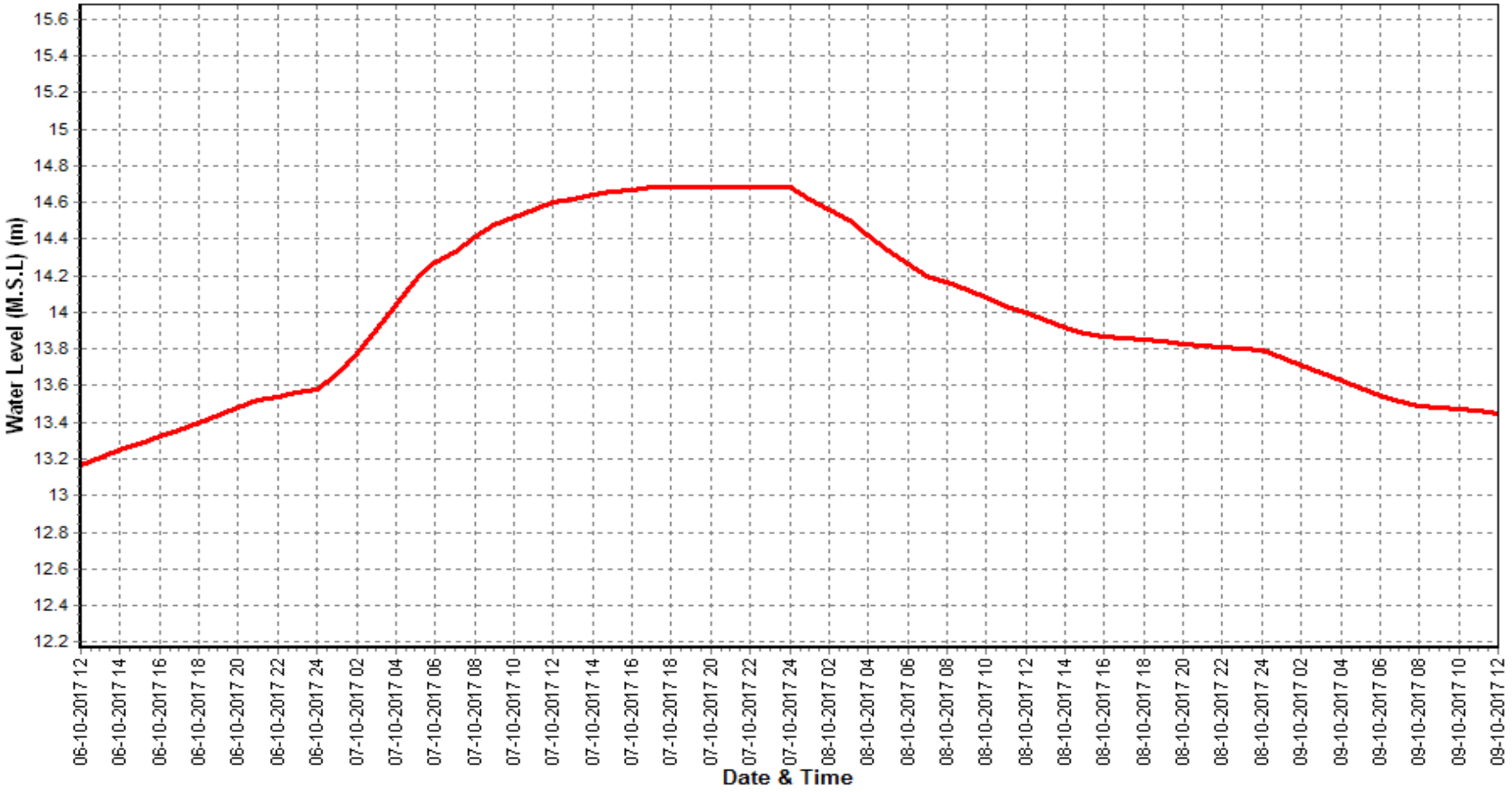


Time Span: 72 Hrs

Water Level vs. Time - Graph of 2nd Highest Flood Peak during the Year : 2017-2018

Station Name : PURUSHOTTAMPUR (ER000U5) **Division : E.E., Bhubaneswar**

Local River : Rushikulya **Sub-Division : Behrampur**

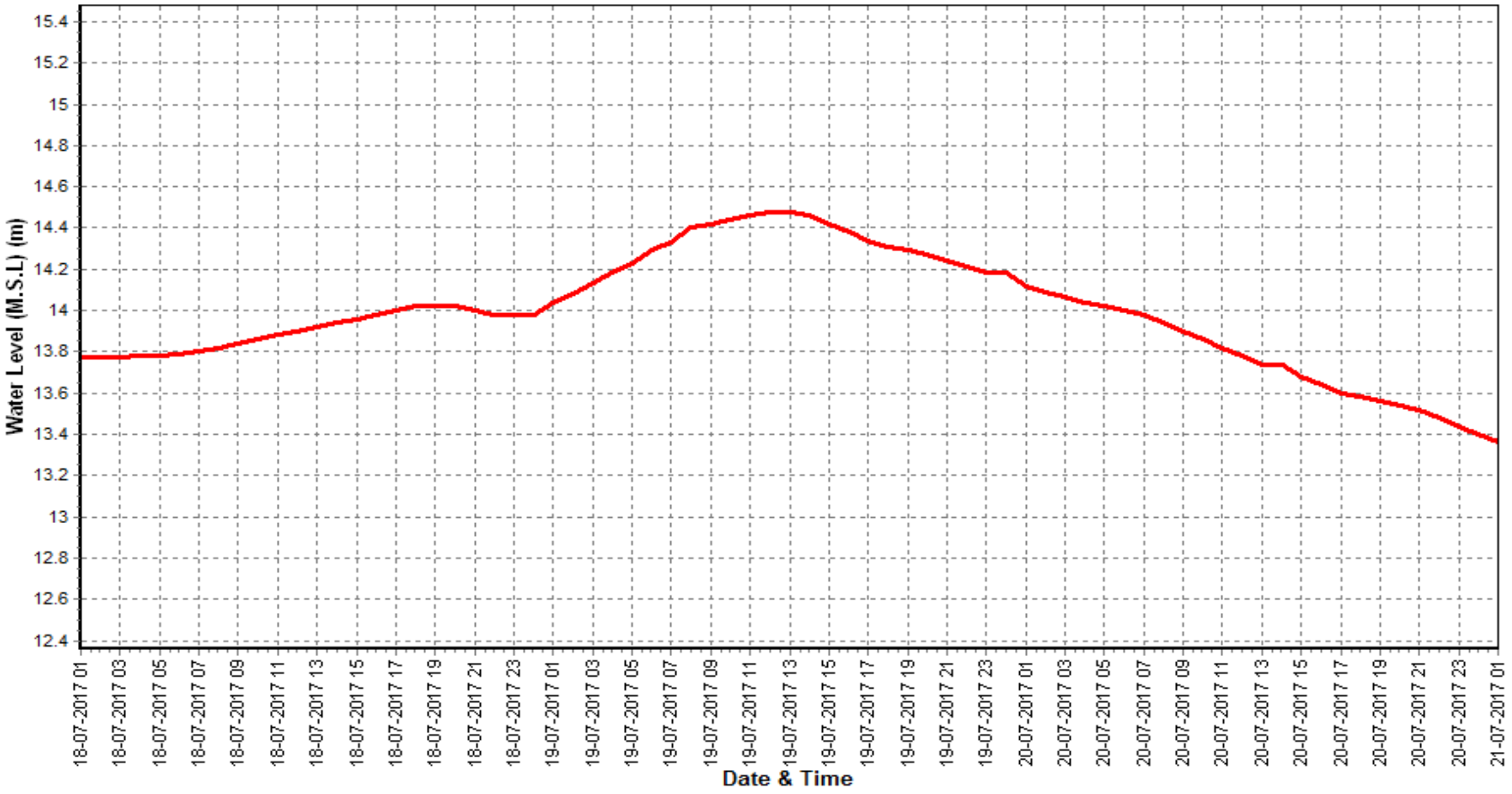


Time Span: 72 Hrs

Water Level vs. Time - Graph of 3rd Highest Flood Peak during the Year : 2017-2018

Station Name : PURUSHOTTAMPUR (ER000U5) **Division : E.E., Bhubaneswar**

Local River : Rushikulya **Sub-Division : Behrampur**



Time Span: 72 Hrs

Daily Observed Sediment Datasheet for period : 2017-2018

Station Name : PURUSHOTTAMPUR (ER000U5) **Division : E.E., Bhubaneswar**

Local River : Rushikulya **Sub-Division : Behrampur**

Day	Jun						Jul						Aug					
	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day
1	1.232	0.000	0.000	0.467	0.467	50	39.03	0.000	0.000	0.350	0.350	1180	174.2	0.000	0.000	0.203	0.203	3048
2	1.069	0.000	0.000	0.223	0.223	21	30.00	0.000	0.000	0.000	0.000	0	230.0	0.000	0.000	0.212	0.212	4213
3	1.044	0.000	0.000	0.310	0.310	28	22.60	0.000	0.000	0.087	0.087	170	285.0	0.000	0.000	0.160	0.160	3947
4	1.718	0.000	0.000	0.281	0.281	42	22.33	0.000	0.000	0.059	0.059	113	300.8	0.000	0.000	0.398	0.398	10346
5	5.189	0.000	0.000	0.000	0.000	0	20.74	0.000	0.000	0.160	0.160	287	198.2	0.000	0.000	0.117	0.117	2005
6	3.931	0.000	0.000	0.000	0.000	0	17.90	0.000	0.000	0.037	0.037	57	140.9	0.000	0.000	0.000	0.000	0
7	3.316	0.000	0.000	0.140	0.140	40	16.78	0.000	0.000	0.071	0.071	103	125.7	0.000	0.000	0.226	0.226	2449
8	2.931	0.000	0.000	0.108	0.108	27	16.35	0.000	0.000	0.057	0.057	80	110.7	0.000	0.000	0.320	0.320	3057
9	2.737	0.000	0.000	0.299	0.299	71	25.00	0.000	0.000	0.000	0.000	0	127.0	0.000	0.000	0.151	0.151	1656
10	3.854	0.000	0.000	1.213	1.213	404	97.54	0.000	0.000	0.155	0.155	1309	235.0	0.000	0.000	0.294	0.294	5977
11	19.00	0.000	0.000	0.000	0.000	0	60.67	0.000	0.000	0.370	0.370	1938	220.7	0.000	0.000	0.271	0.271	5171
12	35.54	0.000	0.000	0.363	0.363	1113	29.69	0.000	0.000	0.268	0.268	687	123.3	0.000	0.000	0.168	0.168	1784
13	32.20	0.000	0.000	0.429	0.429	1193	24.36	0.000	0.000	0.187	0.187	393	100.0	0.000	0.000	0.000	0.000	0
14	21.51	0.000	0.000	0.321	0.321	597	107.7	0.000	0.000	0.200	0.200	1856	215.2	0.000	0.000	0.237	0.237	4401
15	20.83	0.000	0.000	0.186	0.186	335	142.0	0.000	0.000	0.314	0.314	3849	250.0	0.000	0.000	0.000	0.000	0
16	28.40	0.000	0.000	0.442	0.442	1085	144.0	0.000	0.000	0.000	0.000	0	171.1	0.000	0.000	0.135	0.135	1997
17	19.30	0.000	0.000	0.231	0.231	384	302.3	0.000	0.000	0.367	0.367	9596	119.8	0.000	0.000	0.294	0.294	3044
18	17.00	0.000	0.000	0.000	0.000	0	518.3	0.000	0.000	0.158	0.158	7075	205.3	0.000	0.000	0.164	0.164	2911
19	15.41	0.000	0.000	0.084	0.084	111	844.3	0.000	0.000	0.285	0.285	20775	164.7	0.000	0.000	0.182	0.182	2596
20	35.08	0.000	0.000	0.568	0.568	1721	555.4	0.000	0.000	0.288	0.288	13806	180.0	0.000	0.000	0.223	0.223	3473
21	26.46	0.000	0.000	0.035	0.035	79	256.1	0.000	0.000	0.105	0.105	2314	230.9	0.000	0.000	0.262	0.262	5233
22	18.91	0.000	0.000	0.049	0.049	80	110.6	0.000	0.000	0.138	0.138	1316	110.9	0.000	0.000	0.116	0.116	1113
23	21.23	0.000	0.000	0.064	0.064	117	70.00	0.000	0.000	0.000	0.000	0	99.29	0.000	0.000	0.152	0.152	1302
24	31.69	0.000	0.000	0.000	0.000	0	36.93	0.000	0.000	0.039	0.039	125	145.1	0.000	0.000	0.070	0.070	871
25	25.00	0.000	0.000	0.079	0.079	171	29.36	0.000	0.000	0.129	0.129	328	134.7	0.000	0.000	0.192	0.192	2233
26	19.84	0.000	0.000	0.128	0.128	220	26.32	0.000	0.000	0.084	0.084	191	224.7	0.000	0.000	0.000	0.000	0
27	19.86	0.000	0.000	0.053	0.053	90	23.72	0.000	0.000	0.093	0.093	191	160.0	0.000	0.000	0.081	0.081	1121
28	21.34	0.000	0.000	0.018	0.018	34	25.02	0.000	0.000	0.043	0.043	93	151.4	0.000	0.000	0.214	0.214	2795
29	20.20	0.000	0.000	0.054	0.054	94	54.53	0.000	0.000	0.285	0.285	1340	265.2	0.000	0.000	0.096	0.096	2200
30	75.51	0.000	0.000	0.058	0.058	380	40.00	0.000	0.000	0.000	0.000	0	271.6	0.000	0.000	0.193	0.193	4517
31							97.10	0.000	0.000	0.222	0.222	1859	206.6	0.000	0.000			
Ten Daily Mean																		
Ten Daily I	2.702	0.000	0.000	0.304	0.304	68	30.83	0.000	0.000	0.098	0.098	330	192.8	0.000	0.000	0.208	0.208	3670
Ten Daily II	24.43	0.000	0.000	0.262	0.262	654	272.9	0.000	0.000	0.244	0.244	5998	175.0	0.000	0.000	0.167	0.167	2538
Ten Daily III	28.00	0.000	0.000	0.054	0.054	126	69.97	0.000	0.000	0.103	0.103	705	181.9	0.000	0.000	0.138	0.138	2139
Monthly Total						8487						71034						83462

Annual Sediment Load (Metric Tonnes) : 382996

Daily Observed Sediment Datasheet for period : 2017-2018

Station Name : PURUSHOTTAMPUR (ER000U5) **Division : E.E., Bhubaneswar**

Local River : Rushikulya **Sub-Division : Behrampur**

Day	Sep						Oct						Nov					
	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day
1	174.0	0.000	0.000	0.314	0.314	4721	180.0	0.000	0.000	0.000	0.000	0	80.07	0.000	0.000	0.062	0.062	428
2	230.0	0.000	0.000	0.000	0.000	0	155.0	0.000	0.000	0.000	0.000	0	70.28	0.000	0.000	0.029	0.029	177
3	285.0	0.000	0.000	0.000	0.000	0	178.5	0.000	0.000	0.111	0.111	1717	60.97	0.000	0.000	0.031	0.031	163
4	300.8	0.000	0.000	0.192	0.192	4987	236.4	0.000	0.000	0.175	0.175	3580	55.00	0.000	0.000	0.028	0.028	133
5	198.2	0.000	0.000	0.104	0.104	1772	235.1	0.000	0.000	0.144	0.144	2921	45.00	0.000	0.000	0.011	0.011	43
6	140.9	0.000	0.000	0.117	0.117	1418	229.2	0.000	0.000	0.125	0.125	2479	37.80	0.000	0.000	0.000	0.000	0
7	125.7	0.000	0.000	0.211	0.211	2294	939.1	0.000	0.000	0.559	0.559	45389	33.77	0.000	0.000	0.011	0.011	31
8	110.7	0.000	0.000	0.142	0.142	1360	700.0	0.000	0.000	0.000	0.000	0	32.96	0.000	0.000	0.016	0.016	44
9	127.0	0.000	0.000	0.200	0.200	2190	386.8	0.000	0.000	0.071	0.071	2366	32.72	0.000	0.000	0.008	0.008	24
10	235.0	0.000	0.000	0.193	0.193	3913	302.2	0.000	0.000	0.079	0.079	2073	26.37	0.000	0.000	0.012	0.012	28
11	160.3	0.000	0.000	0.109	0.109	1505	240.1	0.000	0.000	0.119	0.119	2458	22.86	0.000	0.000	0.016	0.016	32
12	100.0	0.000	0.000	0.053	0.053	461	229.1	0.000	0.000	0.101	0.101	1999	22.70	0.000	0.000	0.028	0.028	55
13	75.05	0.000	0.000	0.188	0.188	1216	234.1	0.000	0.000	0.294	0.294	5947	22.54	0.000	0.000	0.053	0.053	102
14	165.7	0.000	0.000	0.062	0.062	883	185.5	0.000	0.000	0.284	0.284	4557	22.32	0.000	0.000	0.000	0.000	0
15	196.6	0.000	0.000	0.254	0.254	4315	150.0	0.000	0.000	0.000	0.000	0	47.45	0.000	0.000	0.000	0.000	0
16	144.4	0.000	0.000	0.000	0.000	0	196.5	0.000	0.000	0.205	0.205	3475	195.5	0.000	0.000	0.043	0.043	731
17	115.0	0.000	0.000	0.177	0.177	1761	128.7	0.000	0.000	0.079	0.079	877	308.8	0.000	0.000	0.058	0.058	1545
18	154.5	0.000	0.000	0.126	0.126	1679	103.8	0.000	0.000	0.041	0.041	370	234.5	0.000	0.000	0.039	0.039	784
19	294.1	0.000	0.000	0.135	0.135	3438	97.40	0.000	0.000	0.000	0.000	0	190.0	0.000	0.000	0.027	0.027	442
20	390.8	0.000	0.000	0.000	0.000	0	187.8	0.000	0.000	0.124	0.124	2007	384.6	0.000	0.000	0.013	0.013	422
21	552.3	0.000	0.000	0.251	0.251	11968	1137	0.000	0.000	0.484	0.484	47547	326.9	0.000	0.000	0.024	0.024	684
22	405.7	0.000	0.000	0.226	0.226	7919	550.0	0.000	0.000	0.000	0.000	0	186.5	0.000	0.000	0.000	0.000	0
23	255.3	0.000	0.000	0.094	0.094	2064	340.1	0.000	0.000	0.074	0.074	2174	120.5	0.000	0.000	0.023	0.023	237
24	130.0	0.000	0.000	0.000	0.000	0	286.0	0.000	0.000	0.166	0.166	4092	103.7	0.000	0.000	0.014	0.014	124
25	128.7	0.000	0.000	0.052	0.052	573	181.0	0.000	0.000	0.080	0.080	1253	89.91	0.000	0.000	0.052	0.052	405
26	144.9	0.000	0.000	0.123	0.123	1538	145.0	0.000	0.000	0.055	0.055	683	75.00	0.000	0.000	0.046	0.046	295
27	234.6	0.000	0.000	0.201	0.201	4078	121.5	0.000	0.000	0.052	0.052	549	76.37	0.000	0.000	0.071	0.071	465
28	299.7	0.000	0.000	0.194	0.194	5031	104.5	0.000	0.000	0.070	0.070	633	70.86	0.000	0.000	0.033	0.033	203
29	245.0	0.000	0.000	0.000	0.000	0	95.80	0.000	0.000	0.000	0.000	0	68.70	0.000	0.000	0.000	0.000	0
30	170.0	0.000	0.000	0.000	0.000	0	91.38	0.000	0.000	0.065	0.065	514	66.55	0.000	0.000	0.149	0.149	858
31							85.00	0.000	0.000	0.034	0.034	246						
Ten Daily Mean																		
Ten Daily I	192.7	0.000	0.000	0.147	0.147	2266	354.2	0.000	0.000	0.127	0.127	6053	47.49	0.000	0.000	0.021	0.021	107
Ten Daily II	179.6	0.000	0.000	0.110	0.110	1526	175.3	0.000	0.000	0.125	0.125	2169	145.1	0.000	0.000	0.028	0.028	411
Ten Daily III	256.6	0.000	0.000	0.114	0.114	3317	285.2	0.000	0.000	0.098	0.098	5245	118.5	0.000	0.000	0.041	0.041	327
Monthly																		
Total						71084						139906						8453

Annual Sediment Load (Metric Tonnes) : 382996

Daily Observed Sediment Datasheet for period : 2017-2018

Station Name : PURUSHOTTAMPUR (ER000U5) **Division : E.E., Bhubaneswar**

Local River : Rushikulya **Sub-Division : Behrampur**

Day	Dec						Jan						Feb					
	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day
1	39.93	0.000	0.000	0.000	0.000	0	11.09	0.000	0.000	0.015	0.015	14	5.340	0.000	0.000	0.000	0.000	0
2	38.00	0.000	0.000	0.000	0.000	0	10.57	0.000	0.000	0.000	0.000	0	4.674	0.000	0.000	0.000	0.000	0
3	37.00	0.000	0.000	0.000	0.000	0	10.48	0.000	0.000	0.000	0.000	0	4.682	0.000	0.000	0.000	0.000	0
4	35.91	0.000	0.000	0.040	0.040	125	10.51	0.000	0.000	0.000	0.000	0	4.600	0.000	0.000	0.000	0.000	0
5	34.42	0.000	0.000	0.000	0.000	0	9.925	0.000	0.000	0.000	0.000	0	4.556	0.000	0.000	0.014	0.014	6
6	33.23	0.000	0.000	0.000	0.000	0	9.315	0.000	0.000	0.000	0.000	0	4.535	0.000	0.000	0.000	0.000	0
7	33.20	0.000	0.000	0.000	0.000	0	9.000	0.000	0.000	0.000	0.000	0	4.706	0.000	0.000	0.000	0.000	0
8	35.33	0.000	0.000	0.000	0.000	0	8.765	0.000	0.000	0.055	0.055	41	4.542	0.000	0.000	0.000	0.000	0
9	33.46	0.000	0.000	0.000	0.000	0	8.357	0.000	0.000	0.000	0.000	0	4.617	0.000	0.000	0.000	0.000	0
10	31.07	0.000	0.000	0.000	0.000	0	7.988	0.000	0.000	0.000	0.000	0	4.545	0.000	0.000	0.000	0.000	0
11	30.53	0.000	0.000	0.017	0.017	45	9.370	0.000	0.000	0.000	0.000	0	3.500	0.000	0.000	0.000	0.000	0
12	29.76	0.000	0.000	0.000	0.000	0	9.143	0.000	0.000	0.000	0.000	0	2.593	0.000	0.000	0.049	0.049	11
13	24.91	0.000	0.000	0.000	0.000	0	9.238	0.000	0.000	0.000	0.000	0	2.541	0.000	0.000	0.000	0.000	0
14	24.00	0.000	0.000	0.000	0.000	0	8.500	0.000	0.000	0.000	0.000	0	2.491	0.000	0.000	0.000	0.000	0
15	23.60	0.000	0.000	0.000	0.000	0	8.233	0.000	0.000	0.061	0.061	44	2.386	0.000	0.000	0.000	0.000	0
16	22.78	0.000	0.000	0.000	0.000	0	6.201	0.000	0.000	0.000	0.000	0	2.359	0.000	0.000	0.000	0.000	0
17	22.30	0.000	0.000	0.000	0.000	0	6.103	0.000	0.000	0.000	0.000	0	2.301	0.000	0.000	0.000	0.000	0
18	22.30	0.000	0.000	0.016	0.016	30	6.046	0.000	0.000	0.000	0.000	0	6.000	0.000	0.000	0.000	0.000	0
19	21.32	0.000	0.000	0.000	0.000	0	6.008	0.000	0.000	0.000	0.000	0	8.509	0.000	0.000	0.047	0.047	35
20	21.09	0.000	0.000	0.000	0.000	0	5.798	0.000	0.000	0.000	0.000	0	8.216	0.000	0.000	0.000	0.000	0
21	20.25	0.000	0.000	0.000	0.000	0	7.500	0.000	0.000	0.000	0.000	0	8.189	0.000	0.000	0.000	0.000	0
22	20.08	0.000	0.000	0.000	0.000	0	6.845	0.000	0.000	0.070	0.070	41	7.817	0.000	0.000	0.000	0.000	0
23	17.36	0.000	0.000	0.000	0.000	0	6.706	0.000	0.000	0.000	0.000	0	8.010	0.000	0.000	0.000	0.000	0
24	15.00	0.000	0.000	0.000	0.000	0	7.123	0.000	0.000	0.000	0.000	0	8.121	0.000	0.000	0.000	0.000	0
25	13.00	0.000	0.000	0.000	0.000	0	6.969	0.000	0.000	0.000	0.000	0	8.300	0.000	0.000	0.000	0.000	0
26	11.54	0.000	0.000	0.013	0.013	13	7.000	0.000	0.000	0.000	0.000	0	8.102	0.000	0.000	0.018	0.018	12
27	9.942	0.000	0.000	0.000	0.000	0	6.124	0.000	0.000	0.000	0.000	0	7.935	0.000	0.000	0.000	0.000	0
28	9.236	0.000	0.000	0.000	0.000	0	6.330	0.000	0.000	0.000	0.000	0	7.953	0.000	0.000	0.000	0.000	0
29	8.436	0.000	0.000	0.000	0.000	0	5.447	0.000	0.000	0.000	0.000	0						
30	7.910	0.000	0.000	0.000	0.000	0	5.374	0.000	0.000	0.031	0.031	14						
31	7.800	0.000	0.000	0.000	0.000	0	5.377	0.000	0.000	0.000	0.000	0						
Ten Daily Mean																		
Ten Daily I	35.15	0.000	0.000	0.004	0.004	12	9.600	0.000	0.000	0.007	0.007	6	4.680	0.000	0.000	0.001	0.001	1
Ten Daily II	24.26	0.000	0.000	0.003	0.003	7	7.464	0.000	0.000	0.006	0.006	4	4.089	0.000	0.000	0.010	0.010	5
Ten Daily III	12.78	0.000	0.000	0.001	0.001	1	6.436	0.000	0.000	0.009	0.009	5	8.054	0.000	0.000	0.002	0.002	2
Monthly																		
Total						213						154						63

Annual Sediment Load (Metric Tonnes) : 382996

Daily Observed Sediment Datasheet for period : 2017-2018

Station Name : PURUSHOTTAMPUR (ER000U5) **Division : E.E., Bhubaneswar**

Local River : Rushikulya **Sub-Division : Behrampur**

Day	Mar						Apr						May					
	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day
1	7.982	0.000	0.000	0.000	0.000	0	0.450	0.000	0.000	0.000	0.000	0	5.560	0.000	0.000	0.040	0.040	19
2	7.959	0.000	0.000	0.000	0.000	0	0.315	0.000	0.000	0.000	0.000	0	2.667	0.000	0.000	0.000	0.000	0
3	7.937	0.000	0.000	0.000	0.000	0	0.311	0.000	0.000	0.000	0.000	0	2.679	0.000	0.000	0.000	0.000	0
4	4.500	0.000	0.000	0.000	0.000	0	0.302	0.000	0.000	0.000	0.000	0	2.670	0.000	0.000	0.000	0.000	0
5	1.156	0.000	0.000	0.000	0.000	0	0.307	0.000	0.000	0.000	0.000	0	2.700	0.000	0.000	0.000	0.000	0
6	1.301	0.000	0.000	0.000	0.000	0	0.308	0.000	0.000	0.000	0.000	0	2.710	0.000	0.000	0.000	0.000	0
7	1.327	0.000	0.000	0.000	0.000	0	2.488	0.000	0.000	0.000	0.000	0	3.013	0.000	0.000	0.047	0.047	12
8	1.322	0.000	0.000	0.000	0.000	0	2.900	0.000	0.000	0.000	0.000	0	2.927	0.000	0.000	0.000	0.000	0
9	1.209	0.000	0.000	0.000	0.000	0	3.092	0.000	0.000	0.058	0.058	16	2.835	0.000	0.000	0.000	0.000	0
10	1.184	0.000	0.000	0.000	0.000	0	2.943	0.000	0.000	0.000	0.000	0	2.835	0.000	0.000	0.000	0.000	0
11	1.700	0.000	0.000	0.000	0.000	0	2.635	0.000	0.000	0.000	0.000	0	2.667	0.000	0.000	0.000	0.000	0
12	2.234	0.000	0.000	0.000	0.000	0	2.624	0.000	0.000	0.000	0.000	0	2.699	0.000	0.000	0.000	0.000	0
13	2.452	0.000	0.000	0.000	0.000	0	2.533	0.000	0.000	0.000	0.000	0	24.00	0.000	0.000	0.000	0.000	0
14	2.578	0.000	0.000	0.000	0.000	0	2.439	0.000	0.000	0.000	0.000	0	21.43	0.000	0.000	0.022	0.022	40
15	2.563	0.000	0.000	0.000	0.000	0	5.600	0.000	0.000	0.000	0.000	0	10.64	0.000	0.000	0.000	0.000	0
16	2.631	0.000	0.000	0.000	0.000	0	8.880	0.000	0.000	0.032	0.032	24	9.014	0.000	0.000	0.000	0.000	0
17	2.576	0.000	0.000	0.000	0.000	0	8.256	0.000	0.000	0.000	0.000	0	8.920	0.000	0.000	0.000	0.000	0
18	2.500	0.000	0.000	0.000	0.000	0	7.085	0.000	0.000	0.000	0.000	0	7.895	0.000	0.000	0.000	0.000	0
19	2.262	0.000	0.000	0.000	0.000	0	5.025	0.000	0.000	0.000	0.000	0	7.573	0.000	0.000	0.000	0.000	0
20	2.371	0.000	0.000	0.000	0.000	0	5.114	0.000	0.000	0.000	0.000	0	9.000	0.000	0.000	0.000	0.000	0
21	2.294	0.000	0.000	0.000	0.000	0	5.036	0.000	0.000	0.000	0.000	0	12.74	0.000	0.000	0.014	0.014	15
22	2.172	0.000	0.000	0.000	0.000	0	5.200	0.000	0.000	0.000	0.000	0	9.648	0.000	0.000	0.000	0.000	0
23	2.136	0.000	0.000	0.000	0.000	0	2.386	0.000	0.000	0.038	0.038	8	9.698	0.000	0.000	0.000	0.000	0
24	0.697	0.000	0.000	0.000	0.000	0	2.378	0.000	0.000	0.000	0.000	0	9.136	0.000	0.000	0.000	0.000	0
25	0.690	0.000	0.000	0.000	0.000	0	2.095	0.000	0.000	0.000	0.000	0	9.235	0.000	0.000	0.000	0.000	0
26	0.678	0.000	0.000	0.000	0.000	0	8.376	0.000	0.000	0.000	0.000	0	8.549	0.000	0.000	0.000	0.000	0
27	0.769	0.000	0.000	0.000	0.000	0	8.483	0.000	0.000	0.000	0.000	0	8.400	0.000	0.000	0.000	0.000	0
28	0.675	0.000	0.000	0.000	0.000	0	5.358	0.000	0.000	0.000	0.000	0	4.977	0.000	0.000	0.010	0.010	4
29	0.670	0.000	0.000	0.000	0.000	0	5.300	0.000	0.000	0.000	0.000	0	4.784	0.000	0.000	0.000	0.000	0
30	0.670	0.000	0.000	0.000	0.000	0	5.200	0.000	0.000	0.000	0.000	0	4.643	0.000	0.000	0.000	0.000	0
31	0.590	0.000	0.000	0.000	0.000	0							4.289	0.000	0.000	0.000	0.000	0
Ten Daily Mean																		
Ten Daily I	3.588	0.000	0.000	0.000	0.000	0	1.341	0.000	0.000	0.006	0.006	2	3.060	0.000	0.000	0.009	0.009	3
Ten Daily II	2.387	0.000	0.000	0.000	0.000	0	5.019	0.000	0.000	0.003	0.003	2	10.38	0.000	0.000	0.002	0.002	4
Ten Daily III	1.095	0.000	0.000	0.000	0.000	0	4.981	0.000	0.000	0.004	0.004	1	7.827	0.000	0.000	0.002	0.002	2
Monthly																		
Total						0						48						91

Annual Sediment Load (Metric Tonnes) : 382996

Annual Sediment Load for period : 2001-2018

Station Name : PURUSHOTTAMPUR (ER000U5) **Division : E.E., Bhubaneswar**

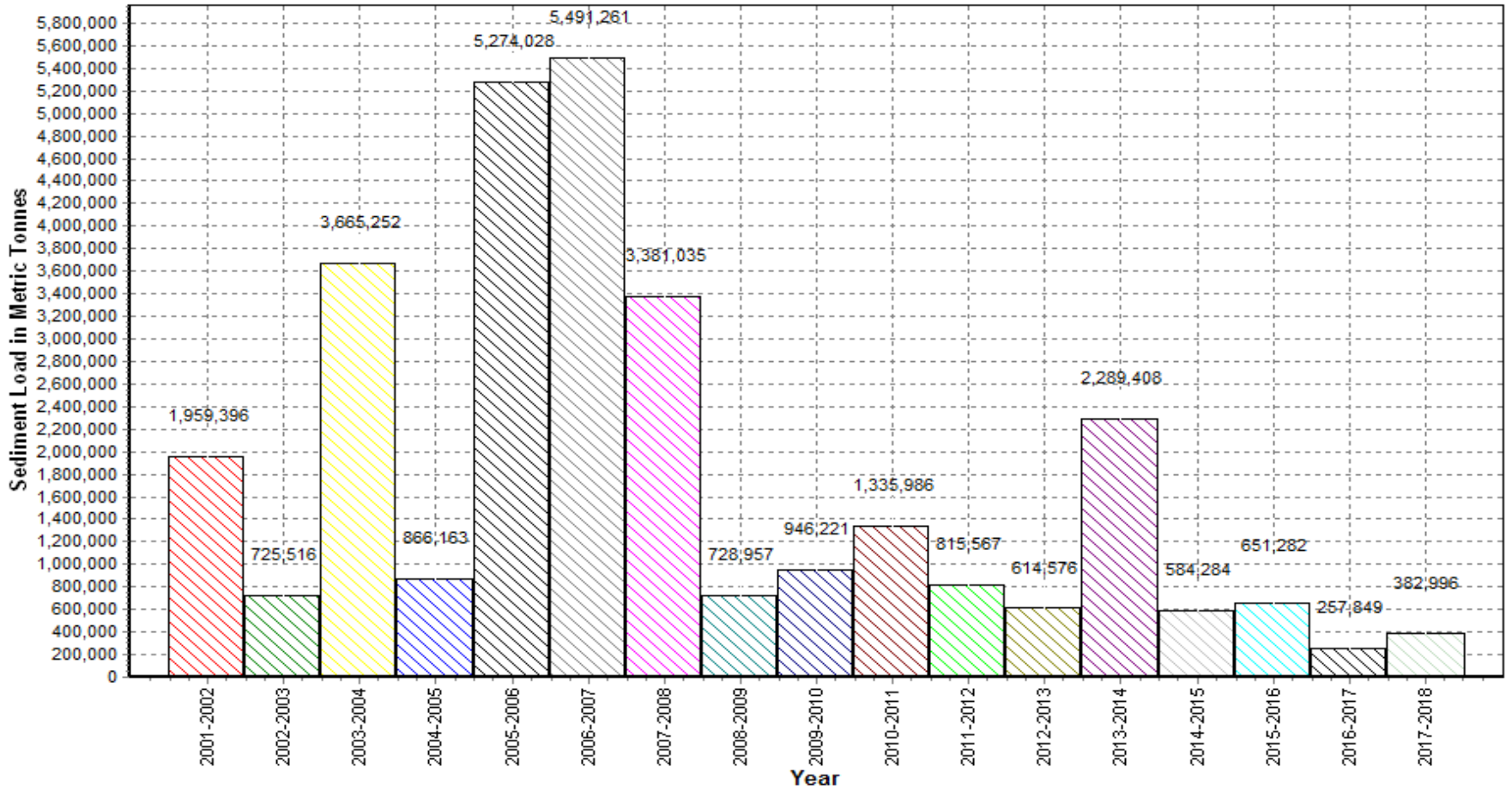
Local River : Rushikulya **Sub-Division : Behrampur**

Year	Monsoon (M.T.)	Non-Monsoon (M.T.)	Annual Load (M.T.)	Annual Run Off (MCM)
2001-2002	1958975	421	1959396	2416
2002-2003	725480	36	725516	878
2003-2004	3637975	27277	3665252	3338
2004-2005	866121	41	866163	1098
2005-2006	5267692	6336	5274028	2748
2006-2007	5489784	1477	5491261	2912
2007-2008	3379928	1107	3381035	2624
2008-2009	728823	134	728957	2067
2009-2010	945977	244	946221	2199
2010-2011	1280999	54988	1335986	2811
2011-2012	815111	456	815567	1022
2012-2013	614544	33	614576	1500
2013-2014	2288254	1154	2289408	5100
2014-2015	584148	136	584284	2731
2015-2016	650977	305	651282	1692
2016-2017	257763	85	257849	1523
2017-2018	382427	569	382996	2540

Annual Sediment Load for the period: 2001-2018

Station Name : PURUSHOTTAMPUR (ER000U5) **Division : E.E., Bhubaneswar**

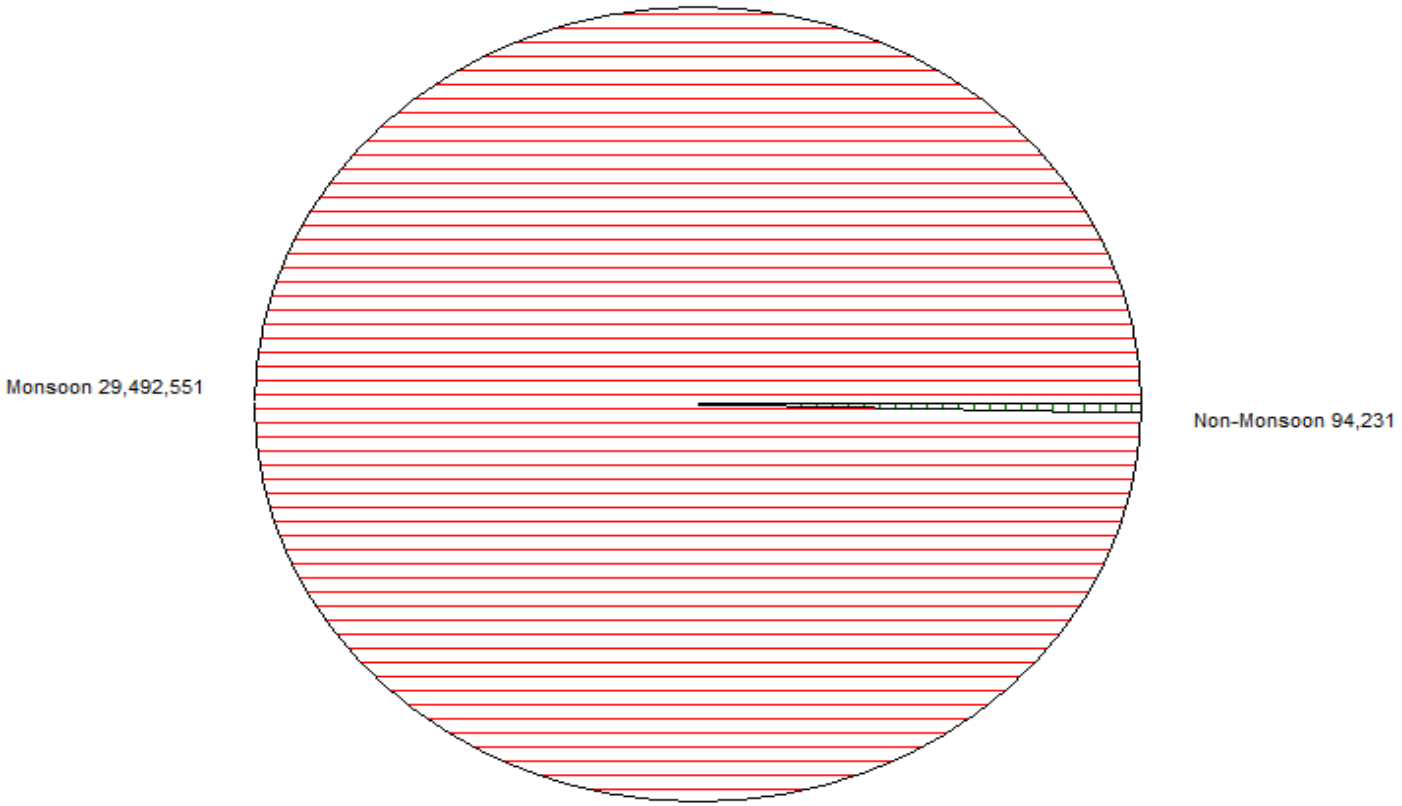
Local River : Rushikulya **Sub-Division : Behrampur**



Seasonal Sediment Load for the period : 2001-2017

Station Name : PURUSHOTTAMPUR (ER000U5) **Division : E.E., Bhubaneswar**

Local River : Rushikulya **Sub-Division : Behrampur**



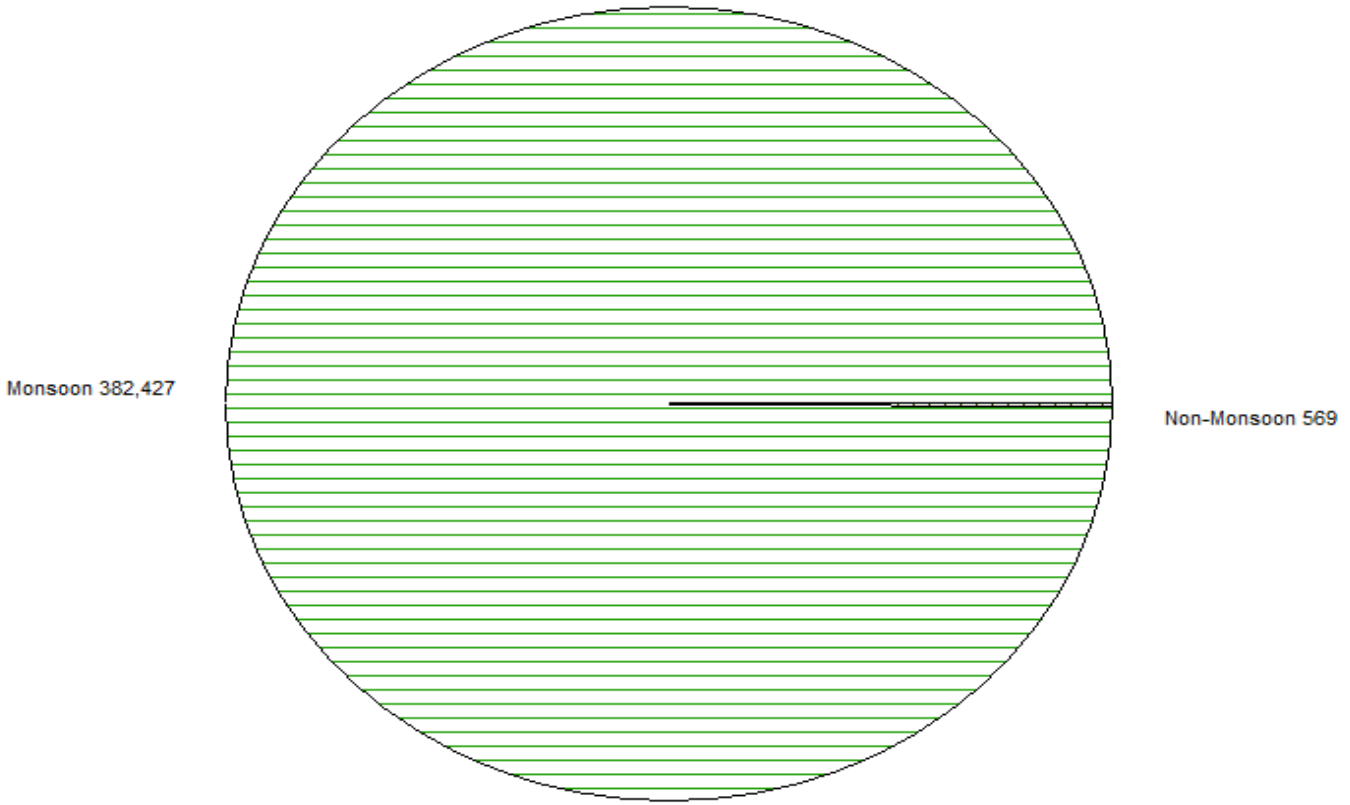
Seasonal Sediment Load for the Year: 2017-2018

Station Name : PURUSHOTTAMPUR (ER000U5)

Division : E.E., Bhubaneswar

Local River : Rushikulya

Sub-Division : Behrampur



Water Quality Datasheet for the period : 2017-2018

Station Name : PURUSHOTTAMPUR (ER000U5) **Division : E.E., Bhubaneswar**

Local River : Rushikulya **River Water Analysis** **Sub-Division : Behrampur**

S.No	Parameters	01/06/2017	01/07/2017	01/08/2017	01/09/2017	03/10/2017	01/11/2017	01/12/2017	01/01/2018	01/02/2018	01/03/2018	02/04/2018	01/05/2018
		A	A	A	A	A	A	A	A	A	A	A	A
	PHYSICAL												
1	Q (cumec)												
2	Colour_Cod (-)	Clear	Light Brown	Light Brown	Light Brown	Light Brown	Clear	Clear	Clear	Clear	Clear	Clear	Clear
3	EC_FLD (µmho/cm)	325	319	300	220	349	278	179	368	374	379	362	360
4	EC_GEN (µmho/cm)	311	313	347	217	343	270	170	363	369	370	368	364
5	Odour_Code (-)	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free
6	pH_FLD (pH units)	8.0	7.9	7.5	7.5	7.9	7.6	7.8	8.1	8.4	8.2	7.4	7.7
7	pH_GEN (pH units)	7.9	7.8	7.6	7.5	7.9	7.6	7.7	8.2	8.3	8.1	7.4	7.8
8	Temp (deg C)	31.0	28.5	30.0	29.0	29.0	27.0	23.0	22.0	23.0	23.5	26.0	25.5
	CHEMICAL												
1	Alk-Phen (mgCaCO3/L)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19.9	0.0	0.0	
2	ALK-TOT (mgCaCO3/L)	125	102	107	97	125	120	139	148	132	148	125	
3	B (mg/L)	0.01	0.01	0.03	0.02	0.01	0.02	0.01	0.02	0.03	0.02	0.01	0.02
4	Ca (mg/L)	40	51	53	51	35	39	46	41	44	42	39	27
5	Cl (mg/L)	22.6	17.0	26.4	15.1	13.8	15.6	13.8	17.3	19.0	22.5	20.8	22.5
6	CO3 (mg/L)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24.0	0.0	0.0	0.0
7	F (mg/L)	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
8	Fe (mg/L)	0.4	0.5	0.4	0.5	0.4	0.5	0.5	0.4	0.5	0.5	0.4	0.5
9	HCO3 (mg/L)	152	124	131	118	152	147	169	180	113	180	152	141
10	K (mg/L)	3.7	3.1	2.6	2.8	3.0	3.2	3.6	3.8	1.3	2.2	2.5	4.3
11	Mg (mg/L)	19.4	27.2	26.2	25.3	14.3	15.9	18.3	17.5	15.1	17.5	8.7	11.9
12	Na (mg/L)	20.3	11.3	14.1	12.7	13.1	13.6	14.1	25.3	33.1	34.2	34.9	20.9
13	NO2+NO3 (mg N/L)	1.12	1.15	1.19	1.25	1.22	1.25	1.18	1.19	1.16	1.21	1.18	1.22
14	NO2-N (mgN/L)	0.00	0.03	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	NO3-N (mgN/L)	1.12	1.12	1.16	1.22	1.22	1.25	1.18	1.19	1.16	1.21	1.18	1.22
16	P-Tot (mgP/L)	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
17	SiO2 (mg/L)	8.0	7.0	7.8	6.3	7.0	9.1	8.8	6.3	7.9	8.5	9.1	8.8
18	SO4 (mg/L)	5.7	1.7	2.1	2.2	4.7	2.0	2.3	2.4	2.5	3.4	4.1	4.1
	BIOLOGICAL/BACTERIOLOGICAL												
	TRACE & TOXIC												
	CHEMICAL INDICES												
1	HAR_Ca (mgCaCO3/L)	100	128	132	128	88	98	114	101	111	105	98	69
2	HAR_Total (mgCaCO3/L)	181	242	242	234	148	164	190	174	174	177	134	118
3	Na% (%)	19	9	11	10	16	15	14	24	29	29	36	27
4	RSC (-)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	SAR (-)	0.7	0.3	0.4	0.4	0.5	0.5	0.4	0.8	1.1	1.1	1.3	0.8
	PESTICIDES												

Water Quality Summary for the period : 2017-2018

Station Name : PURUSHOTTAMPUR (ER000U5) **Division : E.E., Bhubaneswar**

Local River : Rushikulya **Sub-Division : Behrampur**

River Water Summary

S.No	Parameters	Number of Observations	Maximum	Minimum	Mean
	PHYSICAL				
1	Q (cumec)				
2	EC_FLD (µmho/cm)	12	379	179	318
3	EC_GEN (µmho/cm)	12	370	170	317
4	pH_FLD (pH units)	12	8.4	7.4	7.8
5	pH_GEN (pH units)	12	8.3	7.4	7.8
6	Temp (deg C)	12	31.0	22.0	26.5
	CHEMICAL				
1	Alk-Phen (mgCaCO3/L)	11	19.9	0.0	1.8
2	ALK-TOT (mgCaCO3/L)	11	148	97	124
3	B (mg/L)	12	0.03	0.01	0.02
4	Ca (mg/L)	12	53	27	42
5	Cl (mg/L)	12	26.4	13.8	18.9
6	CO3 (mg/L)	12	24.0	0.0	2
7	F (mg/L)	12	0.05	0.05	0.05
8	Fe (mg/L)	12	0.5	0.4	0.5
9	HCO3 (mg/L)	12	180	113	147
10	K (mg/L)	12	4.3	1.3	3
11	Mg (mg/L)	12	27.2	8.7	18.1
12	Na (mg/L)	12	34.9	11.3	20.6
13	NO2+NO3 (mg N/L)	12	1.25	1.12	1.19
14	NO2-N (mgN/L)	12	0.03	0.00	0.01
15	NO3-N (mgN/L)	12	1.25	1.12	1.19
16	P-Tot (mgP/L)	12	0.001	0.001	0.001
17	SiO2 (mg/L)	12	9.1	6.3	7.9
18	SO4 (mg/L)	12	5.7	1.7	3.1
	BIOLOGICAL/BACTERIOLOGICAL				
	TRACE & TOXIC				
	CHEMICAL INDICES				
1	HAR_Ca (mgCaCO3/L)	12	132	69	106
2	HAR_Total (mgCaCO3/L)	12	242	118	182
3	Na% (%)	12	36	9	20
4	RSC (-)	12	0.0	0.0	0
5	SAR (-)	12	1.3	0.3	0.7
	PESTICIDES				

Water Quality Seasonal Average for the period: 2003-2018

Station Name : PURUSHOTTAMPUR (ER000U5) **Division : E.E., Bhubaneswar**

Local River : Rushikulya **River Water** **Sub-Division : Behrampur**

S.No	Parameters	Flood																
		Jun - Oct																
		2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2003-2004	2004-2005
	PHYSICAL																	
1	Q (cumec)																	
2	EC_FLD (µmho/cm)	280	290			270		300	325	293	206	230	180	612	313	303	243	345
3	EC_GEN (µmho/cm)	276	290			263		300	325	293	206	230	180	614	318	306	245	345
4	pH_FLD (pH units)	7.3	7.7			7.9		7.8	7.8	8.1	7.8	7.5	7.5	7.3	7.8	7.7	7.5	7.9
5	pH_GEN (pH units)	7.3	7.7			7.9		7.8	7.8	8.1	7.8	7.5	7.5	7.5	7.9	7.7	7.5	8.0
6	Temp (deg C)	31.0	29.6			32.5		30.7	28.8	27.0	30.1	30.3	26.1	23.0	30.5	29.5	26.1	29.0
	CHEMICAL																	
1	Alk-Phen (mgCaCO3/L)					0.0		0.0	0.0	0.0		0.0	0.0	3.1	0.0	0.0		
2	ALK-TOT (mgCaCO3/L)					92		99	76	115		51	98	89	125	111		
3	B (mg/L)	0.00	0.00			0.00		0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.02	0.00	0.00
4	Ca (mg/L)	30	30			27		25	36	30	20	19	33	23	43	46	27	34
5	Cl (mg/L)	18.2	18.3			18.1		20.7	17.7	17.6	16.0	20.8	17.0	17.0	123.2	19.0	16.5	26.3
6	CO3 (mg/L)	0.0	0.0			0.0		0.0	0.0	0.0	0.0	0.0	0.0	3.7	0.0	0.0	0.0	0.0
7	F (mg/L)	0.07	0.47			0.05		0.09	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.02	0.50
8	Fe (mg/L)	0.1	0.1			0.1		0.2	0.1	0.0	1.3	0.1	0.4	0.3	0.5	0.5	0.1	0.1
9	HCO3 (mg/L)	124	136			108		120	93	141	130	61	119	101	152	135	112	159
10	K (mg/L)	2.1	3.6			2.8		2.8	3.8	2.6	2.6	1.1	3.3	2.2	8.4	3.0	2.3	2.8
11	Mg (mg/L)	7.3	9.7			9.6		12.6	8.8	11.7	7.4	3.5	13.6	12.6	20.4	22.5	6.2	11.7
12	Na (mg/L)	12.6	11.8			11.7		14.2	12.0	14.1	11.0	11.1	18.7	9.6	55.4	14.3	11.0	16.5
13	NO2+NO3 (mg N/L)	0.44	0.63			0.85		0.53	0.76	0.41	0.78	1.04	0.91	0.93	1.21	1.19	0.74	0.54
14	NO2-N (mgN/L)	0.00	0.00			0.00		0.00	0.00	0.07	0.00	0.00	0.00	0.01	0.00	0.02	0.00	0.00
15	NO3-N (mgN/L)	0.44	0.63			0.85		0.53	0.76	0.35	0.78	1.04	0.91	0.92	1.21	1.17	0.74	0.54
16	o-PO4-P (mg P/L)					0.017		0.043									0.000	
17	P-Tot (mgP/L)	0.001	0.001			0.025		0.010	0.001	0.010	0.001	0.001	0.001	0.007	0.010	0.001	0.003	0.001
18	SiO2 (mg/L)	15.6	32.4			9.0		8.4	9.5	12.7	11.5	9.2	6.0	6.7	7.0	7.2	15.9	33.4
19	SO4 (mg/L)	5.1	2.2			10.8		14.9	48.3	3.9	4.0	18.3	6.4	12.6	4.1	3.3	4.2	2.4
	BIOLOGICAL/BACTERIOLOGICAL																	
	TRACE & TOXIC																	
	CHEMICAL INDICES																	
1	HAR_Ca (mgCaCO3/L)	76	75			67		61	90	75	50	49	83	57	107	115	69	84
2	HAR_Total (mgCaCO3/L)	106	105			107		114	127	123	81	63	140	110	192	209	94	123
3	Na% (%)	20	18			19		21	17	20	23	28	22	13	36	13	20	21
4	RSC (-)	0.0	0.0			0.0		0.0	0.0	0.1	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	SAR (-)	0.5	0.5			0.5		0.6	0.5	0.6	0.5	0.6	0.7	0.4	1.7	0.4	0.5	0.6
	PESTICIDES																	

Water Quality Seasonal Average for the period: 2003-2018

Station Name : PURUSHOTTAMPUR (ER000U5) **Division : E.E., Bhubaneswar**

Local River : Rushikulya **River Water** **Sub-Division : Behrampur**

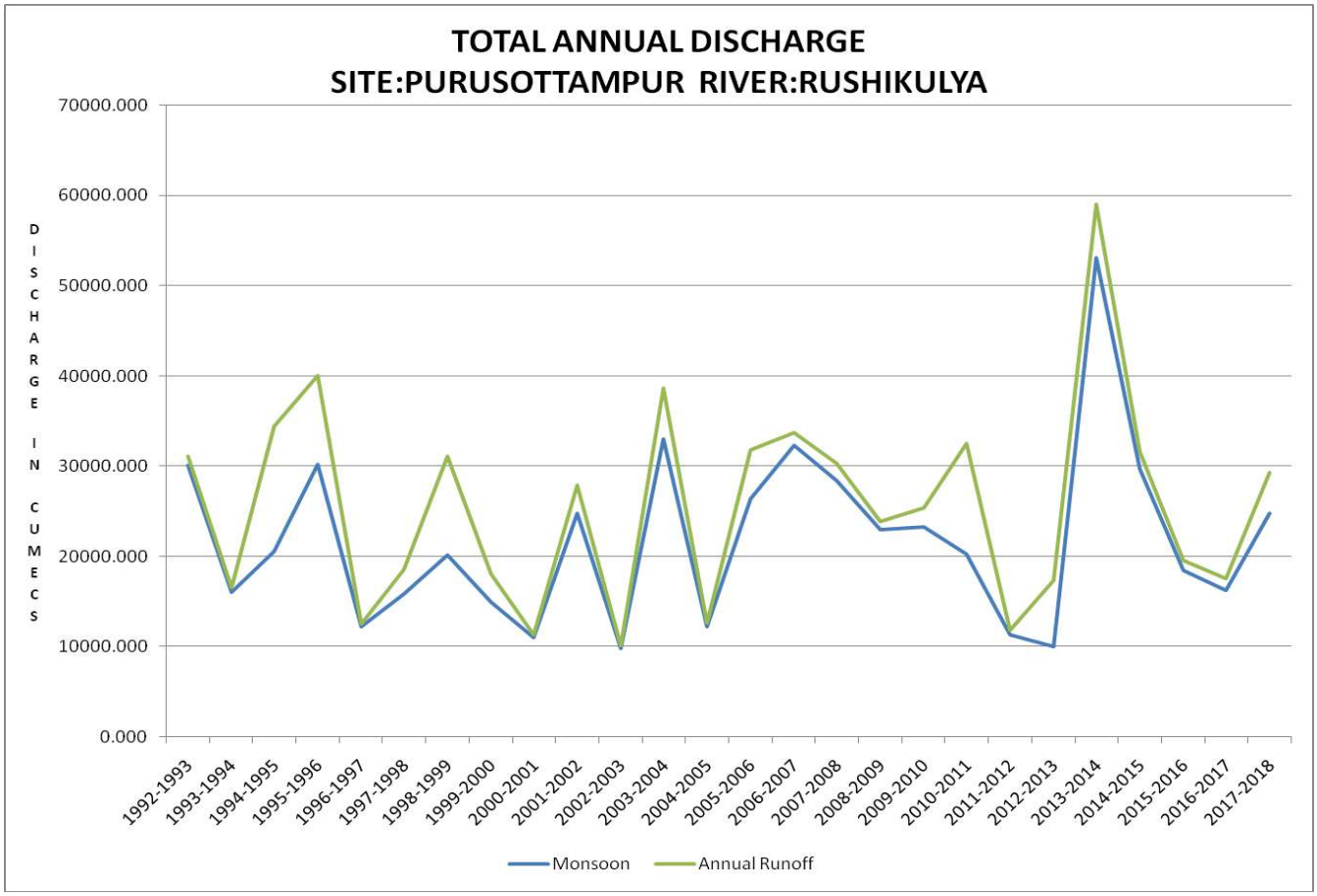
S.No	Parameters	Winter																
		Nov - Feb																
		2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2004	2005	2006	2007
	PHYSICAL																	
1	Q (cumec)																	
2	EC_FLD (µmho/cm)			271		330	385	300	220	260	225	384	622	300	287			
3	EC_GEN (µmho/cm)			255		330	385	300	220	260	225	389	624	293	290			
4	pH_FLD (pH units)			7.9		7.8	7.8	7.9	7.9	8.0	7.7	7.9	8.1	8.0	7.6			
5	pH_GEN (pH units)			8.0		7.8	7.8	7.9	7.9	8.0	7.7	8.0	8.2	7.9	7.7			
6	Temp (deg C)			21.0		20.5	24.8	22.5	24.6	21.2	22.8	27.0	24.8	23.8	30.0			
	CHEMICAL																	
1	Alk-Phen (mgCaCO3/L)			0.0		0.0	0.0	0.0			0.0	23.0	0.0	5.0				
2	ALK-TOT (mgCaCO3/L)			83		93	121	92			125	113	67	135				
3	B (mg/L)			0.00		0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.02	0.00			
4	Ca (mg/L)			24		26	36	32	30	20	35	20	70	42	29			
5	Cl (mg/L)			19.0		33.1	32.1	14.1	18.9	18.2	17.9	16.0	14.1	16.4	19.1			
6	CO3 (mg/L)			0.0		0.0	0.0	0.0	0.0	0.0	0.0	27.7	0.0	6.0	0.0			
7	F (mg/L)			0.28		0.11	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.00			
8	Fe (mg/L)			0.1		0.1	0.1	0.0	1.1	0.0	0.3	0.5	0.7	0.5	0.0			
9	HCO3 (mg/L)			102		113	147	113	138	96	153	82	82	152	129			
10	K (mg/L)			3.4		2.2	3.2	3.0	2.7	1.4	3.2	1.3	14.0	3.0	2.2			
11	Mg (mg/L)			9.1		11.7	12.2	17.5	7.3	6.3	8.8	12.1	31.1	16.7	9.6			
12	Na (mg/L)			12.8		22.6	21.2	18.3	20.2	10.2	18.0	3.0	47.1	21.5	13.6			
13	NO2+NO3 (mg N/L)			0.89		0.74	0.81	0.41	0.71	0.53	0.95	1.04	1.02	1.19	0.56			
14	NO2-N (mgN/L)			0.00		0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.01	0.00	0.00			
15	NO3-N (mgN/L)			0.89		0.74	0.81	0.34	0.71	0.53	0.95	1.04	1.01	1.19	0.56			
16	o-PO4-P (mg P/L)			0.000		0.050												
17	P-Tot (mgP/L)			0.001		0.010	0.001	0.010	0.001	0.001	0.001	0.010	0.010	0.001	0.001			
18	SiO2 (mg/L)			9.7		9.8	8.8	11.5	11.5	10.8	6.0	5.5	7.0	8.0	15.9			
19	SO4 (mg/L)			10.5		16.5	18.3	2.5	2.3	16.3	8.3	2.7	4.2	2.3	4.0			
	BIOLOGICAL/BACTERIOLOGICAL																	
	TRACE & TOXIC																	
	CHEMICAL INDICES																	
1	HAR_Ca (mgCaCO3/L)			60		64	90	80	75	51	87	50	174	106	73			
2	HAR_Total (mgCaCO3/L)			98		113	141	153	106	77	124	101	304	176	112			
3	Na% (%)			21		30	24	20	29	22	24	6	25	20	21			
4	RSC (-)			0.0		0.0	0.0	0.0	0.2	0.1	0.1	0.5	0.0	0.0	0.0			
5	SAR (-)			0.6		0.9	0.8	0.6	0.9	0.5	0.7	0.1	1.2	0.7	0.6			
	PESTICIDES																	

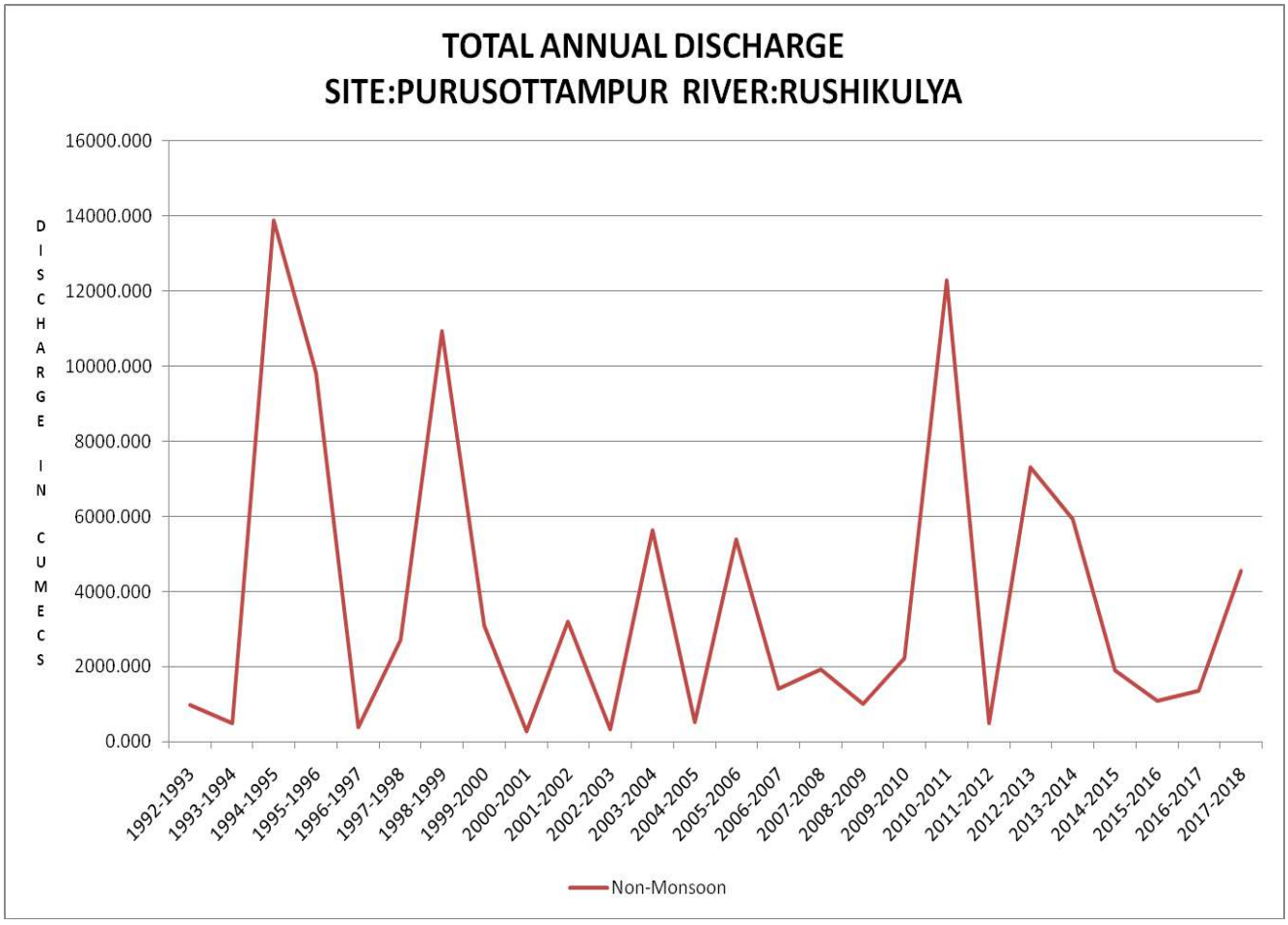
Water Quality Seasonal Average for the period: 2003-2018

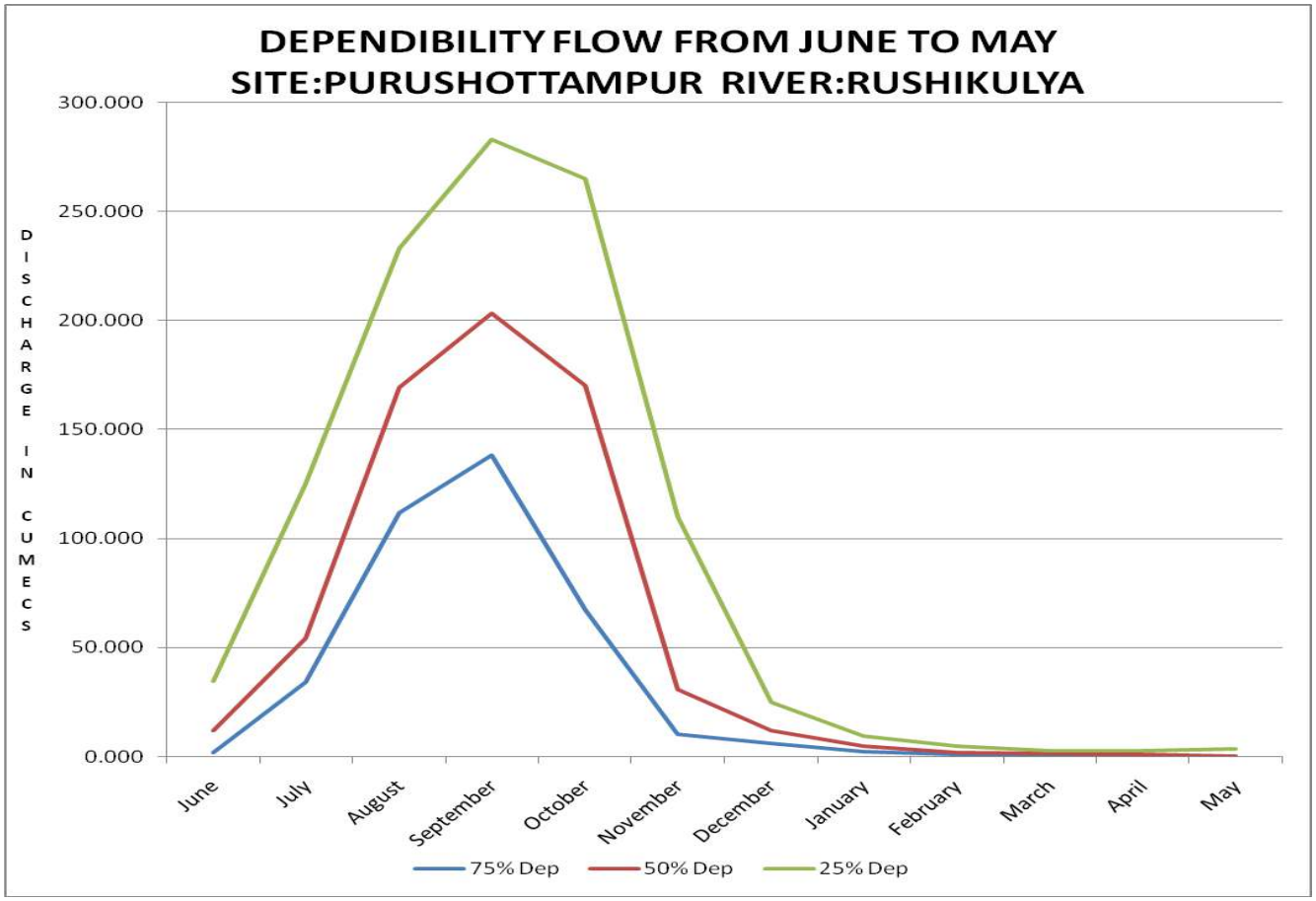
Station Name : PURUSHOTTAMPUR (ER000U5) **Division : E.E., Bhubaneswar**

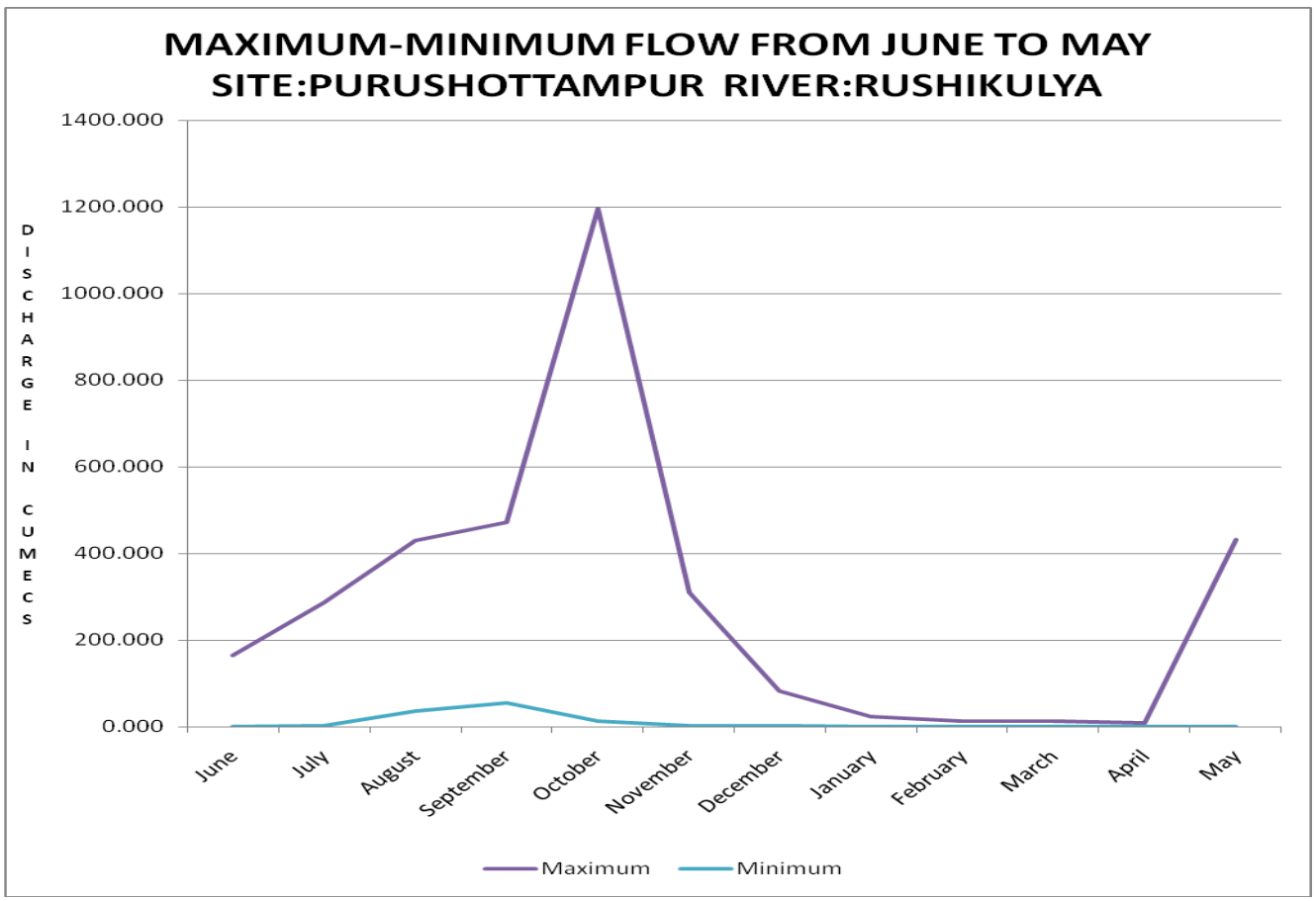
Local River : Rushikulya **River Water** **Sub-Division : Behrampur**

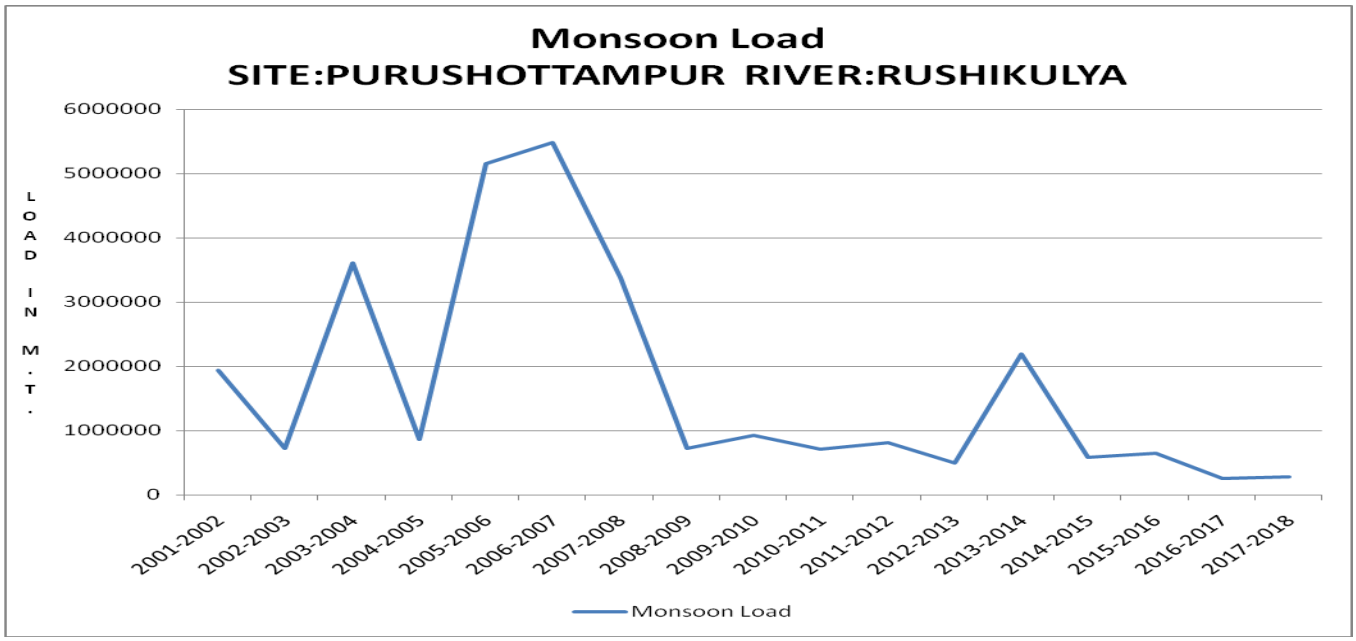
S.No	Parameters	Summer										
		Mar - May										
		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
	PHYSICAL											
1	Q (cumec)											
2	EC_FLD (µmho/cm)	300		280	420	290	210	340	380	580	442	367
3	EC_GEN (µmho/cm)	300		280	420	290	210	340	380	588	446	367
4	pH_FLD (pH units)	8.2		7.9	8.1	7.6	7.7	8.0	7.3	7.9	7.7	7.7
5	pH_GEN (pH units)	8.3		7.9	8.1	7.6	7.7	8.0	7.3	8.0	7.8	7.7
6	Temp (deg C)	29.0		32.0	28.0			26.3	29.5	21.0	28.5	25.0
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)	0.0		0.0	0.0	0.0	0.0		0.0	46.0	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	115		76	123	125	120		126	157	69	136
3	B (mg/L)	0.07		0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.03	0.02
4	Ca (mg/L)	26		19	32	27	27	24	38	29	96	36
5	Cl (mg/L)	16.9		29.7	34.0	32.1	18.2	25.6	31.1	18.9	24.5	21.9
6	CO3 (mg/L)	0.0		0.0	0.0	0.0	0.0	0.0	0.0	55.4	0.0	0.0
7	F (mg/L)	0.05		0.00	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
8	Fe (mg/L)			0.0	0.1	0.0	1.1	0.0	0.4	0.5	0.3	0.5
9	HCO3 (mg/L)	140		93	151	152	147	113	153	79	85	158
10	K (mg/L)	2.1		4.7	3.4		2.6	2.1	2.1	3.5	19.0	3.0
11	Mg (mg/L)	12.4		9.7	16.5	3.9	7.8	6.2	3.9	13.6	38.9	12.7
12	Na (mg/L)	13.1		21.9	21.3		10.2	12.8	19.1	53.0	51.4	30.0
13	NO2+NO3 (mg N/L)	0.43		0.99	0.60	0.36	0.71	1.18	0.78	1.16	1.13	1.20
14	NO2-N (mgN/L)	0.00		0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.04	0.00
15	NO3-N (mgN/L)	0.43		0.99	0.60	0.29	0.71	1.18	0.78	1.16	1.09	1.20
16	o-PO4-P (mg P/L)	0.021		0.020								
17	P-Tot (mgP/L)	0.050		0.010	0.001	0.010	0.001	0.001	0.001	0.010	0.010	0.001
18	SiO2 (mg/L)	9.9		8.3	9.5	8.0	12.0	11.6	6.0	5.0	7.0	8.8
19	SO4 (mg/L)	10.2		11.4	29.5	3.7	4.5	22.8	9.4	3.2	4.8	3.9
	BIOLOGICAL/BACTERIOLOGICAL											
	TRACE & TOXIC											
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	66		48	80	68	68	61	95	72	240	90
2	HAR_Total (mgCaCO3/L)	117		89	149	84	101	86	111	129	402	143
3	Na% (%)	19		34	23		18	24	27	47	21	31
4	RSC (-)	0.0		0.0	0.0	0.8	0.4	0.1	0.3	0.6	0.0	0.0
5	SAR (-)	0.5		1.0	0.8		0.4	0.6	0.8	2.0	1.1	1.1
	PESTICIDES											

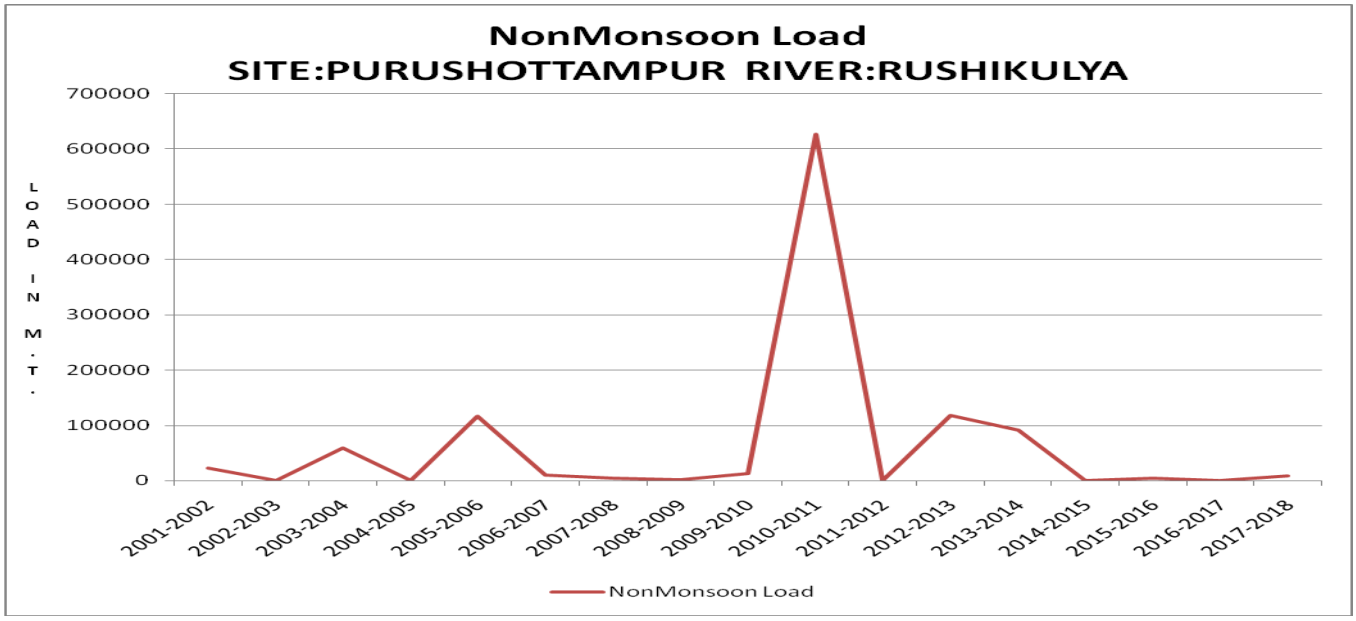

TOTAL ANNUAL DISCHARGE
SITE:PURUSOTTAMPUR RIVER:RUSHIKULYA
DISCHARGE IN CUMECS
70000.000
60000.000
50000.000
40000.000
30000.000
20000.000
10000.000
0.000
1992-1993
1993-1994
1994-1995
1995-1996
1996-1997
1997-1998
1998-1999
1999-2000
2000-2001
2001-2002
2002-2003
2003-2004
2004-2005
2005-2006
2006-2007
2007-2008
2008-2009
2009-2010
2010-2011
2011-2012
2012-2013
2013-2014
2014-2015
2015-2016
2016-2017
2017-2018
Monsoon
Annual Runoff

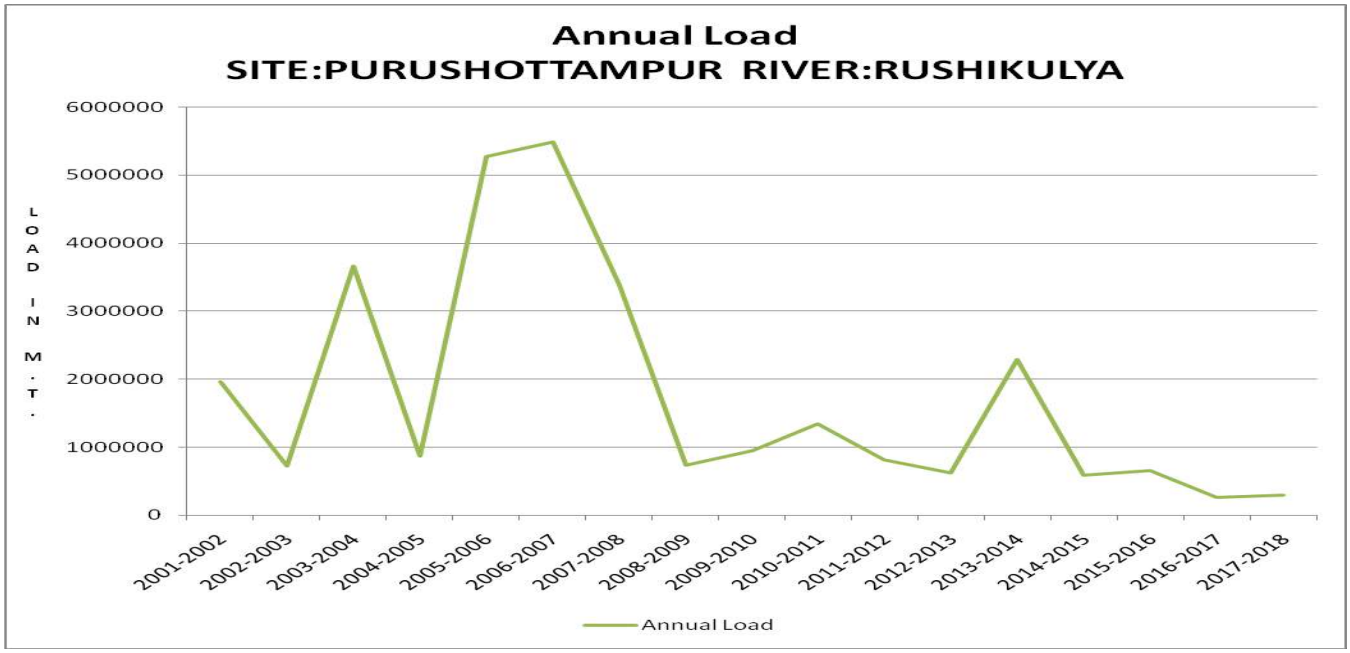

TOTAL ANNUAL DISCHARGE
SITE:PURUSOTTAMPUR RIVER:RUSHIKULYA
DISCHARGE IN CUMECS
16000.000
14000.000
12000.000
10000.000
8000.000
6000.000
4000.000
2000.000
0.000
1992-1993
1993-1994
1994-1995
1995-1996
1996-1997
1997-1998
1998-1999
1999-2000
2000-2001
2001-2002
2002-2003
2003-2004
2004-2005
2005-2006
2006-2007
2007-2008
2008-2009
2009-2010
2010-2011
2011-2012
2012-2013
2013-2014
2014-2015
2015-2016
2016-2017
2017-2018
Non-Monsoon

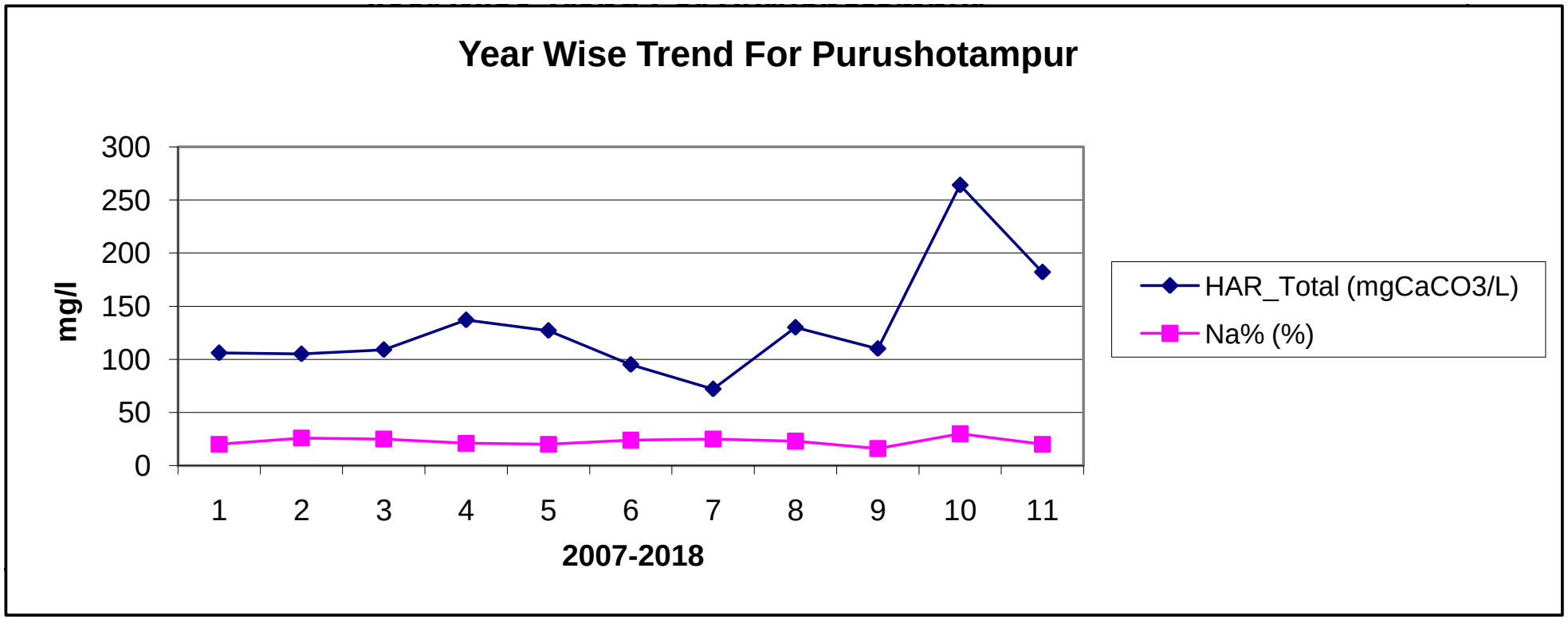

DEPENDIBILITY FLOW FROM JUNE TO MAY
SITE:PURUSHOTTAMPUR RIVER:RUSHIKULYA
DISCHARGE IN CUMECS
300.000
250.000
200.000
150.000
100.000
50.000
0.000
June
July
August
September
October
November
December
January
February
March
April
May
75% Dep
50% Dep
25% Dep

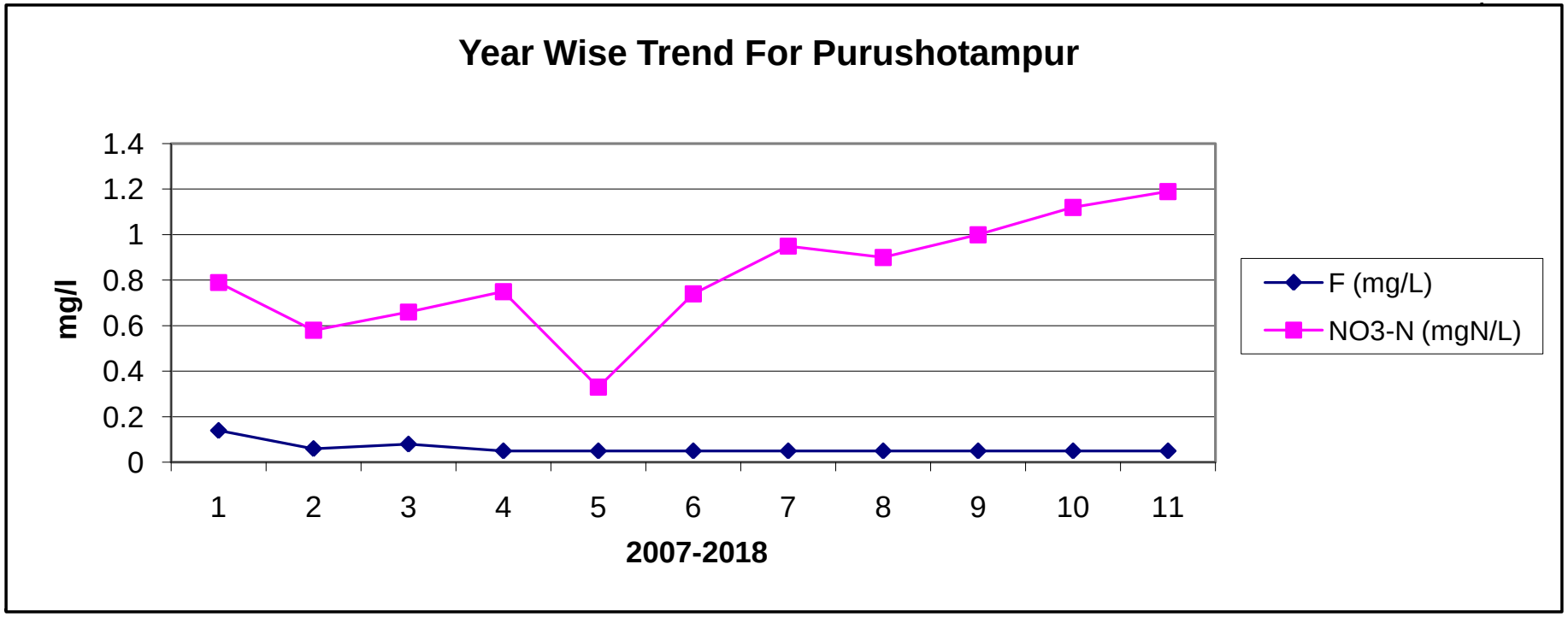

MAXIMUM-MINIMUM FLOW FROM JUNE TO MAY
SITE:PURUSHOTTAMPUR RIVER:RUSHIKULYA
DISCHARGE IN CUMECS
1400.000
1200.000
1000.000
800.000
600.000
400.000
200.000
0.000
June
July
August
September
October
November
December
January
February
March
April
May
Maximum
Minimum

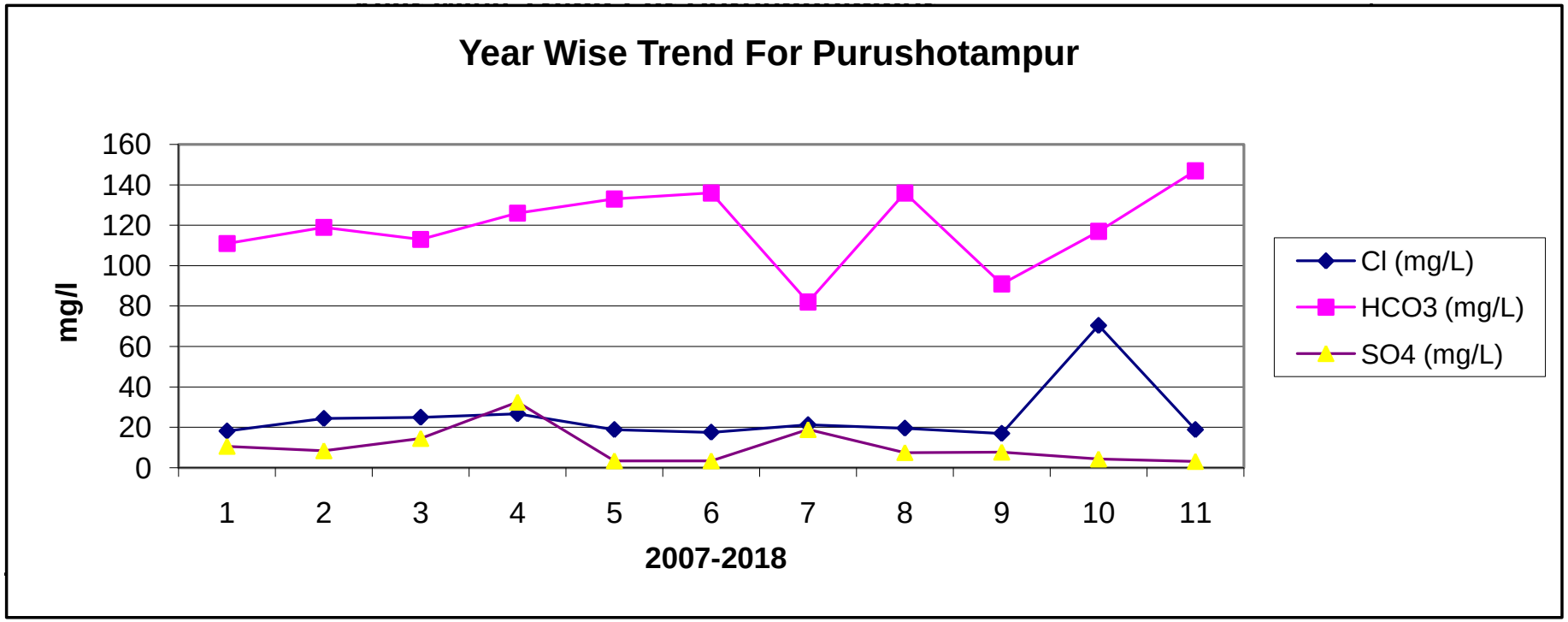

Monsoon Load
SITE:PURUSHOTTAMPUR RIVER:RUSHIKULYA
LOAD IN M.T.
6000000
5000000
4000000
3000000
2000000
1000000
0
2001-2002
2002-2003
2003-2004
2004-2005
2005-2006
2006-2007
2007-2008
2008-2009
2009-2010
2010-2011
2011-2012
2012-2013
2013-2014
2014-2015
2015-2016
2016-2017
2017-2018
Monsoon Load

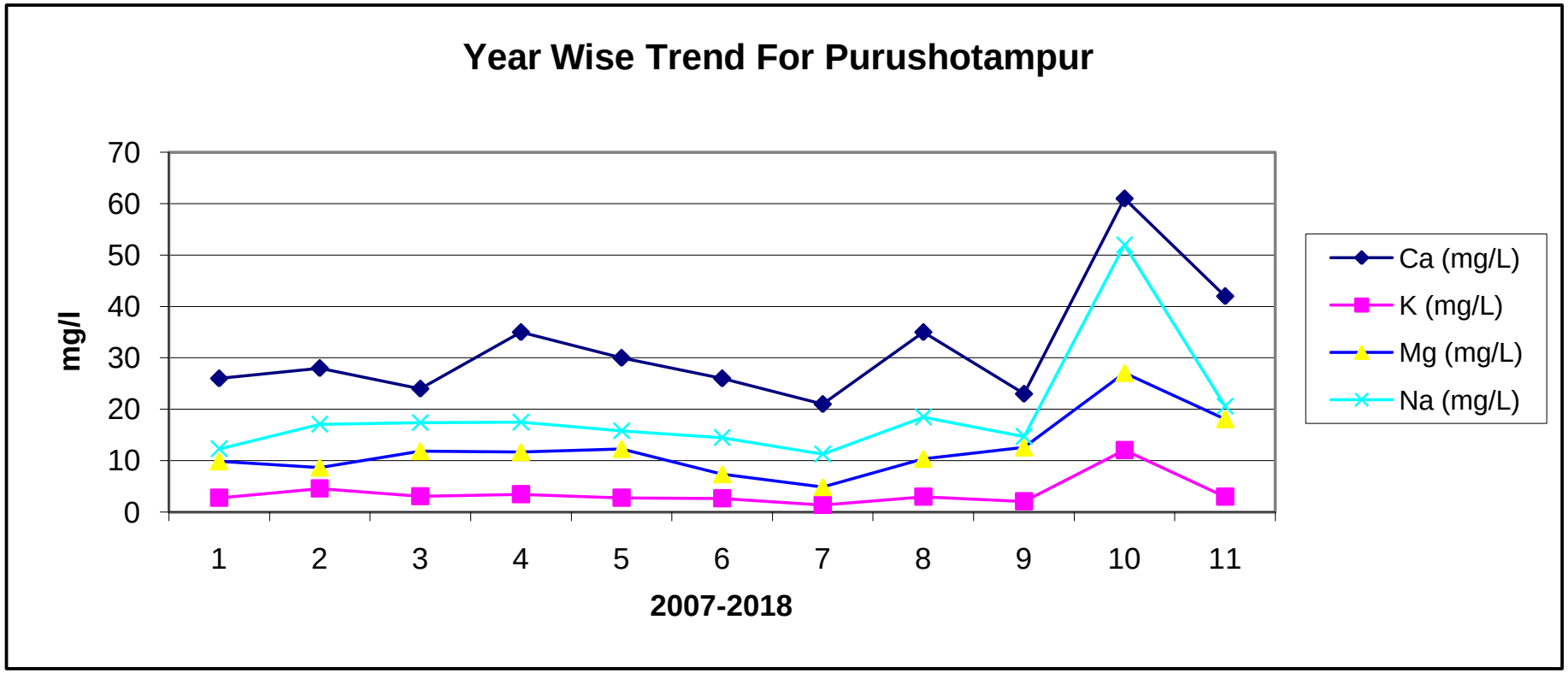

NonMonsoon Load
SITE:PURUSHOTTAMPUR RIVER:RUSHIKULYA
LOAD IN M.T.
700000
600000
500000
400000
300000
200000
100000
0
2001-2002
2002-2003
2003-2004
2004-2005
2005-2006
2006-2007
2007-2008
2008-2009
2009-2010
2010-2011
2011-2012
2012-2013
2013-2014
2014-2015
2015-2016
2016-2017
2017-2018
NonMonsoon Load


Annual Load
SITE:PURUSHOTTAMPUR RIVER:RUSHIKULYA
LOAD IN M.T.
6000000
5000000
4000000
3000000
2000000
1000000
0
2001-2002
2002-2003
2003-2004
2004-2005
2005-2006
2006-2007
2007-2008
2008-2009
2009-2010
2010-2011
2011-2012
2012-2013
2013-2014
2014-2015
2015-2016
2016-2017
2017-2018
Annual Load


Year Wise Trend For Purushotampur
mg/l
300
250
200
150
100
50
0
1
2
3
4
5
6
7
8
9
10
11
2007-2018
HAR_Total (mgCaCO3/L)
Na% (%)


Year Wise Trend For Purushotampur
mg/l
1.4
1.2
1
0.8
0.6
0.4
0.2
0
1
2
3
4
5
6
7
8
9
10
11
2007-2018
F (mg/L)
NO3-N (mgN/L)


Year Wise Trend For Purushotampur
160
140
120
100
80
60
40
20
0
mg/l
1
2
3
4
5
6
7
8
9
10
11
2007-2018
Cl (mg/L)
HCO3 (mg/L)
SO4 (mg/L)


Year Wise Trend For Purushotampur
70
60
50
40
30
20
10
0
mg/l
1
2
3
4
5
6
7
8
9
10
11
2007-2018
Ca (mg/L)
K (mg/L)
Mg (mg/L)
Na (mg/L)

NAGAVALI BASIN

NAGAVALI BASIN

1 GENERAL

1.1 Introduction

River Nagavali is a medium sized east flowing river in peninsular India and lies within the geographical co-ordinates of North latitude 18°10 ′to 19°44′ and East longitudes of 82 °53′ and 84 °05′. It originates near the Lakhbahal village in Kalahandi district (Odisha) at an elevation of about 1300 m. The total length of the river run is 256 km. It is surrounded by Vamsadhara in the North, Champavathi and Peddagedda in the South, Godavari in the West and the Bay of Bengal in the East. It drains parts of the districts of Kalahandi, Rayagada, Koraput of Odisha State and Srikakulam, Vijayanagaram and Visakhapatanam of Andhra Pradesh State. The total basin area is 9510 sq. km and the state wise break-up is tabulated below.

State-wise Catchment area distribution

Sl. No.	**Name of State**	**Catchment Area (sq. km)**	**Percentage of total catchment area**
1.	Odisha	4462	46.9
2.	Andhra Pradesh	5048	53.1
	Total	**9510**	**100.0**

Basin Map of Nagavali river system showing the various hydrological and hydro-meteorological observation stations maintained by CWC, State Government and India Meteorological Department is enclosed herewith.

1.2 River System.

The important tributaries are Janjhavati, Vottigedda, Suvarnamukhi, and Vegavathi. Details of the tributaries which join Nagavali River on both sides are tabulated below:

Name of River	River/Tributary	Length (km)	Catchment area (sq.km)	Percentage of total catchment area
Nagavali	Main Stream	256	5704	59.9
Janjhavati	Right Tributary	70	931	9.8
Vottigedda	Left Tributary	50	606	6.4
Suvarnamukhi	Right Tributary	95	1275	13.4
Vegavathi	Right Tributary	90	994	10.5
		Total	9510	100.0

1.3 Climatic Characteristics

The Basin is mostly influenced by South West monsoon, in addition to cyclonic rainfall due to the formation of depressions in the Bay of Bengal. The average annual rainfall in the basin is around 1000mm. The maximum temperature in the plains of the basin rises upto 40°C during May and goes down to 16ºC in December-January. The average relative humidity during monsoon varies between 80% to 84%.

1.4 Geology

The geological structure of the basin is formed with Pleistocene deposits along the coastal belt and along the course of the river and its major tributaries. Khondalites, unclassified Crystalline and Granites are found in limited areas. Manganese, Quartz, Mica, Graphite, Limestone, Bauxite and construction materials are found in abundance in the Basin.

1.5 Site Details

Details of water storage/ diversion structures in the Nagavali Basin are as below:

Sl. No.	Name of Project	River	Status
1.	Thotapally regulator	Nagavali	Existing
2.	Narayan Puram Anicut	Nagavali	Existing
3.	Vegavathi Anicut	Peddagedda	Existing
4.	Vottigedda Reservoir	Vottigedda	Existing
5.	Peddankumal Anicut	Suvarnamukhi	Existing
6.	Janjavathi Reservoir	Janjavathi	Existing
7.	Madhuvalsa Project	Suvarnamukhi	Existing
8.	Suvarnamukhi-Gomukhi Reservoir	Suvarnamukhi	Existing

2. STREAM FLOW DATA

2.1 Methodology

Area-velocity method is generally adopted for measuring discharge at sites. Cup type current meter is used to measure the velocity of the flow and the depth is measured by using sounding rod for depths upto 3 m and by log line beyond 3 m. Discharge by area velocity method is being observed once in a day starting at 0800 Hrs. at all the sites except on Sundays and holidays. Besides, silt and water quality observation are also being carried out at CWC sites as list above.
The observed stage and discharge figures for each season (monsoon and non-monsoon) are plotted and a mean Stage V/s. Discharge curve is drawn, giving due attention to the scattered points with reference to area, velocity etc.

The factors responsible for the shifting of the curves are also taken care of by studying the river cross section at regular intervals and with super imposition of previous years' Stage V/s. Discharge curves. Accordingly, the trend of the current curve is finalised. Finally, the discharges of the non observed days are computed from these Stage V/s. Discharge Curves.

2.2 Data Availability

Details of data availability for Nagavali Basin is tabulated below:

Code No.	Station Name	Type	Data available	
			From	To
AN000Y2	Srikakulam	GDSQ	G -16.02.88	Continuing
			D -25.08.90	-do-
			S -27.06.01	-do-
			Q -27.06.01	-do-

2.3 Explanatory Notes on Water Year Book

SWDES (Surface Water Data Entry Software), a custom made software for processing hydrological data has been used for preparation of this volume. The explanatory notes described below can be used for interpretation of data presented in this volume.

i) Water Year ranges from June 1st of one calendar year to May 31st of the next calendar year and covers one complete hydrological cycle.

ii) Discharge is given in cubic meters per second.

iii) Discharges are expressed as 0.000 when river bed is dry and 0.000 N.F. when velocity is observed as 'NIL'.

iv) The zero R.L. of gauge is a datum level fixed for given site, which is kept 1 or 2 m lower than the lowest water level recorded in a perennial stream. In a non-perennial stream, it is kept 1 or 2 m lower than the lowest bed level of the stream.

v) Discharges are rounded off as per standard practice.

vi) Runoff in mm is the notional depth of water in millimeters over the catchment, equivalent to annual runoff volume calculated at the discharge measurement station. It is computed using the relation:

$$\text{Runoff (mm)} = \frac{\text{Annual runoff (Mm3) x 1000}}{\text{Catchment area (km2)}}$$

vii) Peak and lowest flow correspond to the highest and lowest water levels recorded from 'SWDES' entered data.

viii) Measuring Authority refers to the field division of Central Water Commission (Eastern Rivers Division) responsible for the operation of the gauging station.

ix) The gauging station code number is a unique seven column alphanumeric reference number which facilitates storage and retrieval of flow data in data base. The first column is identifier of either an integral river basin or, for the sake of convenience, a region having several contiguous river catchments. This is followed by a column which identifies an independent river system which either has one or more outlets to the sea or crosses international border to enter another country. The third, fourth and fifth column spaces denote first, second and third order tributaries, respectively, from the mouth upstream. The sixth and seventh column spaces indicate the location of the gauging station in one of the 225 slots earmarked on the river. The blank column spaces are filled by zero.

3. HYDROLOGICAL DATA

This volume contains the following information for each site stated above:

i. History Sheet: Site Name, State, District, River Basin, Tributary, Sub-Tributary, Catchment Area, Latitude / Longitude, Opening / Closing date for various types of data.

ii. Annual maximum/minimum discharge since period of observation.

iii. Daily Water level and observed/ computed discharge data including 10-daily, monthly and annual totals etc.

iv. Histogram and Hydrograph showing current year monthly mean discharges, Historical monthly mean discharges, historical monthly minimum and monthly maximum discharges.

v. Histogram showing Annual Run off volume since beginning of observation.

vi. Pie-Chart showing monthly mean run off (as percentage of Annual Run off) historical for the current year.

vii. Plot of Pre and Post Monsoon Cross-section of the rivers for current year.

viii. Water Level hydrograph for 3(three) major flood events of current year.

4. SEDIMENT DATA (In case of Sediment Observation sites)

The frequency of sediment observation is carried out daily during monsoon season and once in a week (on Monday) during the non-monsoon period. Data for non-observed days is estimated/ interpolated from the relationship of discharge v/s. sediment load, prepared on the basis of observed sediment concentration and weighted mean discharge of the same year.

Sediment samples are collected from 0.6 depth, using Punjab type bottle sampler, from all the verticals along the hydrological observation sections where velocity is observed for computation of discharge. The collected samples from all the segments are combined in 3 to 7 groups having compartments or groups of equal or nearly equal discharges for analysis. Quantum of suspended sediment load is estimated in three grades, viz. Coarse, Medium and Fine. Coarse and medium grades are separated by sieving process and the fine grade by filtration of left over samples after sieving through filter paper. Grade wise concentration is derived gravimetrically as per standard procedure. The following parameters are derived and recorded:

- Daily Observed suspended sediment (g/l).
- Corresponding discharge.
- Average sediment load in tonnes/day (10 daily & monthly basis).
- Annual sediment load for the current year.
- Annual & Seasonal sediment load and the corresponding volume of inflow for all the years since inception.
- Grain size distribution of bed load.

5. WATER QUALITY DATA (In case of Water Quality Observation sites)

The water samples are collected at a regular interval of once in a month for trend stations and once in two month for base stations (on 1st working day), from the main flowing segment of the stream just below the water surface (20 to 30 cm) on the Station Gauge line where depth of flow and velocity are maximum, preferably in the mid stream. The water samples are collected in the pre-rinsed and cleaned one-litre capacity polythene bottle having double stopper (inside and outside) facility. Sampling bottle is filled to its full capacity without entrapping air bubbles inside.

After sampling, the collected samples are sent to the Water Quality Laboratory (Level-II) based at Bhubaneswar (under the Eastern Rivers Division) and to Raipur laboratory (under Mahanadi Division, Burla), along with in-situ physical characteristics, for analysis. The samples received from the sites are preserved in a refrigerator in the water quality laboratories for analysis.

Analysis of parameters, namely pH, Electrical conductivity, Sodium, Potassium, Iron, Aluminum, Ammonia, Fluoride, Nitrate, Nitrite, Phosphate, Silicate, Boron, Sulphate, Calcium, Magnesium, Carbonate, Bi-carbonate, Chloride, Dissolved Oxygen, BOD and COD, are carried out at the Level II laboratory by using standard methodology. Micro biological parameters like total colliform and faecal colliform are also being analyzed. For analysis of trace and toxic elements, samples are sent to Level-II+ laboratory at Hyderabad once in a year, in the month of April.

The following parameters are analyzed and recorded:

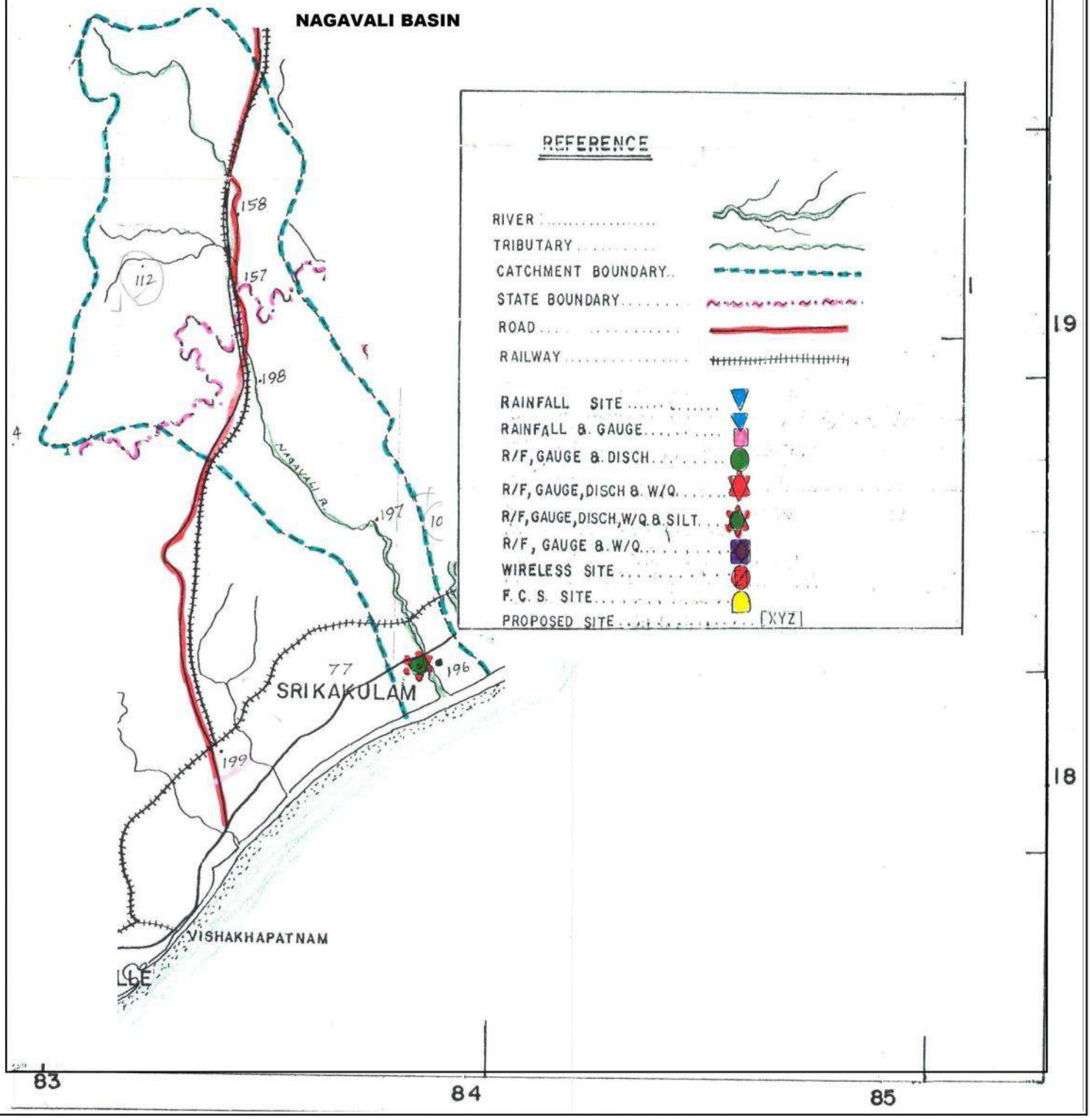
- Monthly Values: Physical; Chemical (mg/l); Biological (mg/l); Traces & Toxic (mg/l) and Chemical Indices.

- Average Values for the Year: 10 Years data to be given season wise averages:-

    - Average for Summer (March to June).
    - Average for Floods (July to October).
    - Average for Winter (November to February)

NAME OF THE SITES IN OPERATION UNDER NAGAVALI BASIN

Sl. No	Station Name	River/ Tributary	Type	Latitude	Longitude	Max. Water Level & Discharge upto May,2018			
						WL	Date	Q.	Date
1.	Srikakulam	Nagavali	GDSQ	18° 18' 48"	83° 53' 18	14.53	12/05/90	4224	14/10/14


NAGAVALI BASIN
REFERENCE
RIVER
TRIBUTARY
CATCHMENT BOUNDARY
STATE BOUNDARY
ROAD
RAILWAY
RAINFALL SITE
RAINFALL & GAUGE
R/F, GAUGE & DISCH
R/F, GAUGE, DISCH & W/Q
R/F, GAUGE, DISCH, W/Q & SILT
R/F, GAUGE & W/Q
WIRELESS SITE
F. C. S. SITE
PROPOSED SITE [XYZ]
158
157
112
198
197
196
199
77
10
SRIKAKULAM
VISHAKHAPATNAM
NAGAVALI R.
19
18
4
83
84
85

HISTORY SHEET

			Water Year	:	**2017-2018**
Site	:	**SRIKAKULAM**	**Code**	:	**AN000Y2**
State	:	Andhra Pradesh	District		Srikakulam
Basin	:	EFR B Mahanadi-Godavari	Independent River	:	Nagavali
Tributary	:		Sub Tributary	:	
Sub-Sub Tributary	:		Local River	:	Nagavali
Division	:	E.E., Bhubaneswar	Sub-Division	:	Behrampur
Drainage Area	:	9500 Sq. Km.	Bank	:	Left
Latitude	:	18°18'48"	Longitude	:	83°53'18"
Zero of Gauge (m)	:	6.65 (m.s.l)	1/1/1988	-	1/12/2090
		Opening Date	Closing Date		
Gauge	:	2/16/1988			
Discharge	:	8/25/1990			
Sediment	:	6/27/2001			
Water Quality	:	6/27/2001			

Annual Maximum / Minimum discharge with corresponding Water Level (m.s.l)

	Maximum			Minimum		
Year	**Q (cumecs)**	**WL (m)**	**Date**	**Q (cumecs)**	**WL (m)**	**Date**
1991-1992	1497	10.935	7/30/1991	0.870	8.050	5/22/1992
1992-1993	2013	11.530	7/28/1992	0.075	7.880	4/12/1993
1993-1994	337.5	9.790	7/14/1993	0.000	8.070	4/5/1994
1994-1995	1917	11.410	5/11/1995	0.000	8.040	5/6/1995
1995-1996	1128	10.760	9/1/1995	1.052	8.030	3/18/1996
1996-1997	1284	10.740	8/23/1996	0.080	7.945	3/25/1997
1997-1998	577.8	10.155	9/18/1997	0.240	7.865	4/23/1998
1998-1999	451.1	9.950	11/11/1998	0.000	7.775	4/28/1999
1999-2000	370.3	9.720	9/9/1999	0.000	7.790	4/5/2000
2000-2001	852.9	10.637	8/25/2000	0.000	7.735	3/12/2001
2001-2002	758.8	10.200	7/7/2001	0.355	7.875	3/20/2002
2002-2003	301.2	9.490	10/17/2002	0.000	7.630	4/29/2003
2003-2004	1087	10.785	10/8/2003	0.000	7.780	6/14/2003
2004-2005	658.6	10.350	8/5/2004	0.120	7.930	5/23/2005
2005-2006	796.3	10.470	9/21/2005	0.106	7.500	4/16/2006
2006-2007	5625	14.085	8/4/2006	3.579	7.660	3/9/2007
2007-2008	1014	11.000	8/7/2007	3.960	7.950	5/13/2008
2008-2009	1703	11.035	9/18/2008	0.055	7.320	4/30/2009
2009-2010	1375	10.740	7/14/2009	0.554	7.690	4/25/2010
2010-2011	1339	10.640	12/9/2010	4.942	7.990	3/22/2011
2011-2012	1443	10.820	9/2/2011	2.583	7.600	3/15/2012
2012-2013	1900	11.030	11/4/2012	0.061	7.450	4/19/2013
2013-2014	2142	11.375	10/28/2013	1.058	7.400	4/30/2014
2014-2015	4224	12.610	10/14/2014	3.029	7.390	3/3/2015
2015-2016	1200	10.670	9/17/2015	0.280	7.150	2/25/2016
2016-2017	772.1	10.530	9/24/2016	0.060	7.230	4/25/2017
2017-2018	1191	11.385	7/17/2017	0.894	7.230	5/31/2018

Stage-Discharge Data for the period 2017 - 2018

Station Name : SRIKAKULAM (AN000Y2) **Division : E.E., Bhubaneswar**

Local River : Nagavali **Sub-Division : Behrampur**

Day	Jun		Jul		Aug		Sep		Oct		Nov	
	W.L	Q	W.L	Q	W.L	Q	W.L	Q	W.L	Q	W.L	Q
1	7.350	2.704	7.760	20.51	7.485	21.89	8.950	266.0	8.280	123.9 *	7.660	53.02
2	7.340	2.593	7.770	20.56 *	7.470	21.74	8.450	166.2 *	8.380	142.2 *	7.640	50.84
3	7.350	2.685	7.760	20.42	7.790	18.65	8.350	145.9 *	8.380	142.4	7.630	48.74
4	7.370	2.514 *	7.780	21.03	7.520	25.76	8.380	150.8	8.260	126.9	7.600	43.61 *
5	7.340	2.529	7.810	21.56	7.550	32.72	8.250	116.0	8.930	266.7	7.600	43.61 *
6	7.330	2.341	7.840	22.99	7.570	34.26 *	8.130	77.33	8.850	241.7	7.600	43.24
7	7.320	2.330	7.830	21.70	7.550	33.49	8.090	74.17 *	10.120	628.3	7.590	36.53
8	7.350	2.529	7.720	16.50	7.515	30.71	8.050	68.09	9.520	449.9 *	7.580	26.57
9	7.330	2.532	7.700	15.73 *	7.510	29.26	8.140	78.78	8.670	196.7	7.550	27.71
10	7.410	3.426	7.670	14.58	7.550	33.56	8.300	114.1 *	8.650	193.0	7.500	22.48
11	7.410	3.426 *	7.700	15.53	7.690	58.39	8.245	103.1	8.630	185.1	7.460	20.03
12	7.450	4.049	7.700	13.86	7.615	46.40	8.135	77.14	8.635	187.1	7.450	19.51 *
13	7.920	32.38	7.650	11.10	7.570	38.50 *	8.030	69.86	8.660	203.0	7.440	18.99
14	8.080		7.700	11.00	7.700	64.16	8.300	125.2	8.630	183.8	7.430	18.27
15	8.170	73.40	7.710	16.88	7.990	103.5 *	8.540	176.7	8.150	95.96 *	7.520	21.25
16	7.990	35.55	7.840	58.39 *	7.930	90.59	8.610	189.3	8.000	68.83	7.890	68.37
17	7.930	31.61	11.385	1191	7.960	92.12	8.400	150.0 *	7.930	63.29	7.950	86.88
18	7.850	22.00 *	8.790	244.4	7.980	95.24	9.020	344.2	8.270	123.0	7.940	86.74
19	7.970	33.76	9.220	384.0	8.095	114.2	8.790	215.8	8.240	117.2 *	8.030	126.3 *
20	7.940	29.39	9.480	428.7	8.280	121.5 *	8.520	164.5	8.560	179.5	8.020	121.9
21	7.910	28.27	7.770	131.9	8.590	153.2	8.360	140.8	8.630	191.8	8.220	161.6
22	7.900	27.45	7.650	121.7	8.330	126.6	8.750	213.9	8.290	124.1 *	8.290	182.7
23	7.890	26.44	7.550	110.6 *	7.940	89.66	8.570	178.2	8.160	81.88	8.085	128.0
24	7.880	25.67	7.980	158.4	7.960	96.72	8.315	127.1	7.880	71.38	7.865	75.42
25	7.880	25.66 *	7.730	130.8	7.910	82.25	8.490	157.0	8.400	150.1	7.760	57.65
26	7.880	25.66 *	7.690	54.69	8.480	144.7	8.400	144.1	8.200	119.3	7.740	54.25 *
27	7.900	27.69	7.435	50.10	8.390	142.0 *	8.700	202.3	8.160	113.1	7.940	88.72
28	7.850	23.50	7.340	27.16	8.570	147.4	8.730	193.6	8.000	78.45	7.845	70.22
29	7.810	21.43	7.300	18.10	10.150	613.8	8.340	134.9 *	7.910	69.49 *	7.910	83.45
30	7.790	20.77	7.250	11.05 *	9.085	277.8	8.340	134.9 *	7.850	63.51	7.850	70.48
31			7.290	16.69	8.880	259.0			7.695	58.75		
Ten-Daily Mean												
I Ten-Daily	7.349	2.618	7.764	19.56	7.551	28.20	8.309	125.7	8.804	251.2	7.595	39.63
II Ten-Daily	7.871	29.51	8.517	237.5	7.881	82.46	8.459	161.6	8.370	140.7	7.713	58.82
III Ten-Daily	7.869	25.25	7.544	75.56	8.571	193.9	8.499	162.7	8.107	102.0	7.950	97.25
Monthly												
Min.	7.320	2.330	7.250	11.00	7.470	18.65	8.030	68.09	7.695	58.75	7.430	18.27
Max.	8.170	73.40	11.385	1191	10.150	613.8	9.020	344.2	10.120	628.3	8.290	182.7
Mean	7.696	18.77	7.929	109.7	8.020	104.5	8.422	150	8.417	162.6	7.753	65.24

Annual Runoff in MCM = 1843 Annual Runoff in mm = 194

Peak Observed Discharge = 1191 cumecs on 17-Jul-17 Corres. Water Level :11.385 m

Lowest Observed Discharge = 0.894 cumecs on 31-May-18 Corres. Water Level :7.23 m

Q: Observed/Computed Discharge in cumecs WL:Corresponding Mean Water Level(m.s.l) in m *:Computed Discharge

Note:Missing values ignored while arriving at Annual Runoff

Stage-Discharge Data for the period 2017 - 2018

Station Name : SRIKAKULAM (AN000Y2) **Division : E.E., Bhubaneswar**

Local River : Nagavali **Sub-Division : Behrampur**

Day	Dec		Jan		Feb		Mar		Apr		May	
	W.L	Q	WL	Q	WL	Q	WL	Q	WL	Q	WL	Q
1	7.770	59.71	7.730	26.15	7.490	18.10	7.280	2.966	7.370	4.500 *	7.340	3.208
2	7.830	65.58 *	7.710	27.00	7.480	17.88	7.280	2.967 *	7.530	12.20	7.530	24.18
3	7.830	65.58 *	7.480	18.54	7.450	15.19	7.270	2.659	7.440	8.552	7.500	21.73
4	7.830	65.58	7.400	15.51	7.500	20.59 *	7.370	5.701 *	7.430	6.480	7.570	27.35
5	7.820	64.78	7.390	14.62	7.440	13.11	7.360	5.397	7.430	6.345	7.540	24.58
6	7.820	64.57	7.390	14.69	7.470	13.53	7.350	4.945	7.420	4.361	7.500	18.32 *
7	7.780	52.55	7.380	13.94	7.380	6.905	7.340	3.951	7.410	4.231	7.470	13.55
8	7.775	51.86	7.600	30.29	7.370	6.512	7.340	3.862	7.400	4.209 *	7.470	13.45
9	7.900	69.35	7.660	32.91	7.340	5.889	7.330	3.818	7.370	4.101	7.460	12.39
10	7.890	67.47 *	7.680	34.66	7.330	5.609	7.330	3.605	7.370	4.092	7.440	7.460
11	7.890	68.63	7.670	32.12	7.320	5.518 *	7.320	3.392 *	7.360	3.841	7.430	7.210
12	7.800	57.52	7.660	30.75	7.330	5.591	7.300	2.968	7.340	3.305	7.430	7.275
13	7.790	56.32	7.650	29.14	7.320	5.423	7.290	2.779	7.340	3.462	7.420	7.020 *
14	7.780	56.08	7.620	27.59 *	7.330	5.675	7.290	2.669	7.330	3.248	7.420	7.062
15	7.760	54.54	7.620	26.70	7.340	5.742	7.280	2.530	7.320	3.024 *	7.410	6.633
16	7.730	41.43	7.610	24.73	7.310	3.796	7.270	2.899	7.310	2.796	7.410	6.504
17	7.690	40.00 *	7.610	24.58	7.300	3.449	7.270	3.089	7.300	2.335	7.380	5.293
18	7.640	28.59	7.500	21.16	7.290	3.251 *	7.270	4.000 *	7.300	2.302	7.370	5.066
19	7.610	23.81	7.380	14.94	7.290	3.249	7.300	4.773	7.300	2.263	7.360	4.769
20	7.570	20.02	7.360	14.25	7.290	3.145	7.300	4.714	7.300	2.270	7.360	4.768 *
21	7.500	12.92	7.350	13.69 *	7.290	3.168	7.290	3.000 *	7.290	1.943	7.290	2.658
22	7.710	43.59	7.350	13.69	7.290	3.042	7.280	4.222	7.290	1.950 *	7.280	2.620
23	7.740	46.51	7.340	13.28	7.290	3.100	7.280	4.269	7.360	3.883	7.270	2.354
24	7.700	40.63 *	7.330	12.87	7.290	3.050	7.270	3.919	7.350	3.737	7.270	2.279
25	7.670	36.22 *	7.320	12.02	7.270	3.113 *	7.260	3.704 *	7.380	4.217	7.260	2.076
26	7.510	12.42	7.310	8.941 *	7.300	3.113	7.440	7.618	7.370	3.782	7.260	1.876
27	7.660	24.46	7.300	6.447	7.290	3.043	7.430	7.223	7.360	3.548	7.260	1.828 *
28	7.630	21.31	7.280	5.107 *	7.280	2.973	7.380	5.510	7.350	3.375	7.240	1.547
29	7.700	27.52	7.280	5.098			7.360	4.577 *	7.350	3.377 *	7.240	1.391
30	7.660	24.44	7.260	2.463			7.340	4.577 *	7.350	3.208 *	7.230	1.007
31	7.660	24.45 *	7.250	2.380			7.320	4.609			7.230	0.894
Ten-Daily Mean												
I Ten-Daily	7.825	62.70	7.542	22.83	7.425	12.33	7.325	3.987	7.417	5.907	7.482	16.62
II Ten-Daily	7.726	44.70	7.568	24.60	7.312	4.484	7.289	3.381	7.320	2.885	7.399	6.160
III Ten-Daily	7.649	28.59	7.306	8.727	7.287	3.075	7.332	4.839	7.345	3.302	7.257	1.866
Monthly												
Min.	7.500	12.42	7.250	2.380	7.270	2.973	7.260	2.530	7.290	1.943	7.230	0.894
Max.	7.900	69.35	7.730	34.66	7.500	20.59	7.440	7.618	7.530	12.20	7.570	27.35
Mean	7.730	44.79	7.467	18.4	7.345	6.884	7.316	4.094	7.361	4.031	7.375	8.011

Peak Computed Discharge = 449.9 cumecs on 08-Oct-17 Corres. Water Level :9.52 m

Lowest Computed Discharge = 1.828 cumecs on 27-May-18 Corres. Water Level :7.26 m

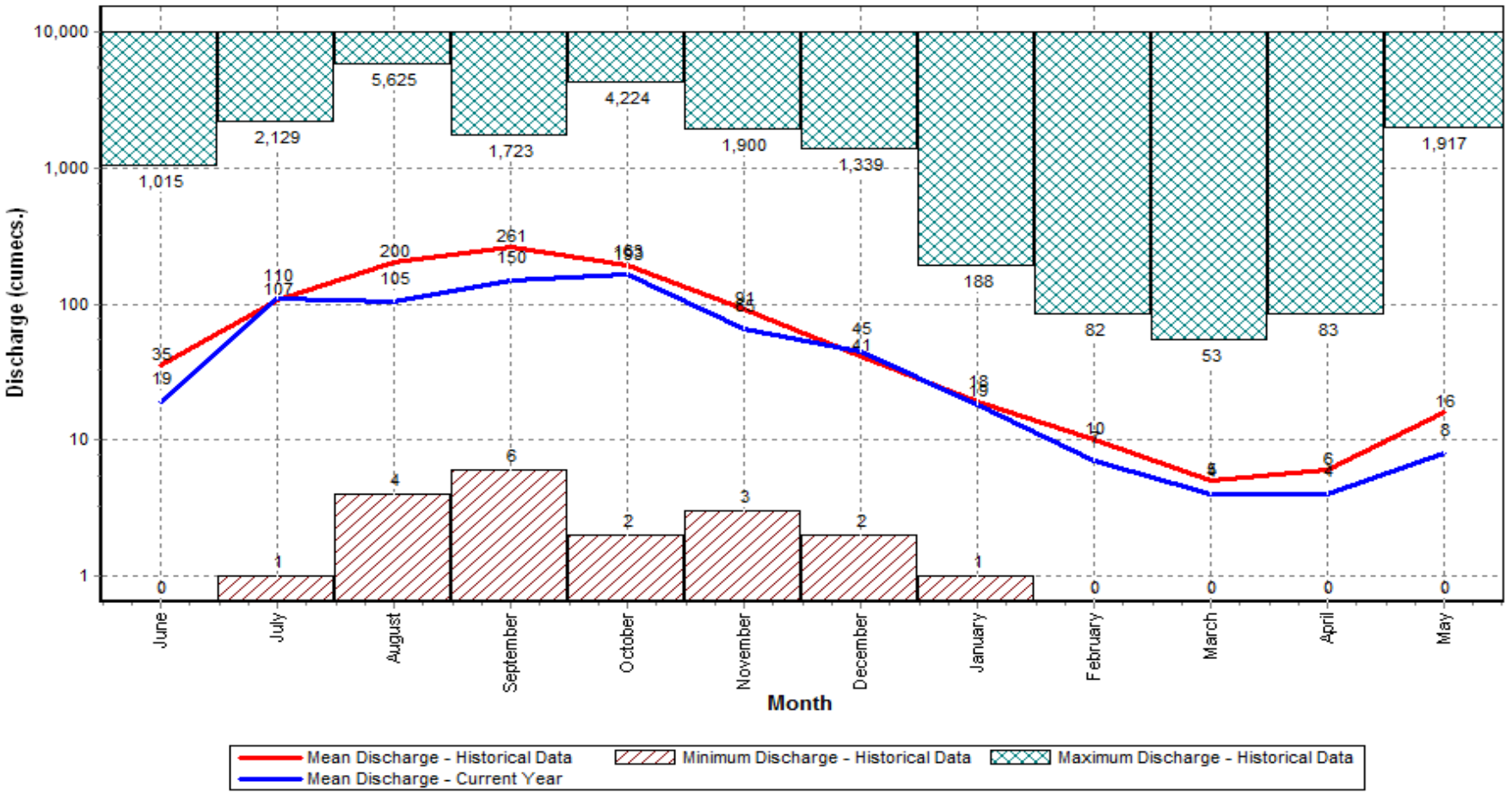
Q: Observed/Computed Discharge in cumecs WL:Corresponding Mean Water Level(m.s.l) in m *:Computed Discharge

Note:Missing values ignored while arriving at Annual Runoff

HISTOGRAM - HYDROGRAPH for Water Year : 2017-2018

Station Name : SRIKAKULAM (AN000Y2) | **Data considered : 1991-2018** | **Division : E.E., Bhubaneswar**

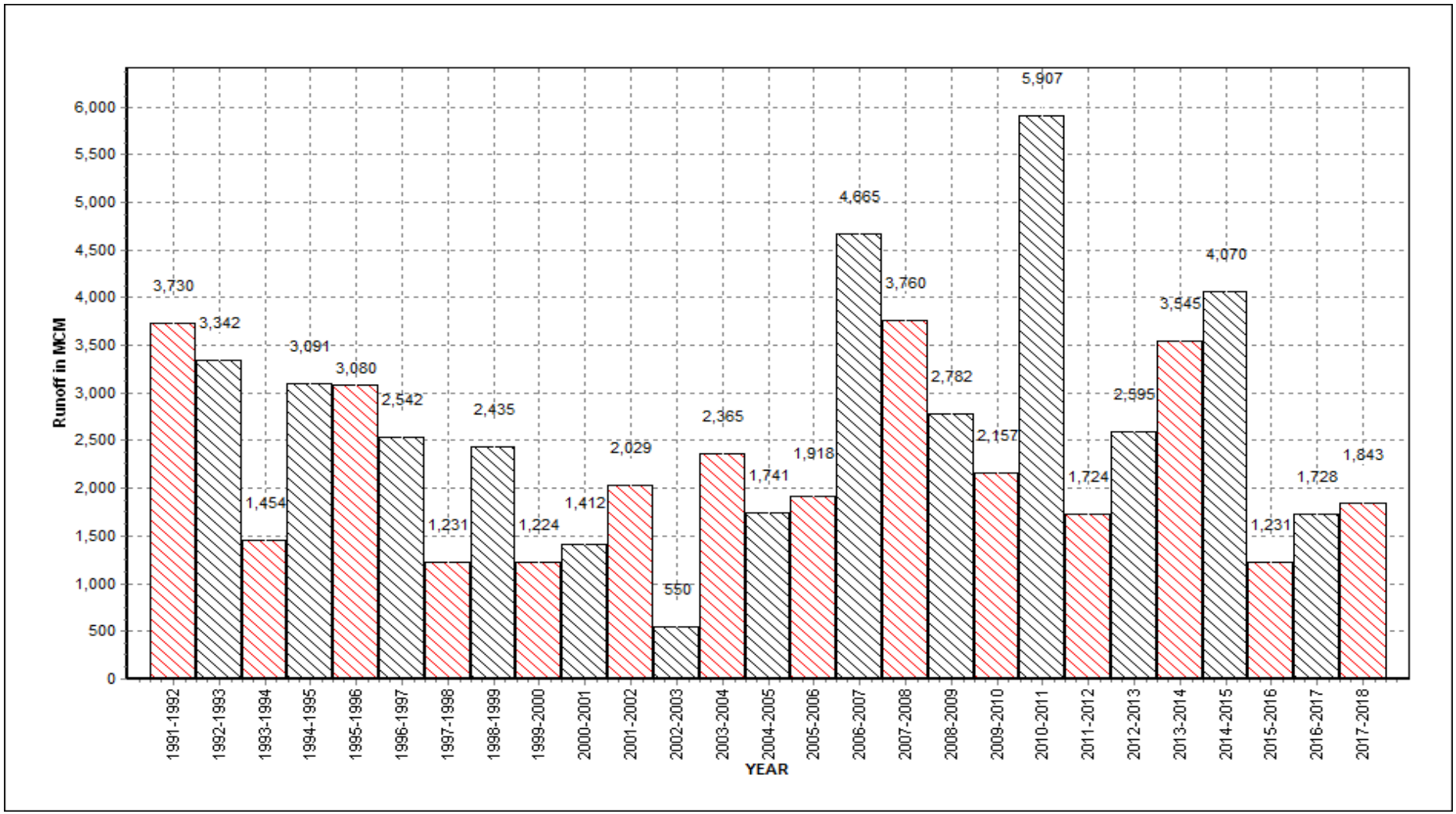
Local River : Nagavali | **Sub-Division : Behrampur**



Annual Runoff Values for the period: 1991 - 2018

Station Name : SRIKAKULAM (AN000Y2) **Division : E.E., Bhubaneswar**

Local River : Nagavali **Sub-Division : Behrampur**



Note: Missing values have not been considered while arriving at Annual Runoff

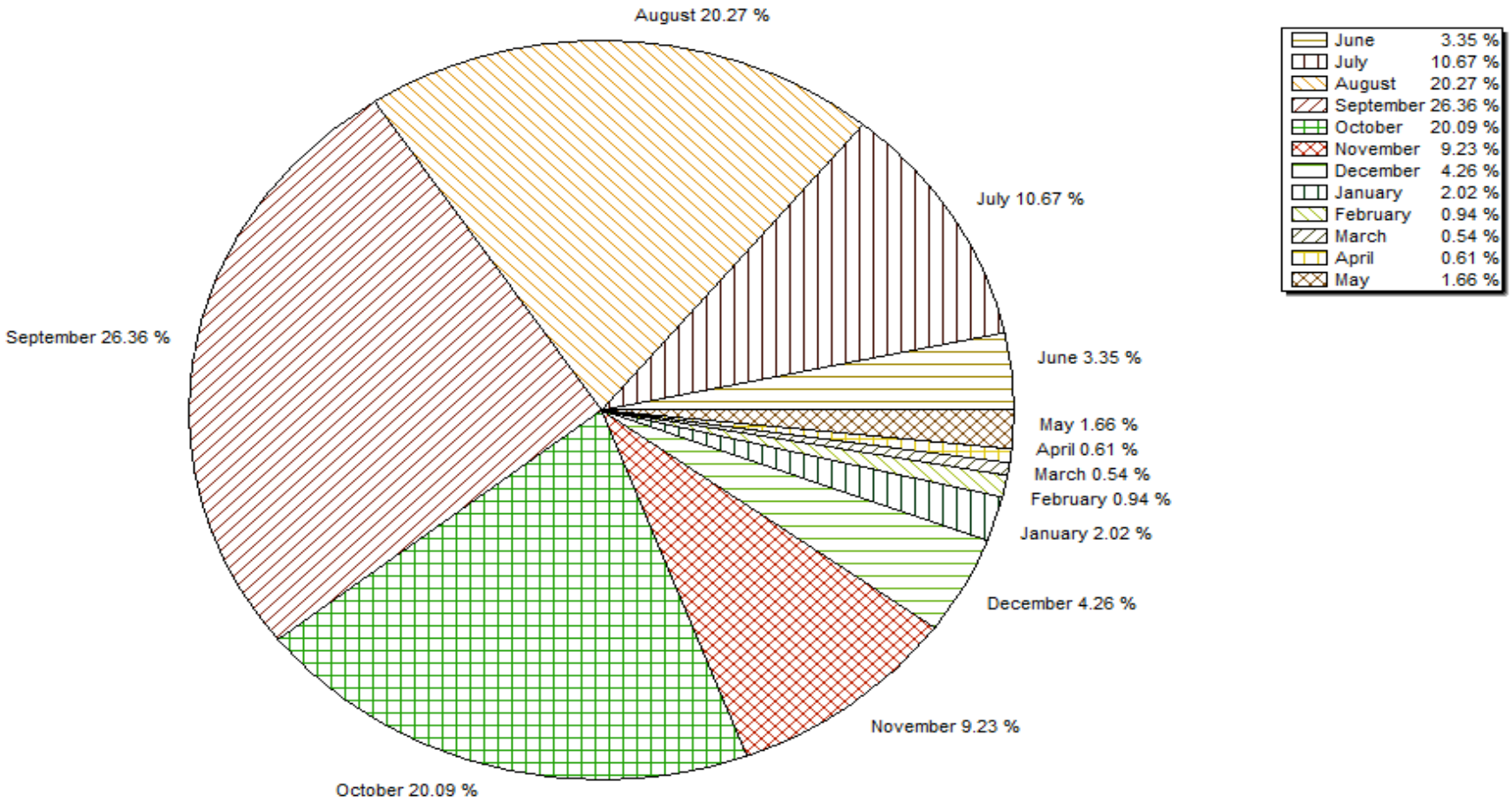
Monthly Average Runoff based on period : 1991-2017

Station Name : SRIKAKULAM (AN000Y2)

Local River : Nagavali

Division : E.E., Bhubaneswar

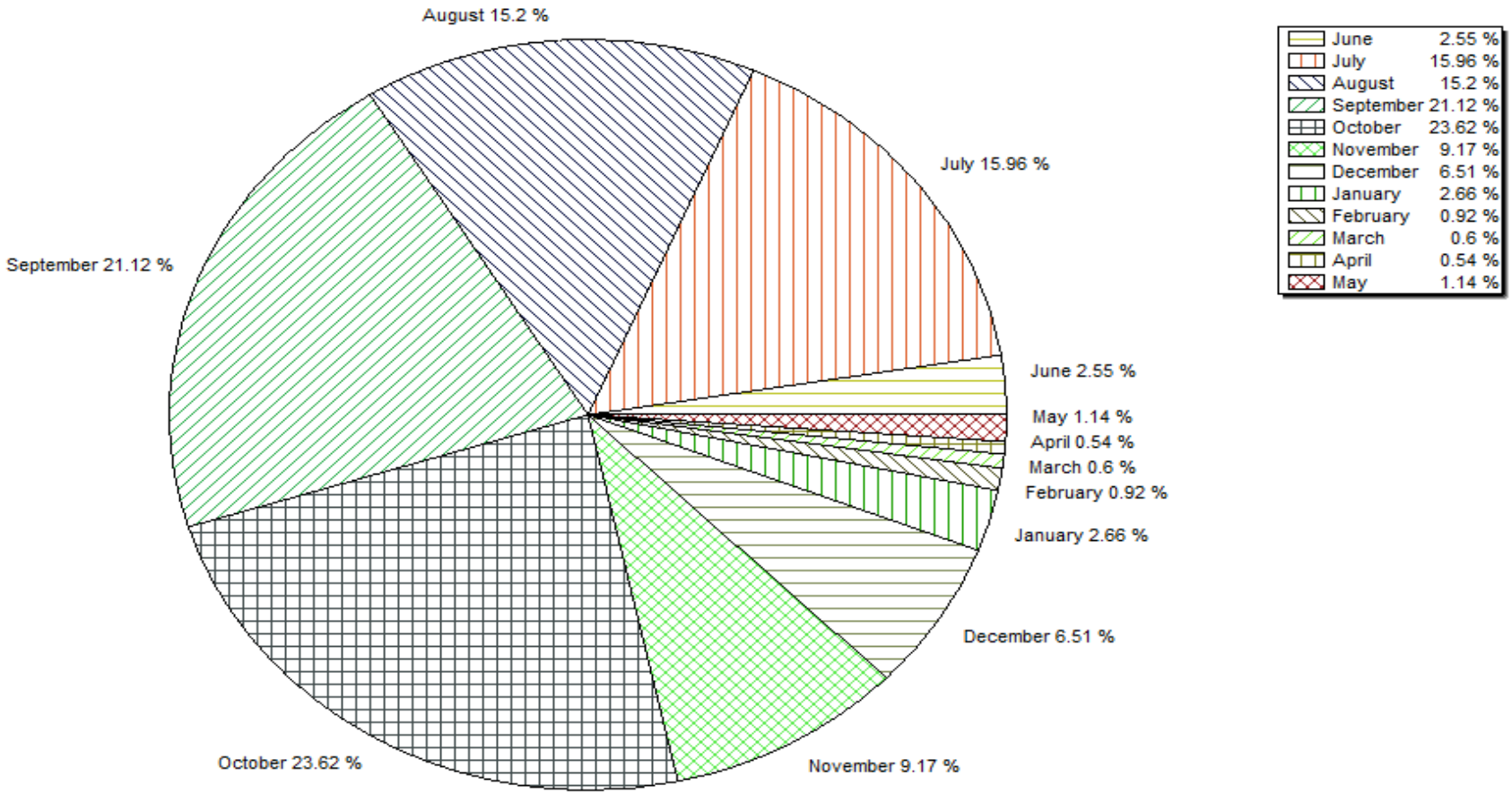
Sub-Division : Behrampur



Monthly Runoff for the Year : 2017-2018

Station Name : SRIKAKULAM (AN000Y2) **Division : E.E., Bhubaneswar**

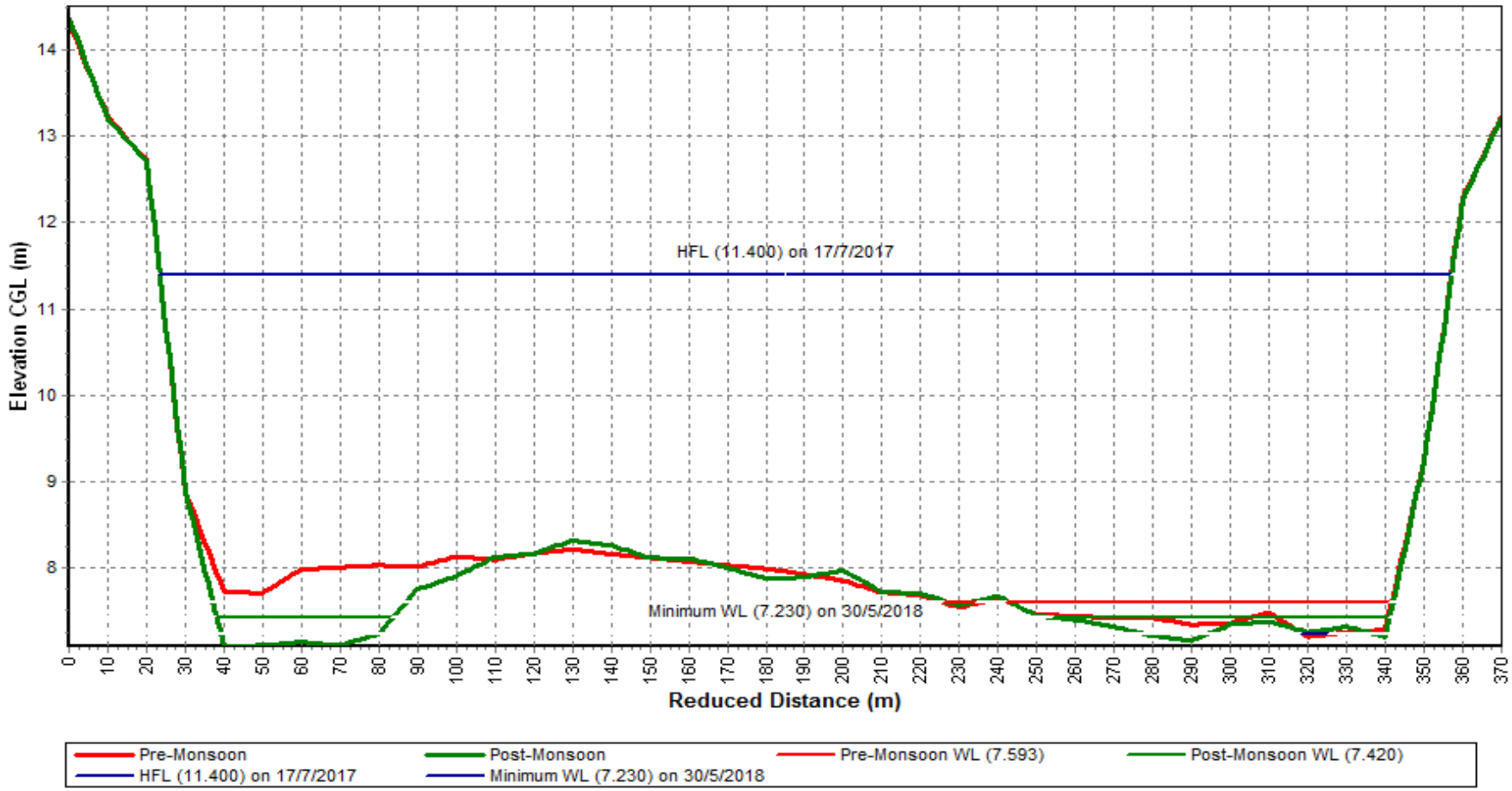
Local River : Nagavali **Sub-Division : Behrampur**



Pre-Monsoon & Post-Monsoon X-Section for Water Year : 2017-2018

Station Name : SRIKAKULAM (AN000Y2) **Division : E.E., Bhubaneswar**

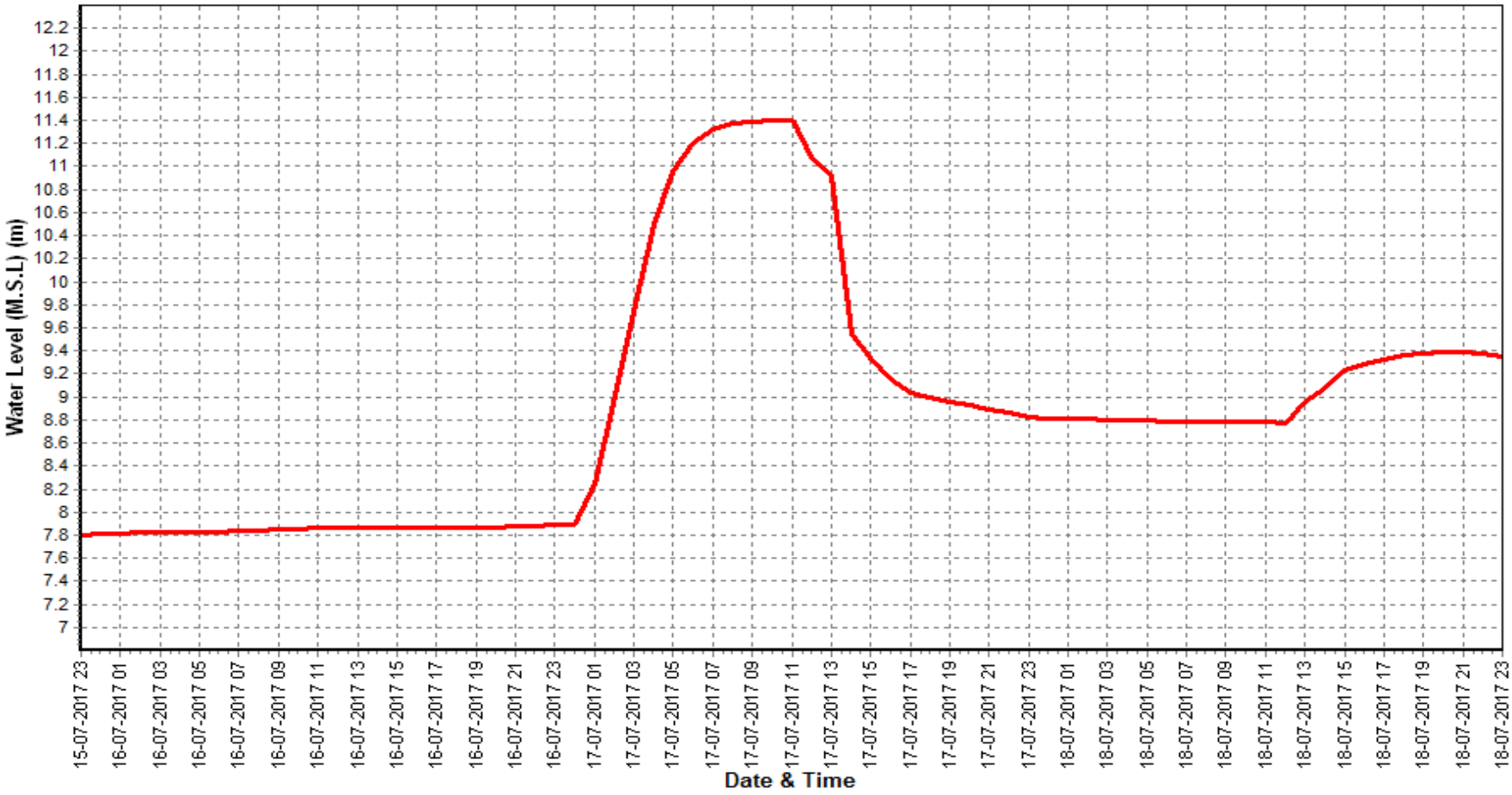
Local River : Nagavali **Sub-Division : Behrampur**



Water Level vs. Time - Graph of Highest Flood Peak during the Year : 2017-2018

Station Name : SRIKAKULAM (AN000Y2) **Division : E.E., Bhubaneswar**

Local River : Nagavali **Sub-Division : Behrampur**

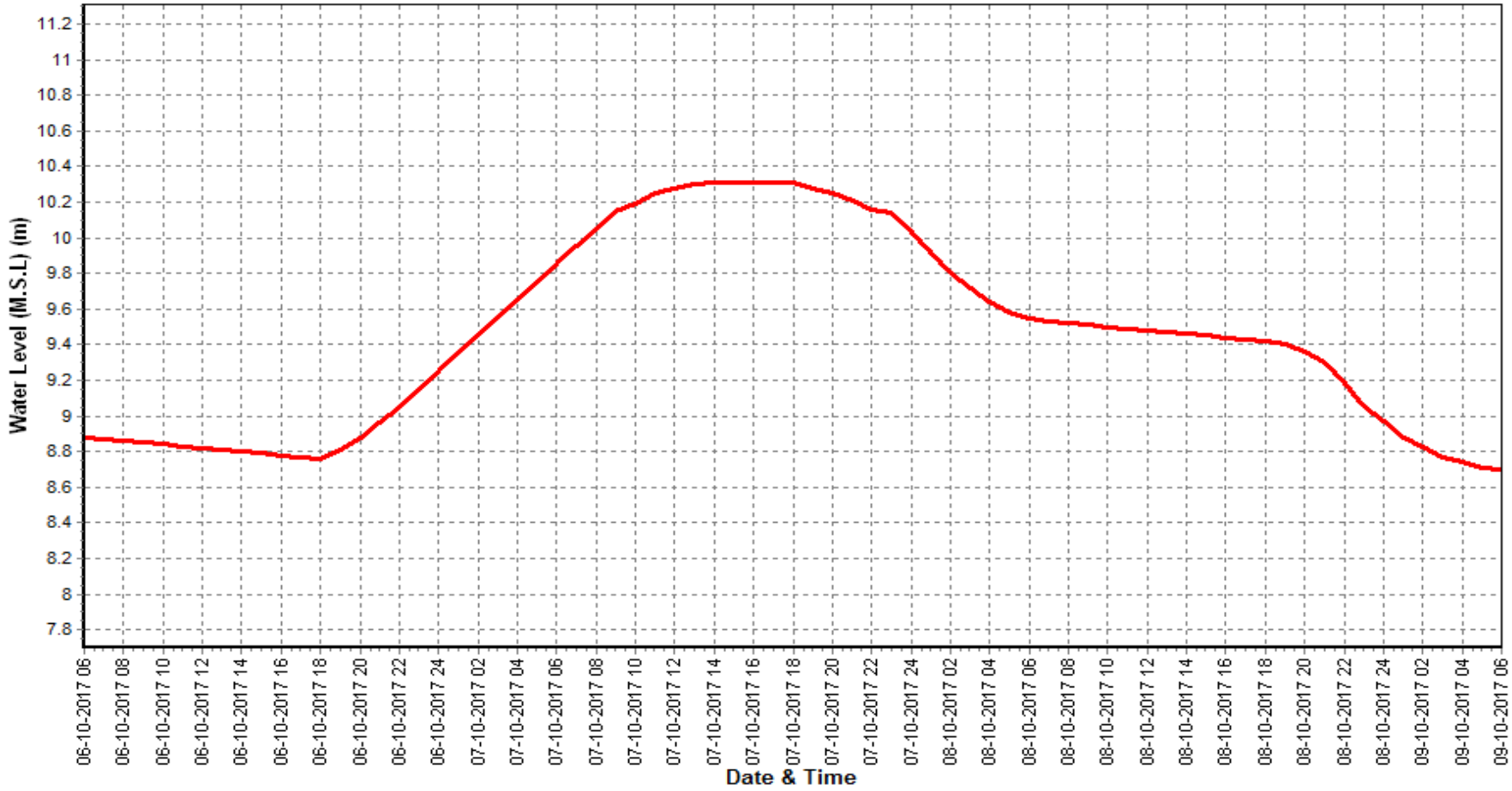


Time Span: 72 Hrs

Water Level vs. Time - Graph of 2nd Highest Flood Peak during the Year : 2017-2018

Station Name : SRIKAKULAM (AN000Y2) **Division : E.E., Bhubaneswar**

Local River : Nagavali **Sub-Division : Behrampur**

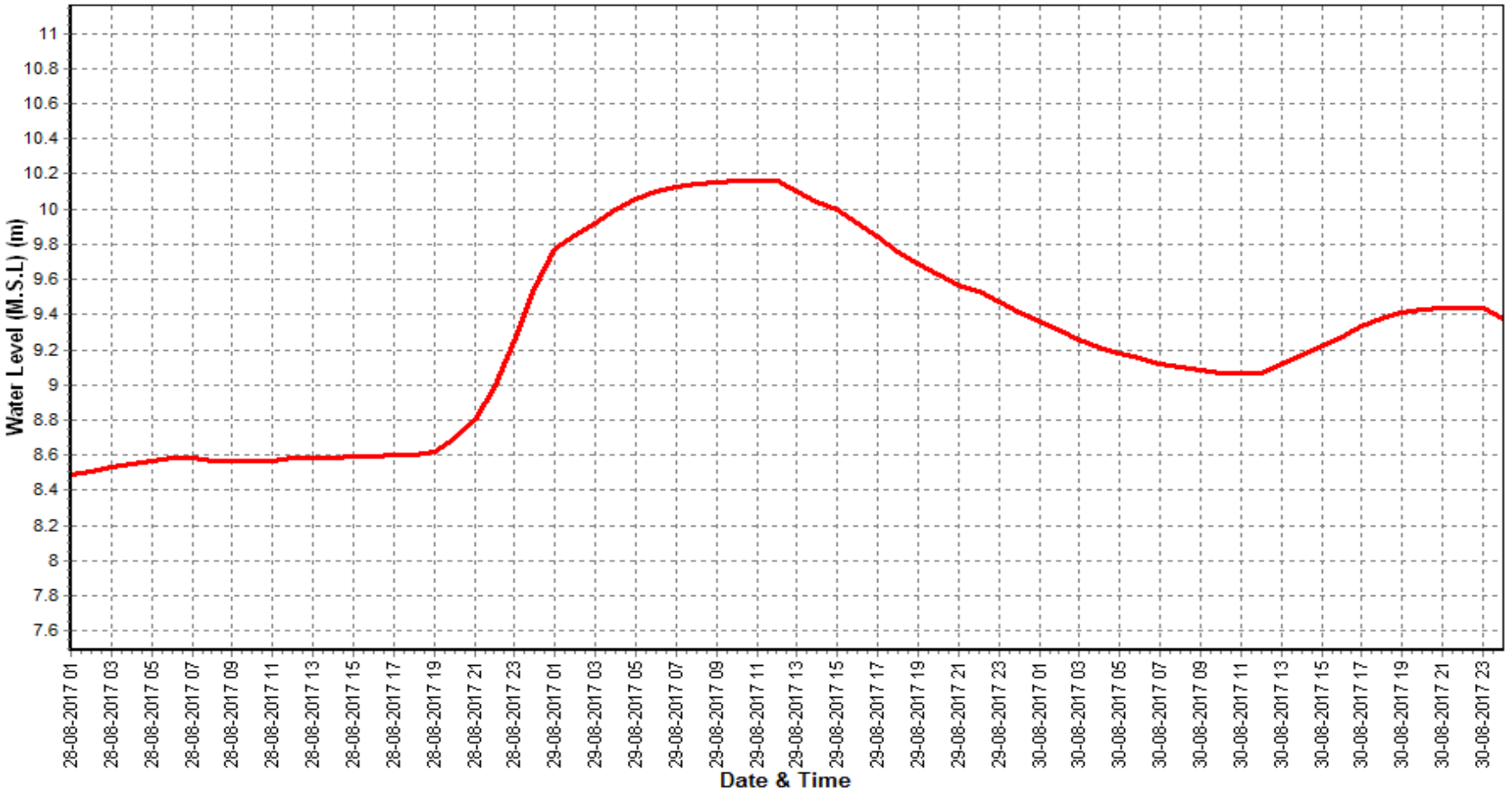


Time Span: 72 Hrs

Water Level vs. Time - Graph of 3rd Highest Flood Peak during the Year : 2017-2018

Station Name : SRIKAKULAM (AN000Y2) **Division : E.E., Bhubaneswar**

Local River : Nagavali **Sub-Division : Behrampur**



Time Span: 72 Hrs

Daily Observed Sediment Datasheet for period : 2017-2018

Station Name : SRIKAKULAM (AN000Y2) **Division : E.E., Bhubaneswar**

Local River : Nagavali **Sub-Division : Behrampur**

Day	Jun						Jul						Aug					
	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day
1	2.704	0.000	0.000	0.000	0.000	0	20.51	0.000	0.000	0.029	0.029	52	21.89	0.000	0.000	0.080	0.080	151
2	2.593	0.000	0.000	0.000	0.000	0	20.56	0.000	0.000	0.000	0.000	0	21.74	0.000	0.000	0.067	0.067	127
3	2.685	0.000	0.000	0.000	0.000	0	20.42	0.000	0.000	0.047	0.047	82	18.65	0.000	0.000	0.091	0.091	147
4	2.514	0.000	0.000	0.000	0.000	0	21.03	0.000	0.000	0.030	0.030	55	25.76	0.000	0.000	0.141	0.141	314
5	2.529	0.000	0.000	0.000	0.000	0	21.56	0.000	0.000	0.050	0.050	92	32.72	0.000	0.000	0.087	0.087	245
6	2.341	0.000	0.000	0.000	0.000	0	22.99	0.000	0.000	0.050	0.050	99	34.26	0.000	0.000	0.000	0.000	0
7	2.330	0.000	0.000	0.000	0.000	0	21.70	0.000	0.000	0.040	0.040	74	33.49	0.000	0.000	0.135	0.135	391
8	2.529	0.000	0.000	0.000	0.000	0	16.50	0.000	0.000	0.062	0.062	88	30.71	0.000	0.000	0.107	0.107	283
9	2.532	0.000	0.000	0.000	0.000	0	15.73	0.000	0.000	0.000	0.000	0	29.26	0.000	0.000	0.015	0.015	39
10	3.426	0.000	0.000	0.000	0.000	0	14.58	0.000	0.000	0.062	0.062	78	33.56	0.000	0.000	0.015	0.015	44
11	3.426	0.000	0.000	0.000	0.000	0	15.53	0.000	0.000	0.069	0.069	93	58.39	0.000	0.000	0.000	0.000	0
12	4.049	0.000	0.000	0.000	0.000	0	13.86	0.000	0.000	0.083	0.083	99	46.40	0.000	0.000	0.000	0.000	0
13	32.38	0.000	0.000	0.031	0.031	86	11.10	0.000	0.000	0.071	0.071	68	38.50	0.000	0.000	0.739	0.739	2459
14		0.000	0.000	0.087	0.087		11.00	0.000	0.000	0.045	0.045	43	64.16	0.000	0.000	0.082	0.082	455
15	73.40	0.000	0.000	0.036	0.036	226	16.88	0.000	0.000	0.018	0.018	27	103.5	0.000	0.000	0.037	0.037	333
16	35.55	0.000	0.000	0.026	0.026	80	58.39	0.000	0.000	0.000	0.000	0	90.59	0.000	0.000	0.032	0.032	253
17	31.61	0.000	0.000	0.041	0.041	111	1191	0.054	0.069	1.345	1.468	151061	92.12	0.000	0.000	0.000	0.000	0
18	22.00	0.000	0.000	0.000	0.000	0	244.4	0.051	0.028	0.977	1.055	22286	95.24	0.000	0.000	0.024	0.024	200
19	33.76	0.000	0.000	0.136	0.136	398	384.0	0.033	0.057	0.557	0.647	21473	114.2	0.105	0.038	0.000	0.143	1410
20	29.39	0.000	0.000	0.204	0.204	518	428.7	0.057	0.009	0.213	0.280	10356	121.5	0.000	0.000	0.024	0.024	249
21	28.27	0.000	0.000	0.188	0.188	458	131.9	0.153	0.128	0.142	0.423	4819	153.2	0.070	0.051	0.077	0.198	2620
22	27.45	0.000	0.000	0.014	0.014	33	121.7	0.093	0.025	0.127	0.244	2567	126.6	0.058	0.054	0.101	0.213	2332
23	26.44	0.000	0.000	0.032	0.032	72	110.6	0.000	0.000	0.000	0.000	0	89.66	0.000	0.000	0.170	0.170	1317
24	25.67	0.000	0.000	0.024	0.024	53	158.4	0.042	0.071	0.130	0.243	3320	96.72	0.000	0.000	0.000	0.000	0
25	25.66	0.000	0.000	0.000	0.000	0	130.8	0.141	0.040	0.146	0.328	3703	82.25	0.000	0.000	0.234	0.234	1661
26	25.66	0.000	0.000	0.000	0.000	0	54.69	0.000	0.000	0.293	0.293	1383	144.7	0.037	0.034	0.296	0.368	4595
27	27.69	0.000	0.000	0.017	0.017	40	50.10	0.000	0.000	0.117	0.117	508	142.0	0.000	0.000	0.000	0.000	0
28	23.50	0.000	0.000	0.014	0.014	28	27.16	0.000	0.000	0.098	0.098	231	147.4	0.059	0.024	0.020	0.102	1304
29	21.43	0.000	0.000	0.011	0.011	21	18.10	0.000	0.000	0.154	0.154	241	613.8	0.224	0.176	0.231	0.631	33474
30	20.77	0.000	0.000	0.011	0.011	20	11.05	0.000	0.000	0.000	0.000	0	277.8	0.060	0.099	0.069	0.227	5458
31							16.69	0.000	0.000	0.058	0.058	83	259.0	0.025	0.087	0.068	0.180	4037
Ten Daily Mean																		
Ten Daily I	2.618	0.000	0.000	0.000	0.000	0	19.56	0.000	0.000	0.037	0.037	62	28.20	0.000	0.000	0.074	0.074	174
Ten Daily II	29.51	0.000	0.000	0.056	0.056	158	237.5	0.019	0.016	0.338	0.374	20551	82.46	0.010	0.004	0.094	0.108	536
Ten Daily III	25.25	0.000	0.000	0.031	0.031	73	75.56	0.039	0.024	0.115	0.178	1532	193.9	0.048	0.048	0.115	0.211	5163
Monthly Total						2146						222982						63899

Annual Sediment Load (Metric Tonnes) : 530480

Daily Observed Sediment Datasheet for period : 2017-2018

Station Name : SRIKAKULAM (AN000Y2) **Division : E.E., Bhubaneswar**

Local River : Nagavali **Sub-Division : Behrampur**

Day	Sep						Oct						Nov					
	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day
1	266.0	0.133	0.080	0.216	0.430	9882	123.9	0.000	0.000	0.000	0.000	0	53.02	0.000	0.000	0.064	0.064	293
2	166.2	0.000	0.000	0.000	0.000	0	142.2	0.000	0.000	0.000	0.000	0	50.84	0.000	0.000	0.120	0.120	525
3	145.9	0.000	0.000	0.000	0.000	0	142.4	0.362	0.345	0.071	0.778	9575	48.74	0.000	0.000	0.062	0.062	261
4	150.8	0.067	0.017	0.163	0.247	3223	126.9	0.219	0.129	0.046	0.394	4319	43.61	0.000	0.000	0.000	0.000	0
5	116.0	0.031	0.015	0.168	0.213	2136	266.7	0.292	0.168	0.049	0.509	11718	43.61	0.000	0.000	0.000	0.000	0
6	77.33	0.000	0.000	0.036	0.036	243	241.7	0.137	0.098	0.045	0.279	5821	43.24	0.000	0.000	0.053	0.053	196
7	74.17	0.000	0.000	0.034	0.034	220	628.3	0.506	0.608	0.150	1.264	68622	36.53	0.000	0.000	0.043	0.043	135
8	68.09	0.000	0.000	0.056	0.056	332	449.9	0.000	0.000	0.000	0.000	0	26.57	0.000	0.000	0.216	0.216	497
9	78.78	0.000	0.000	0.075	0.075	512	196.7	0.104	0.147	0.071	0.322	5475	27.71	0.000	0.000	0.089	0.089	213
10	114.1	0.000	0.000	0.000	0.000	0	193.0	0.134	0.122	0.040	0.297	4945	22.48	0.000	0.000	0.064	0.064	125
11	103.1	0.036	0.039	0.045	0.120	1072	185.1	0.133	0.028	0.068	0.228	3653	20.03	0.000	0.000	0.029	0.029	50
12	77.14	0.000	0.000	0.061	0.061	405	187.1	0.146	0.075	0.065	0.286	4620	19.51	0.000	0.000	0.000	0.000	0
13	69.86	0.000	0.000	0.049	0.049	296	203.0	0.108	0.045	0.004	0.157	2755	18.99	0.000	0.000	0.024	0.024	40
14	125.2	0.070	0.094	0.023	0.187	2018	183.8	0.050	0.019	0.006	0.075	1186	18.27	0.000	0.000	0.028	0.028	44
15	176.7	0.081	0.094	0.071	0.246	3749	95.96	0.000	0.000	0.000	0.000	0	21.25	0.000	0.000	0.029	0.029	53
16	189.3	0.228	0.135	0.061	0.424	6937	68.83	0.000	0.000	0.011	0.011	62	68.37	0.000	0.000	0.014	0.014	84
17	150.0	0.000	0.000	0.000	0.000	0	63.29	0.000	0.000	0.100	0.100	549	86.88	0.000	0.000	0.027	0.027	205
18	344.2	0.248	0.128	0.085	0.460	13693	123.0	0.128	0.110	0.078	0.316	3356	86.74	0.000	0.000	0.093	0.093	694
19	215.8	0.127	0.082	0.078	0.286	5335	117.2	0.000	0.000	0.000	0.000	0	126.3	0.000	0.000	0.000	0.000	0
20	164.5	0.097	0.076	0.077	0.250	3559	179.5	0.092	0.118	0.170	0.380	5892	121.9	0.000	0.000	0.054	0.054	573
21	140.8	0.123	0.137	0.054	0.314	3822	191.8	0.141	0.135	0.011	0.287	4751	161.6	0.000	0.000	0.044	0.044	617
22	213.9	0.162	0.200	0.055	0.417	7700	124.1	0.165	0.077	0.016	0.258	2767	182.7	0.000	0.000	0.071	0.071	1126
23	178.2	0.134	0.120	0.056	0.310	4777	81.88	0.000	0.000	0.041	0.041	289	128.0	0.000	0.000	0.055	0.055	610
24	127.1	0.130	0.097	0.033	0.260	2856	71.38	0.000	0.000	0.008	0.008	52	75.42	0.000	0.000	0.006	0.006	40
25	157.0	0.062	0.105	0.153	0.320	4339	150.1	0.054	0.060	0.003	0.117	1517	57.65	0.000	0.000	0.002	0.002	9
26	144.1	0.157	0.122	0.064	0.343	4273	119.3	0.093	0.138	0.015	0.245	2529	54.25	0.000	0.000	0.000	0.000	0
27	202.3	0.049	0.054	0.037	0.139	2431	113.1	0.079	0.088	0.005	0.172	1682	88.72	0.000	0.000	0.010	0.010	77
28	193.6	0.107	0.121	0.054	0.282	4711	78.45	0.000	0.000	0.011	0.011	77	70.22	0.000	0.000	0.001	0.001	8
29	134.9	0.000	0.000	0.000	0.000	0	69.49	0.000	0.000	0.000	0.000	0	83.45	0.000	0.000	0.001	0.001	9
30	134.9	0.000	0.000	0.000	0.000	0	63.51	0.000	0.000	0.019	0.019	105	70.48	0.000	0.000	0.003	0.003	16
31							58.75	0.000	0.000	0.008	0.008	39						
Ten Daily Mean																		
Ten Daily I	125.7	0.023	0.011	0.075	0.109	1655	251.2	0.175	0.162	0.047	0.384	11048	39.63	0.000	0.000	0.071	0.071	225
Ten Daily II	161.6	0.089	0.065	0.055	0.208	3706	140.7	0.066	0.039	0.050	0.155	2207	58.82	0.000	0.000	0.030	0.030	174
Ten Daily III	162.7	0.093	0.095	0.051	0.239	3491	102.0	0.048	0.045	0.013	0.106	1255	97.25	0.000	0.000	0.019	0.019	251
Monthly Total						88523						146358						6500

Annual Sediment Load (Metric Tonnes) : 530480

Daily Observed Sediment Datasheet for period : 2017-2018

Station Name : SRIKAKULAM (AN000Y2) **Division : E.E., Bhubaneswar**

Local River : Nagavali **Sub-Division : Behrampur**

Day	Dec						Jan						Feb					
	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day
1	59.71	0.000	0.000	0.004	0.004	23	26.15	0.000	0.000	0.000	0.000	0	18.10	0.000	0.000	0.001	0.001	2
2	65.58	0.000	0.000	0.000	0.000	0	27.00	0.000	0.000	0.000	0.000	0	17.88	0.000	0.000	0.000	0.000	0
3	65.58	0.000	0.000	0.000	0.000	0	18.54	0.000	0.000	0.000	0.000	0	15.19	0.000	0.000	0.000	0.000	0
4	65.58	0.000	0.000	0.005	0.005	27	15.51	0.000	0.000	0.000	0.000	0	20.59	0.000	0.000	0.000	0.000	0
5	64.78	0.000	0.000	0.000	0.000	0	14.62	0.000	0.000	0.000	0.000	0	13.11	0.000	0.000	0.002	0.002	2
6	64.57	0.000	0.000	0.000	0.000	0	14.69	0.000	0.000	0.000	0.000	0	13.53	0.000	0.000	0.000	0.000	0
7	52.55	0.000	0.000	0.000	0.000	0	13.94	0.000	0.000	0.000	0.000	0	6.905	0.000	0.000	0.000	0.000	0
8	51.86	0.000	0.000	0.000	0.000	0	30.29	0.000	0.000	0.001	0.001	3	6.512	0.000	0.000	0.000	0.000	0
9	69.35	0.000	0.000	0.000	0.000	0	32.91	0.000	0.000	0.000	0.000	0	5.889	0.000	0.000	0.000	0.000	0
10	67.47	0.000	0.000	0.000	0.000	0	34.66	0.000	0.000	0.000	0.000	0	5.609	0.000	0.000	0.000	0.000	0
11	68.63	0.000	0.000	0.000	0.000	0	32.12	0.000	0.000	0.000	0.000	0	5.518	0.000	0.000	0.000	0.000	0
12	57.52	0.000	0.000	0.000	0.000	0	30.75	0.000	0.000	0.000	0.000	0	5.591	0.000	0.000	0.001	0.001	1
13	56.32	0.000	0.000	0.000	0.000	0	29.14	0.000	0.000	0.000	0.000	0	5.423	0.000	0.000	0.000	0.000	0
14	56.08	0.000	0.000	0.000	0.000	0	27.59	0.000	0.000	0.000	0.000	0	5.675	0.000	0.000	0.000	0.000	0
15	54.54	0.000	0.000	0.000	0.000	0	26.70	0.000	0.000	0.002	0.002	4	5.742	0.000	0.000	0.000	0.000	0
16	41.43	0.000	0.000	0.000	0.000	0	24.73	0.000	0.000	0.000	0.000	0	3.796	0.000	0.000	0.000	0.000	0
17	40.00	0.000	0.000	0.000	0.000	0	24.58	0.000	0.000	0.000	0.000	0	3.449	0.000	0.000	0.000	0.000	0
18	28.59	0.000	0.000	0.000	0.000	0	21.16	0.000	0.000	0.000	0.000	0	3.251	0.000	0.000	0.000	0.000	0
19	23.81	0.000	0.000	0.000	0.000	0	14.94	0.000	0.000	0.000	0.000	0	3.249	0.000	0.000	0.001	0.001	0
20	20.02	0.000	0.000	0.000	0.000	0	14.25	0.000	0.000	0.000	0.000	0	3.145	0.000	0.000	0.000	0.000	0
21	12.92	0.000	0.000	0.000	0.000	0	13.69	0.000	0.000	0.000	0.000	0	3.168	0.000	0.000	0.000	0.000	0
22	43.59	0.000	0.000	0.000	0.000	0	13.69	0.000	0.000	0.001	0.001	2	3.042	0.000	0.000	0.000	0.000	0
23	46.51	0.000	0.000	0.000	0.000	0	13.28	0.000	0.000	0.000	0.000	0	3.100	0.000	0.000	0.000	0.000	0
24	40.63	0.000	0.000	0.000	0.000	0	12.87	0.000	0.000	0.000	0.000	0	3.050	0.000	0.000	0.000	0.000	0
25	36.22	0.000	0.000	0.000	0.000	0	12.02	0.000	0.000	0.000	0.000	0	3.113	0.000	0.000	0.000	0.000	0
26	12.42	0.000	0.000	0.000	0.000	0	8.941	0.000	0.000	0.000	0.000	0	3.113	0.000	0.000	0.001	0.001	0
27	24.46	0.000	0.000	0.000	0.000	0	6.447	0.000	0.000	0.000	0.000	0	3.043	0.000	0.000	0.000	0.000	0
28	21.31	0.000	0.000	0.000	0.000	0	5.107	0.000	0.000	0.000	0.000	0	2.973	0.000	0.000	0.000	0.000	0
29	27.52	0.000	0.000	0.000	0.000	0	5.098	0.000	0.000	0.002	0.002	1						
30	24.44	0.000	0.000	0.000	0.000	0	2.463	0.000	0.000	0.000	0.000	0						
31	24.45	0.000	0.000	0.000	0.000	0	2.380	0.000	0.000	0.000	0.000	0						
Ten Daily Mean																		
Ten Daily I	62.70	0.000	0.000	0.001	0.001	5	22.83	0.000	0.000	0.000	0.000	0	12.33	0.000	0.000	0.000	0.000	0
Ten Daily II	44.70	0.000	0.000	0.000	0.000	0	24.60	0.000	0.000	0.000	0.000	0	4.484	0.000	0.000	0.000	0.000	0
Ten Daily III	28.59	0.000	0.000	0.000	0.000	0	8.727	0.000	0.000	0.000	0.000	0	3.075	0.000	0.000	0.000	0.000	0
Monthly Total						50						10						5

Annual Sediment Load (Metric Tonnes) : 530480

Daily Observed Sediment Datasheet for period : 2017-2018

Station Name : SRIKAKULAM (AN000Y2) **Division : E.E., Bhubaneswar**

Local River : Nagavali **Sub-Division : Behrampur**

Day	Mar						Apr						May					
	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day	Q cumecs.	Coarse g/l	Medium g/l	Fine g/l	Total g/l	Total M.T./day
1	2.966	0.000	0.000	0.002	0.002	0	4.500	0.000	0.000	0.000	0.000	0	3.208	0.000	0.000	0.001	0.001	0
2	2.967	0.000	0.000	0.000	0.000	0	12.20	0.000	0.000	0.002	0.002	2	24.18	0.000	0.000	0.000	0.000	0
3	2.659	0.000	0.000	0.000	0.000	0	8.552	0.000	0.000	0.000	0.000	0	21.73	0.000	0.000	0.000	0.000	0
4	5.701	0.000	0.000	0.000	0.000	0	6.480	0.000	0.000	0.000	0.000	0	27.35	0.000	0.000	0.000	0.000	0
5	5.397	0.000	0.000	0.002	0.002	1	6.345	0.000	0.000	0.000	0.000	0	24.58	0.000	0.000	0.000	0.000	0
6	4.945	0.000	0.000	0.000	0.000	0	4.361	0.000	0.000	0.000	0.000	0	18.32	0.000	0.000	0.000	0.000	0
7	3.951	0.000	0.000	0.000	0.000	0	4.231	0.000	0.000	0.000	0.000	0	13.55	0.000	0.000	0.001	0.001	1
8	3.862	0.000	0.000	0.000	0.000	0	4.209	0.000	0.000	0.000	0.000	0	13.45	0.000	0.000	0.000	0.000	0
9	3.818	0.000	0.000	0.000	0.000	0	4.101	0.000	0.000	0.002	0.002	1	12.39	0.000	0.000	0.000	0.000	0
10	3.605	0.000	0.000	0.000	0.000	0	4.092	0.000	0.000	0.000	0.000	0	7.460	0.000	0.000	0.000	0.000	0
11	3.392	0.000	0.000	0.002	0.002	1	3.841	0.000	0.000	0.000	0.000	0	7.210	0.000	0.000	0.000	0.000	0
12	2.968	0.000	0.000	0.000	0.000	0	3.305	0.000	0.000	0.000	0.000	0	7.275	0.000	0.000	0.000	0.000	0
13	2.779	0.000	0.000	0.000	0.000	0	3.462	0.000	0.000	0.000	0.000	0	7.020	0.000	0.000	0.000	0.000	0
14	2.669	0.000	0.000	0.000	0.000	0	3.248	0.000	0.000	0.000	0.000	0	7.062	0.000	0.000	0.001	0.001	1
15	2.530	0.000	0.000	0.000	0.000	0	3.024	0.000	0.000	0.000	0.000	0	6.633	0.000	0.000	0.000	0.000	0
16	2.899	0.000	0.000	0.000	0.000	0	2.796	0.000	0.000	0.001	0.001	0	6.504	0.000	0.000	0.000	0.000	0
17	3.089	0.000	0.000	0.000	0.000	0	2.335	0.000	0.000	0.000	0.000	0	5.293	0.000	0.000	0.000	0.000	0
18	4.000	0.000	0.000	0.000	0.000	0	2.302	0.000	0.000	0.000	0.000	0	5.066	0.000	0.000	0.000	0.000	0
19	4.773	0.000	0.000	0.002	0.002	1	2.263	0.000	0.000	0.000	0.000	0	4.769	0.000	0.000	0.000	0.000	0
20	4.714	0.000	0.000	0.000	0.000	0	2.270	0.000	0.000	0.000	0.000	0	4.768	0.000	0.000	0.000	0.000	0
21	3.000	0.000	0.000	0.000	0.000	0	1.943	0.000	0.000	0.000	0.000	0	2.658	0.000	0.000	0.001	0.001	0
22	4.222	0.000	0.000	0.000	0.000	0	1.950	0.000	0.000	0.000	0.000	0	2.620	0.000	0.000	0.000	0.000	0
23	4.269	0.000	0.000	0.000	0.000	0	3.883	0.000	0.000	0.002	0.002	1	2.354	0.000	0.000	0.000	0.000	0
24	3.919	0.000	0.000	0.000	0.000	0	3.737	0.000	0.000	0.000	0.000	0	2.279	0.000	0.000	0.000	0.000	0
25	3.704	0.000	0.000	0.000	0.000	0	4.217	0.000	0.000	0.000	0.000	0	2.076	0.000	0.000	0.000	0.000	0
26	7.618	0.000	0.000	0.002	0.002	1	3.782	0.000	0.000	0.000	0.000	0	1.876	0.000	0.000	0.000	0.000	0
27	7.223	0.000	0.000	0.000	0.000	0	3.548	0.000	0.000	0.000	0.000	0	1.828	0.000	0.000	0.000	0.000	0
28	5.510	0.000	0.000	0.000	0.000	0	3.375	0.000	0.000	0.000	0.000	0	1.547	0.000	0.000	0.000	0.000	0
29	4.577	0.000	0.000	0.000	0.000	0	3.377	0.000	0.000	0.000	0.000	0	1.391	0.000	0.000	0.000	0.000	0
30	4.577	0.000	0.000	0.000	0.000	0	3.208	0.000	0.000	0.000	0.000	0	1.007	0.000	0.000	0.000	0.000	0
31	4.609	0.000	0.000	0.000	0.000	0							0.894	0.000	0.000	0.000	0.000	0
Ten Daily Mean																		
Ten Daily I	3.987	0.000	0.000	0.000	0.000	0	5.907	0.000	0.000	0.000	0.000	0	16.62	0.000	0.000	0.000	0.000	0
Ten Daily II	3.381	0.000	0.000	0.000	0.000	0	2.885	0.000	0.000	0.000	0.000	0	6.160	0.000	0.000	0.000	0.000	0
Ten Daily III	4.839	0.000	0.000	0.000	0.000	0	3.302	0.000	0.000	0.000	0.000	0	1.866	0.000	0.000	0.000	0.000	0
Monthly																		
Total						3						3						2

Annual Sediment Load (Metric Tonnes) : 530480

Annual Sediment Load for period : 2002-2018

Station Name : SRIKAKULAM (AN000Y2) **Division : E.E., Bhubaneswar**

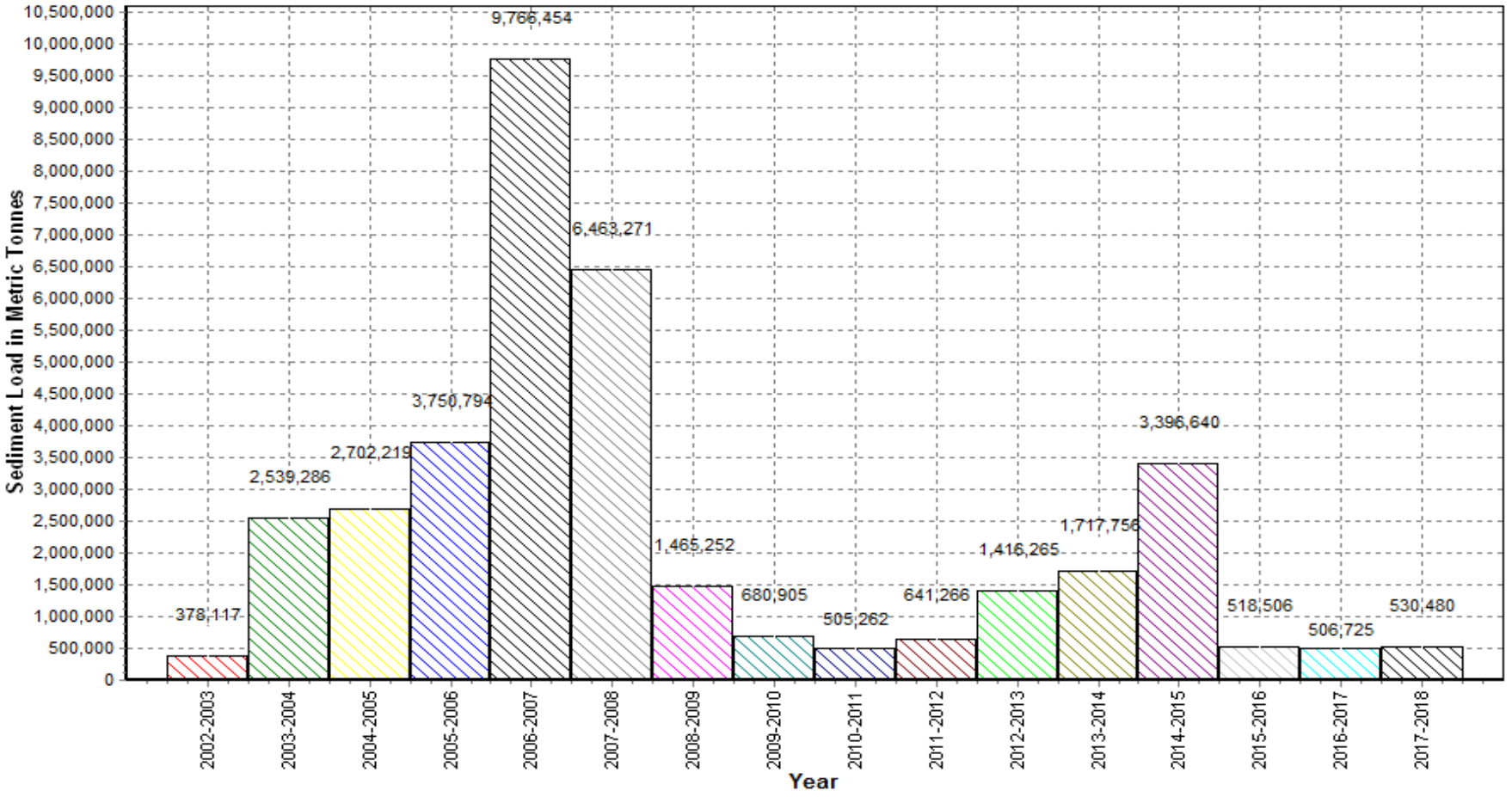
Local River : Nagavali **Sub-Division : Behrampur**

Year	Monsoon (M.T.)	Non-Monsoon (M.T.)	Annual Load (M.T.)	Annual Run Off (MCM)
2002-2003	375944	2174	378117	550
2003-2004	2412284	127002	2539286	2365
2004-2005	2685839	16379	2702219	1741
2005-2006	3742198	8596	3750794	1918
2006-2007	9674341	92114	9766454	4665
2007-2008	6430165	33106	6463271	3760
2008-2009	1429168	36085	1465252	2782
2009-2010	675387	5518	680905	2157
2010-2011	503206	2055	505262	5907
2011-2012	639727	1539	641266	1724
2012-2013	1413063	3202	1416265	2595
2013-2014	1688300	29456	1717756	3535
2014-2015	3379522	17118	3396640	4070
2015-2016	516720	1785	518506	1231
2016-2017	506725	0	506725	1728
2017-2018	530406	74	530480	1843

Annual Sediment Load for the period: 2002-2018

Station Name : SRIKAKULAM (AN000Y2) **Division : E.E., Bhubaneswar**

Local River : Nagavali **Sub-Division : Behrampur**



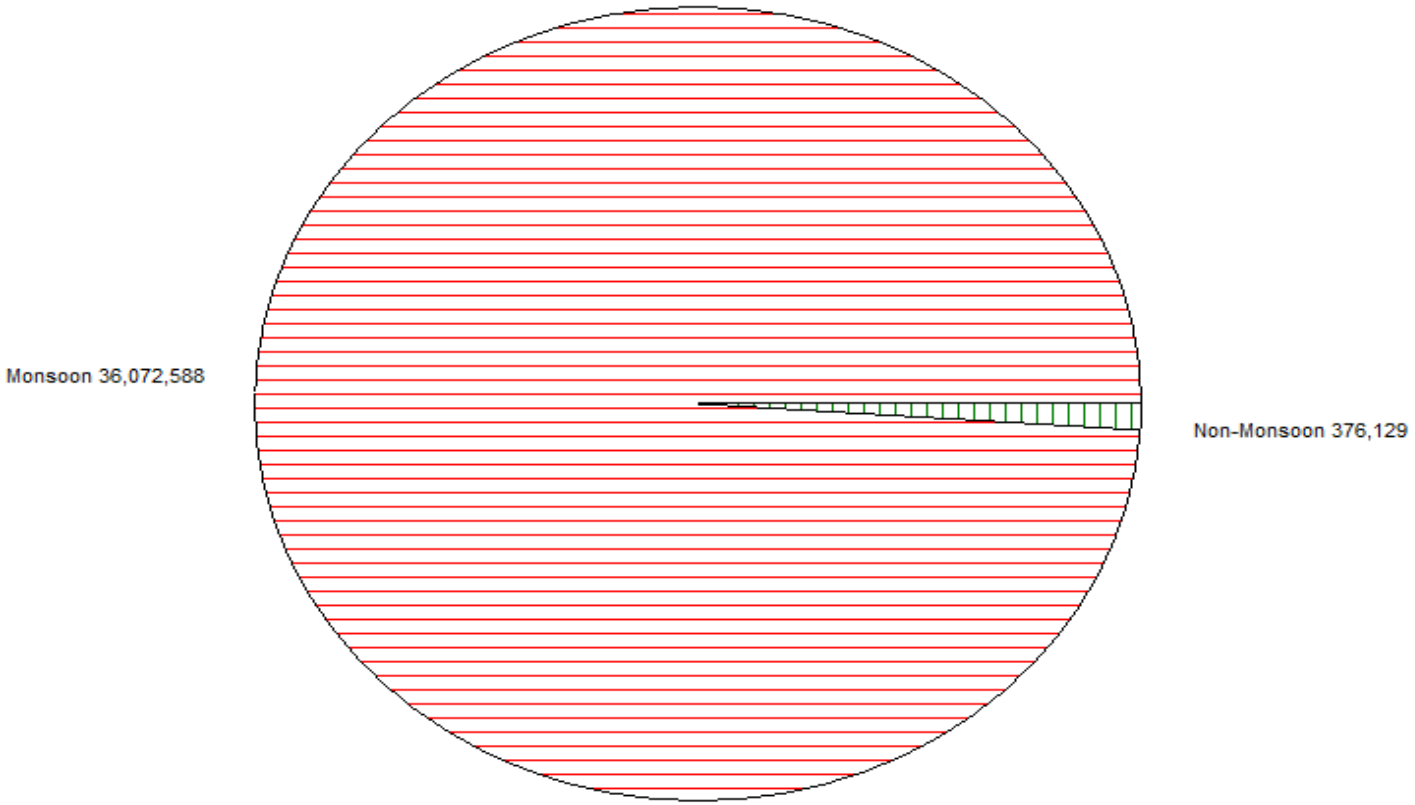
Seasonal Sediment Load for the period : 2002-2017

Station Name : SRIKAKULAM (AN000Y2)

Local River : Nagavali

Division : E.E., Bhubaneswar

Sub-Division : Behrampur



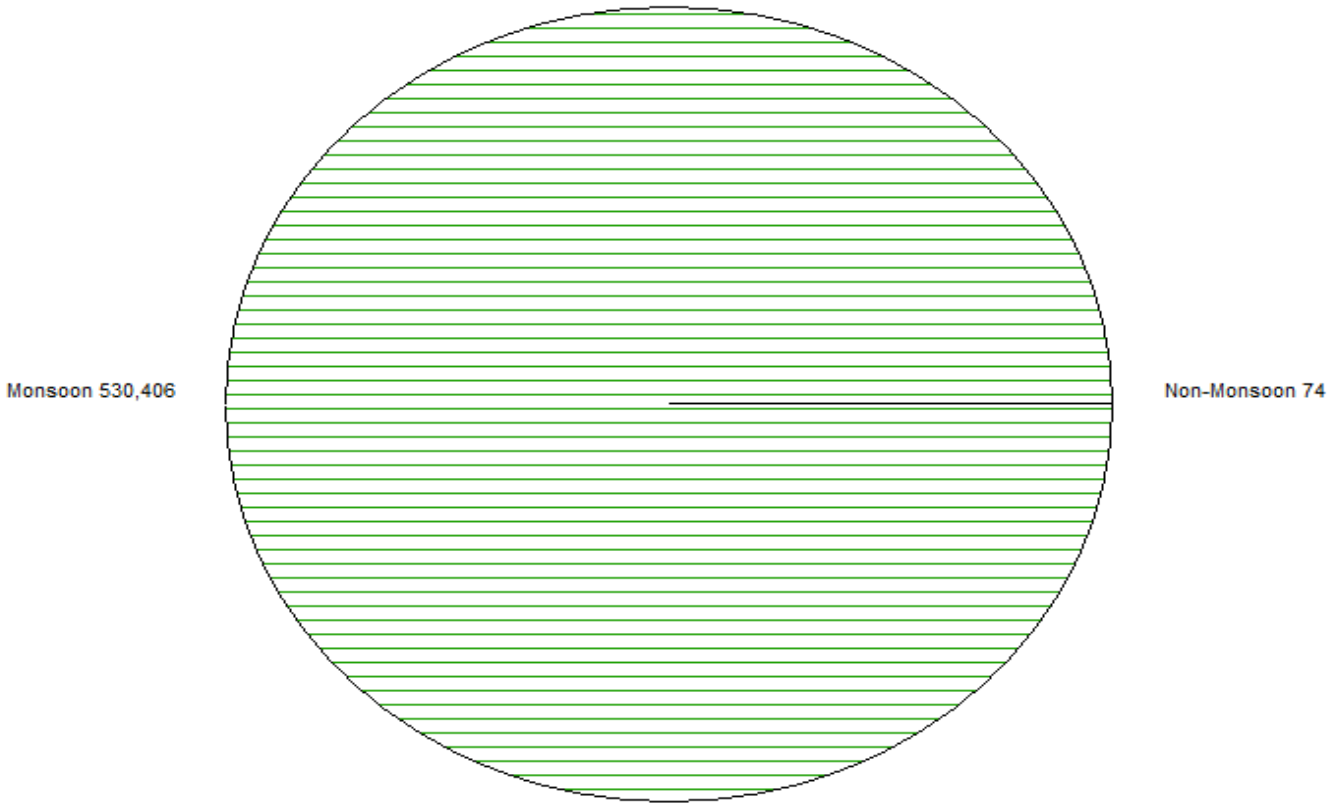
Seasonal Sediment Load for the Year: 2017-2018

Station Name : SRIKAKULAM (AN000Y2)

Local River : Nagavali

Division : E.E., Bhubaneswar

Sub-Division : Behrampur



Water Quality Datasheet for the period : 2017-2018

Station Name : SRIKAKULAM (AN000Y2) **Division : E.E., Bhubaneswar**

Local River : Nagavali **River Water Analysis** **Sub-Division : Behrampur**

S.No	Parameters	01/06/2017	01/07/2017	01/08/2017	01/09/2017	03/10/2017	01/11/2017	01/12/2017	01/01/2018	01/02/2018	01/03/2018	02/04/2018	01/05/2018
		A	A	A	A	A	B	A	A	A	A	B	A
	PHYSICAL												
1	Q (cumec)												
2	Colour_Cod (-)	Clear	Light Brown	Light Brown	Light Brown	Light Brown	Clear	Clear	Clear	Clear	Clear	Clear	Clear
3	EC_FLD (µmho/cm)	505	378	497	169	321	380	325	350	410	485	399	410
4	EC_GEN (µmho/cm)	490	371	493	162	317	374	318	345	401	478	395	400
5	Odour_Code (-)	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free
6	pH_FLD (pH units)	8.3	7.2	7.7	7.4	7.9	7.3	8.0	7.9	8.5	8.3	7.9	7.8
7	pH_GEN (pH units)	8.0	7.1	7.8	7.4	7.8	7.4	7.9	7.9	8.4	8.2	7.8	7.7
8	Temp (deg C)	31.2	26.0	25.0	30.4	28.0	30.1	29.0	22.5	24.8	23.9	28.0	27.0
	CHEMICAL												
1	Alk-Phen (mgCaCO3/L)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.0	0.0	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	157	129	134	92	111	139	115	120	139	166	171	120
3	B (mg/L)	0.02	0.02	0.01	0.02	0.03	0.01	0.01	0.02	0.03	0.02	0.03	0.02
4	Ca (mg/L)	58	51	53	53	35	48	63	48	51	52	43	30
5	Cl (mg/L)	20.8	24.5	11.3	15.1	15.6	19.0	50.7	20.8	17.3	20.8	22.5	22.5
6	CO3 (mg/L)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.4	0.0	0.0	0.0
7	F (mg/L)	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
8	Fe (mg/L)	0.5	0.5	0.4	0.4	0.5	0.5	0.5	0.5	0.4	0.5	0.4	0.5
9	HCO3 (mg/L)	192	158	163	112	135	169	141	147	141	203	209	147
10	K (mg/L)	4.1	3.5	2.8	3.1	3.6	3.8	4.1	4.5	1.3	1.8	1.0	2.8
11	Mg (mg/L)	18.5	15.5	16.5	17.5	14.3	17.5	16.7	15.9	17.5	20.6	14.3	11.1
12	Na (mg/L)	33.5	16.1	26.3	27.8	8.2	8.7	9.1	29.8	31.1	32.4	30.9	23.4
13	NO2+NO3 (mg N/L)	1.20	1.13	1.20	1.12	1.19	1.22	1.25	1.18	1.23	1.21	1.18	1.16
14	NO2-N (mgN/L)	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	NO3-N (mgN/L)	1.19	1.12	1.19	1.12	1.19	1.22	1.25	1.18	1.23	1.21	1.18	1.16
16	P-Tot (mgP/L)	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
17	SiO2 (mg/L)	7.0	8.5	7.0	6.5	6.8	9.3	8.5	7.2	9.7	6.5	7.8	6.3
18	SO4 (mg/L)	33.6	12.1	12.8	2.6	2.4	2.7	2.8	3.0	3.1	13.1	12.1	14.1
	BIOLOGICAL/BACTERIOLOGICAL												
	TRACE & TOXIC												
	CHEMICAL INDICES												
1	HAR_Ca (mgCaCO3/L)	144	128	132	132	88	121	157	121	127	131	108	75
2	HAR_Total (mgCaCO3/L)	221	193	201	205	148	194	226	187	200	217	167	122
3	Na% (%)	24	15	22	23	11	9	8	25	25	24	29	29
4	RSC (-)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
5	SAR (-)	1.0	0.5	0.8	0.8	0.3	0.3	0.3	1.0	1.0	1.0	1.0	0.9
	PESTICIDES												

Water Quality Summary for the period : 2017-2018

Station Name : SRIKAKULAM (AN000Y2) **Division : E.E., Bhubaneswar**

Local River : Nagavali **Sub-Division : Behrampur**

River Water Summary

S.No	Parameters	Number of Observations	Maximum	Minimum	Mean
	PHYSICAL				
1	Q (cumec)				
2	EC_FLD (µmho/cm)	12	505	169	386
3	EC_GEN (µmho/cm)	12	493	162	379
4	pH_FLD (pH units)	12	8.5	7.2	7.8
5	pH_GEN (pH units)	12	8.4	7.1	7.8
6	Temp (deg C)	12	31.2	22.5	27.2
	CHEMICAL				
1	Alk-Phen (mgCaCO3/L)	12	12.0	0.0	1
2	ALK-TOT (mgCaCO3/L)	12	171	92	133
3	B (mg/L)	12	0.03	0.01	0.02
4	Ca (mg/L)	12	63	30	49
5	Cl (mg/L)	12	50.7	11.3	21.7
6	CO3 (mg/L)	12	14.4	0.0	1.2
7	F (mg/L)	12	0.05	0.05	0.05
8	Fe (mg/L)	12	0.5	0.4	0.5
9	HCO3 (mg/L)	12	209	112	160
10	K (mg/L)	12	4.5	1.0	3
11	Mg (mg/L)	12	20.6	11.1	16.3
12	Na (mg/L)	12	33.5	8.2	23.1
13	NO2+NO3 (mg N/L)	12	1.25	1.12	1.19
14	NO2-N (mgN/L)	12	0.01	0.00	0
15	NO3-N (mgN/L)	12	1.25	1.12	1.19
16	P-Tot (mgP/L)	12	0.001	0.001	0.001
17	SiO2 (mg/L)	12	9.7	6.3	7.6
18	SO4 (mg/L)	12	33.6	2.4	9.5
	BIOLOGICAL/BACTERIOLOGICAL				
	TRACE & TOXIC				
	CHEMICAL INDICES				
1	HAR_Ca (mgCaCO3/L)	12	157	75	122
2	HAR_Total (mgCaCO3/L)	12	226	122	190
3	Na% (%)	12	29	8	20
4	RSC (-)	12	0.1	0.0	0
5	SAR (-)	12	1.0	0.3	0.7
	PESTICIDES				

Water Quality Seasonal Average for the period: 2003-2018

Station Name : SRIKAKULAM (AN000Y2) **Division : E.E., Bhubaneswar**

Local River : Nagavali **River Water** **Sub-Division : Behrampur**

S.No	Parameters	Flood																
		Jun - Oct																
		2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2003-2004	2004-2005
	PHYSICAL																	
1	Q (cumec)																	
2	EC_FLD (µmho/cm)	262	330			333		281	355	370	232	291	273	749	302	374	274	365
3	EC_GEN (µmho/cm)	260	328			327		281	357	370	232	291	273	747	307	367	270	350
4	pH_FLD (pH units)	7.3	7.5			7.8		7.5	7.9	8.2	7.7	7.6	7.9	7.5	7.1	7.7	7.5	8.0
5	pH_GEN (pH units)	7.3	7.6			7.8		7.6	7.8	8.2	7.7	7.6	7.9	7.5	7.2	7.6	7.5	8.0
6	Temp (deg C)	31.0	30.5			30.0		26.2	25.7	26.0	29.4	27.4	27.3	28.7	27.0	28.1	26.8	25.8
	CHEMICAL																	
1	Alk-Phen (mgCaCO3/L)					0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		
2	ALK-TOT (mgCaCO3/L)					123		79	104	136	91		104	75	136	125		
3	B (mg/L)	0.00	0.00			0.00		0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.02	0.00	0.00
4	Ca (mg/L)	25	26			33		26	29	29	34	20	27	25	58	50	28	34
5	Cl (mg/L)	24.3	35.0			24.2		25.3	21.0	29.2	23.1	21.7	20.0	16.3	27.0	17.5	21.3	28.2
6	CO3 (mg/L)	0.0	0.0			0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	F (mg/L)	0.02	0.54			0.58		0.03	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.08	0.52
8	Fe (mg/L)	0.1	0.3			0.1		0.0	0.1	0.0		0.4	0.5	0.4	0.8	0.5	0.1	0.2
9	HCO3 (mg/L)	95	135			147		97	146	166	111	100	126	92	165	152	119	163
10	K (mg/L)	2.2	3.1			6.8		3.2	2.4	2.8	4.0	2.0	2.9	3.0	8.3	3.4	2.2	2.4
11	Mg (mg/L)	6.3	9.3			9.8		8.4	16.2	13.1	7.8	6.6	14.5	13.6	20.7	16.5	7.5	11.7
12	Na (mg/L)	17.2	24.3			16.4		17.8	13.4	19.8	18.6	13.2	11.5	8.0	38.1	22.4	14.5	19.3
13	NO2+NO3 (mg N/L)	0.44	0.27			2.04		0.59	2.26	0.36		0.71	0.83	1.15	1.06	1.17	0.64	0.06
14	NO2-N (mgN/L)	0.00	0.01			0.00		0.00	0.00	0.07		0.01	0.01	0.00	0.01	0.01	0.00	0.00
15	NO3-N (mgN/L)	0.44	0.26			2.04		0.59	2.26	0.29		0.70	0.82	1.15	1.06	1.16	0.64	0.06
16	o-PO4-P (mg P/L)					0.007		0.033	0.065									
17	P-Tot (mgP/L)	0.008	0.001			0.001		0.001	0.004	0.010	0.001	0.001	0.001	0.004	0.010	0.001	0.034	0.001
18	SiO2 (mg/L)	13.4	37.6			16.4		9.2	10.3	9.0	20.0	11.7	4.7	6.0	6.7	7.2	9.9	37.0
19	SO4 (mg/L)	6.8	5.8			7.7		13.8	14.5	12.2	11.4	23.1	8.9	16.6	23.3	12.7	5.3	4.1
	BIOLOGICAL/BACTERIOLOGICAL																	
	TRACE & TOXIC																	
	CHEMICAL INDICES																	
1	HAR_Ca (mgCaCO3/L)	62	66			83		65	73	72	86	49	67	63	146	125	70	86
2	HAR_Total (mgCaCO3/L)	88	100			126		100	141	127	119	76	127	119	232	194	101	131
3	Na% (%)	32	33			22		26	17	25	25	28	16	12	25	19	23	23
4	RSC (-)	0.0	0.2			0.1		0.0	0.0	0.2	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0
5	SAR (-)	0.8	1.1			0.7		0.7	0.5	0.8	0.7	0.7	0.5	0.3	1.1	0.7	0.6	0.7
	PESTICIDES																	

Water Quality Seasonal Average for the period: 2003-2018

Station Name : SRIKAKULAM (AN000Y2) **Division : E.E., Bhubaneswar**

Local River : Nagavali **River Water** **Sub-Division : Behrampur**

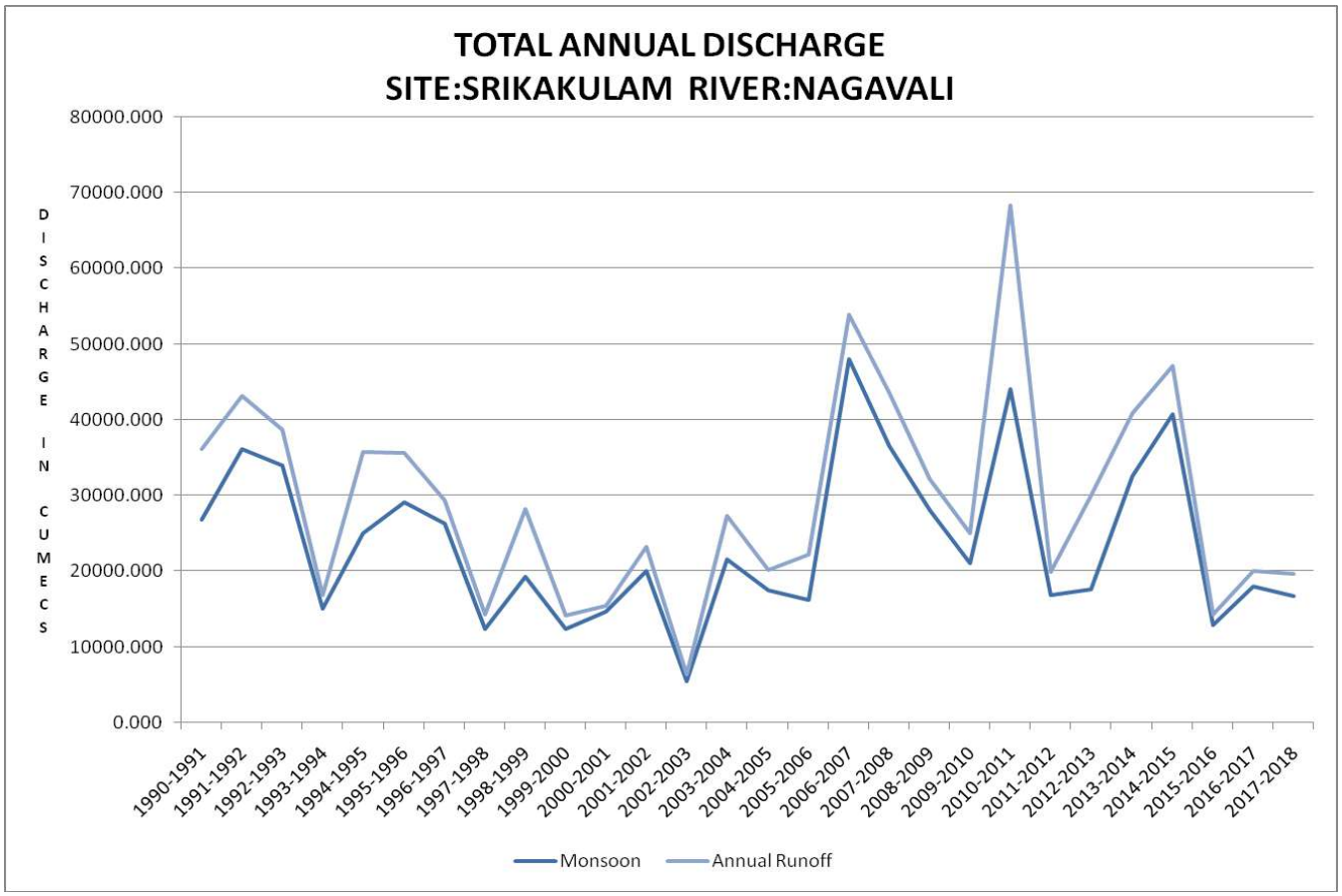
S.No	Parameters	Winter																
		Nov - Feb																
		2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2004	2005	2006	2007
	PHYSICAL																	
1	Q (cumec)																	
2	EC_FLD (µmho/cm)			305		284	410	310	247	280	556	522	664	366	409			
3	EC_GEN (µmho/cm)			295		280	410	310	247	280	556	475	666	360	400			
4	pH_FLD (pH units)			7.8		7.8	7.7	8.3	7.7	8.0	7.4	7.9	7.4	7.9	7.8			
5	pH_GEN (pH units)			7.8		7.7	7.7	8.3	7.7	8.0	7.4	7.9	7.5	7.9	7.8			
6	Temp (deg C)			25.7		20.0	21.5	21.0	28.0		22.8	26.5	27.6	26.6	27.8			
	CHEMICAL																	
1	Alk-Phen (mgCaCO3/L)			0.0		0.0	0.0	0.0	0.0		0.0	11.5	0.0	3.0				
2	ALK-TOT (mgCaCO3/L)			111		99	147	134	111		117	95	72	128				
3	B (mg/L)			0.00		0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.02	0.00			
4	Ca (mg/L)			31		30	34	42	28	21	39	22	49	53	47			
5	Cl (mg/L)			24.1		21.4	24.3	26.4	23.8	21.2	23.6	17.9	10.4	27.0	20.2			
6	CO3 (mg/L)			0.0		0.0	0.0	0.0	0.0	0.0	0.0	13.9	0.0	3.6	0.0			
7	F (mg/L)			0.31		0.11	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.00			
8	Fe (mg/L)			0.1		0.1	0.1	0.0		0.1	0.6	0.4	2.3	0.5	0.1			
9	HCO3 (mg/L)			134		121	172	163	136	101	143	87	87	149	198			
10	K (mg/L)			12.2		2.0	2.3	2.6	3.3	1.4	2.4	1.2	14.3	3.4	2.8			
11	Mg (mg/L)			7.7		7.3	17.0	25.3	14.9	3.5	2.9	12.6	23.3	16.9	12.1			
12	Na (mg/L)			15.4		15.2	18.4	20.9	22.7	13.3	17.9	14.1	60.9	19.7	14.9			
13	NO2+NO3 (mg N/L)			0.55		0.80	0.43	0.36		0.97	1.04	1.11	1.33	1.22	0.66			
14	NO2-N (mgN/L)			0.00		0.00	0.00	0.07		0.00	0.01	0.01	0.02	0.00	0.00			
15	NO3-N (mgN/L)			0.55		0.80	0.43	0.29		0.97	1.02	1.09	1.31	1.22	0.66			
16	o-PO4-P (mg P/L)			0.010		0.020	0.083											
17	P-Tot (mgP/L)			0.001		0.001	0.001	0.010	0.001	0.001	0.001	0.010	0.010	0.001	0.026			
18	SiO2 (mg/L)			9.5		7.4	12.2	8.0	28.0	8.7	6.0	5.5	7.0	8.7	11.8			
19	SO4 (mg/L)			9.6		6.8	9.3	4.7	9.9	18.5	5.7	5.0	1.3	2.9	4.3			
	BIOLOGICAL/BACTERIOLOGICAL																	
	TRACE & TOXIC																	
	CHEMICAL INDICES																	
1	HAR_Ca (mgCaCO3/L)			78		74	84	104	71	51	98	56	122	132	118			
2	HAR_Total (mgCaCO3/L)			122		104	155	209	133	66	110	109	219	202	169			
3	Na% (%)			21		24	20	18	26	30	26	21	36	17	16			
4	RSC (-)			0.1		0.0	0.0	0.0	0.0	0.3	0.2	0.0	0.0	0.0	0.0			
5	SAR (-)			0.6		0.6	0.6	0.6	0.9	0.7	0.7	0.6	1.8	0.6	0.5			
	PESTICIDES																	

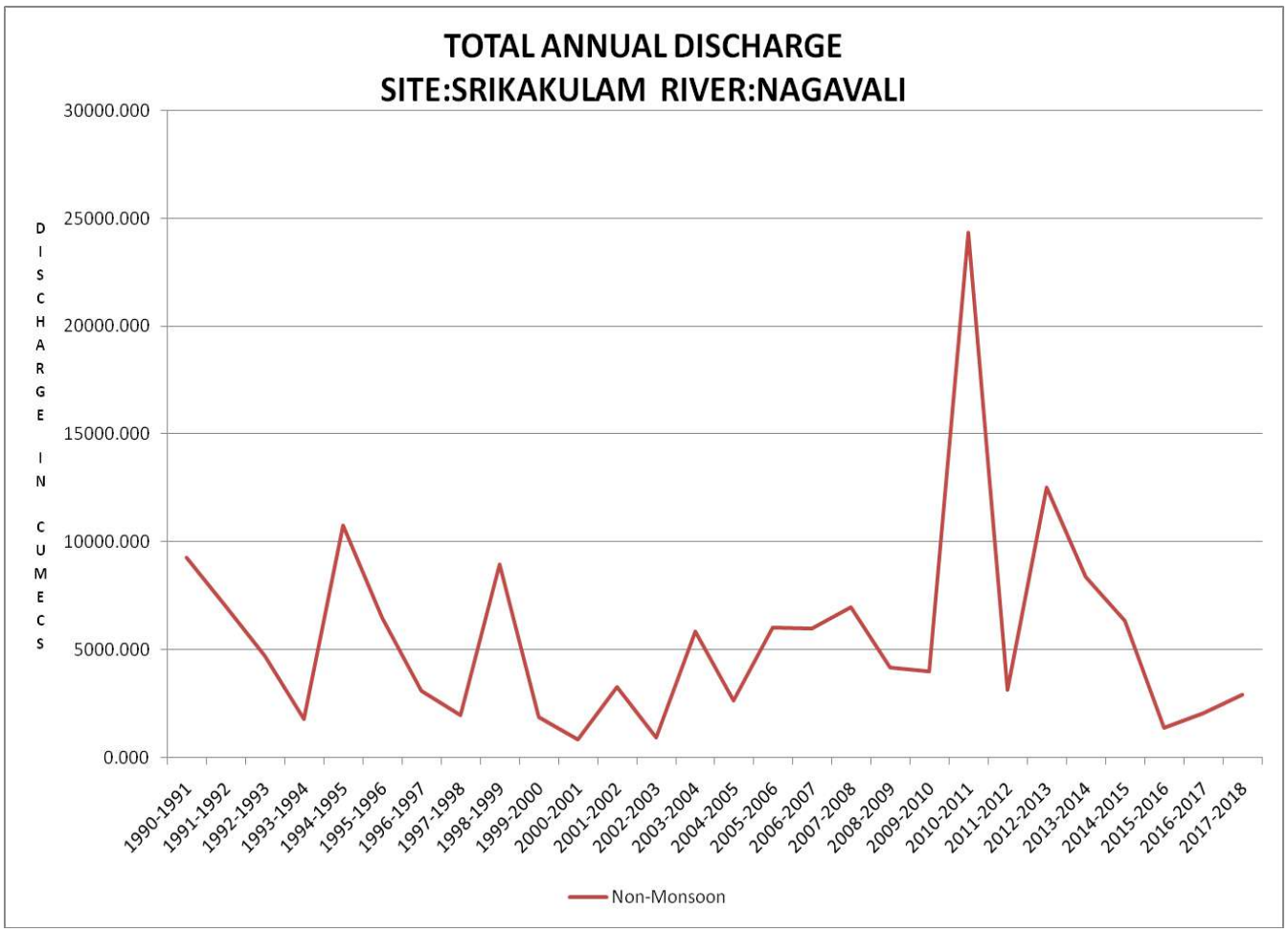
Water Quality Seasonal Average for the period: 2003-2018

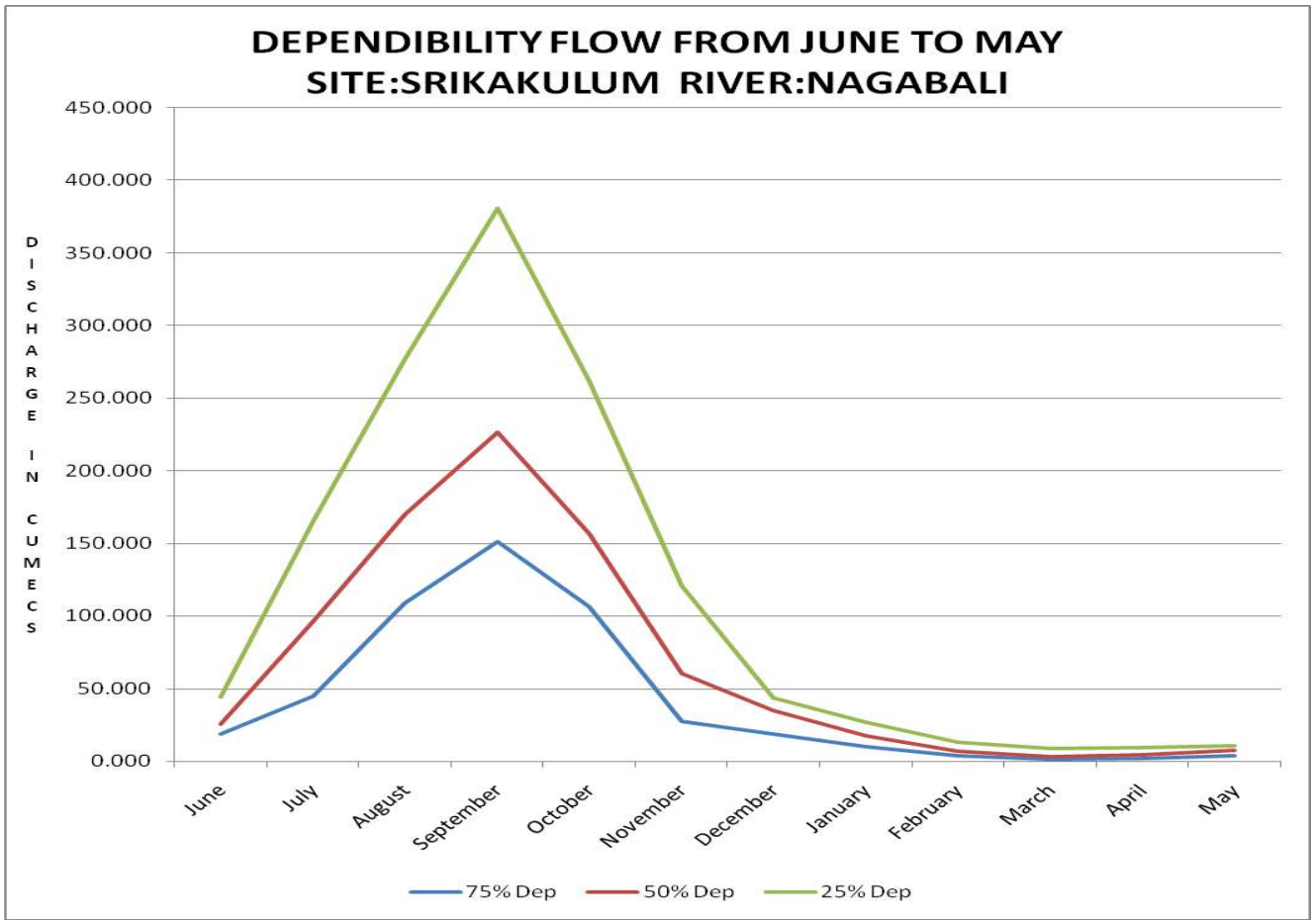
Station Name : SRIKAKULAM (AN000Y2) **Division : E.E., Bhubaneswar**

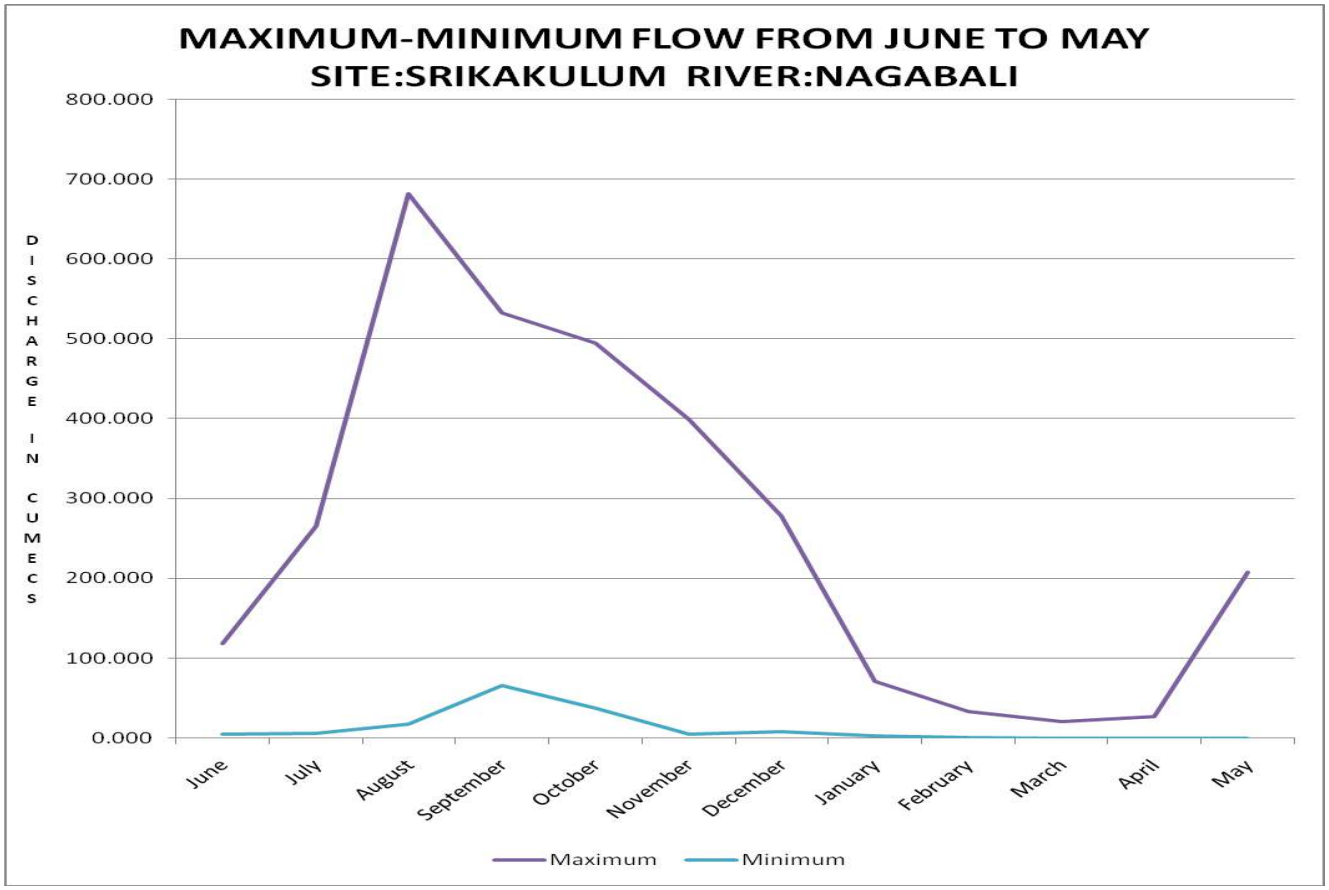
Local River : Nagavali **River Water** **Sub-Division : Behrampur**

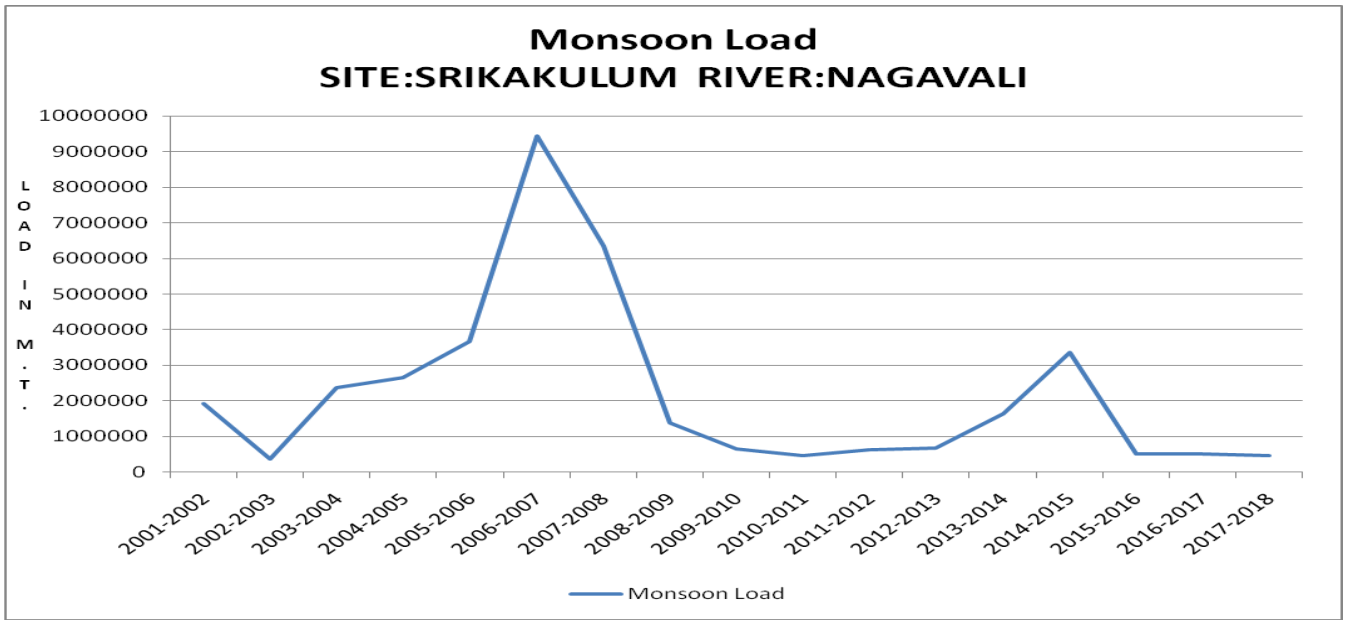
S.No	Parameters	Summer										
		Mar - May										
		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
	PHYSICAL											
1	Q (cumec)											
2	EC_FLD (µmho/cm)	298		480	430	380	295	295	510	899	550	431
3	EC_GEN (µmho/cm)	290		280	430	380	295	295	510	908	551	424
4	pH_FLD (pH units)	8.2		8.4	8.0	8.0	7.4	7.9	8.1	7.8	8.1	8.0
5	pH_GEN (pH units)	8.2		8.4	8.0	8.0	7.4	7.9	8.1	7.8	8.2	7.9
6	Temp (deg C)	32.4		25.0	18.5		31.2	26.5	27.5	30.0	32.5	26.3
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)	0.0		0.5	0.0	0.0			0.0	0.0	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	105		170	171	157			120	74	79	152
3	B (mg/L)	0.00		0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.02
4	Ca (mg/L)	32		29	32	21	33	16	45	30	43	42
5	Cl (mg/L)	28.0		35.3	24.5	17.0	22.3	14.6	17.0	22.6	32.1	21.9
6	CO3 (mg/L)	0.0		0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	F (mg/L)	0.06		0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
8	Fe (mg/L)	0.1		0.1	0.1	0.0	3.7	0.0	0.2	0.4	0.7	0.5
9	HCO3 (mg/L)	128		207	208	192	122	84	146	90	96	186
10	K (mg/L)	2.0		3.5	2.7		9.2	1.0	2.5	1.5	18.6	1.9
11	Mg (mg/L)	8.9		24.3	19.4	24.3	8.3	4.3	25.3	12.6	23.3	15.3
12	Na (mg/L)	18.1		25.3	16.1		21.5	12.4	19.4	5.0	44.8	28.9
13	NO2+NO3 (mg N/L)	0.55		0.85	0.62	0.36	14.29	0.48	0.71	1.05	1.26	1.18
14	NO2-N (mgN/L)	0.00		0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.01	0.00
15	NO3-N (mgN/L)	0.55		0.85	0.62	0.29	14.29	0.48	0.71	1.05	1.25	1.18
16	o-PO4-P (mg P/L)	0.010		0.000								
17	P-Tot (mgP/L)	0.003		0.001	0.001	0.010	0.001	0.001	0.001	0.010	0.001	0.001
18	SiO2 (mg/L)	12.3		8.6	11.0	8.0	24.2	12.3	6.0	5.0	8.0	6.9
19	SO4 (mg/L)	9.4		9.1	7.3	7.0	12.3	16.2	8.0	5.7	1.6	13.1
	BIOLOGICAL/BACTERIOLOGICAL											
	TRACE & TOXIC											
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	80		72	80	52	83	41	113	76	108	105
2	HAR_Total (mgCaCO3/L)	117		173	161	153	118	58	218	129	205	169
3	Na% (%)	25		24	18		27	31	16	8	30	27
4	RSC (-)	0.0		0.0	0.2	0.1	0.0	0.2	0.0	0.0	0.0	0.0
5	SAR (-)	0.7		0.8	0.6		0.9	0.7	0.6	0.2	1.4	1.0
	PESTICIDES											

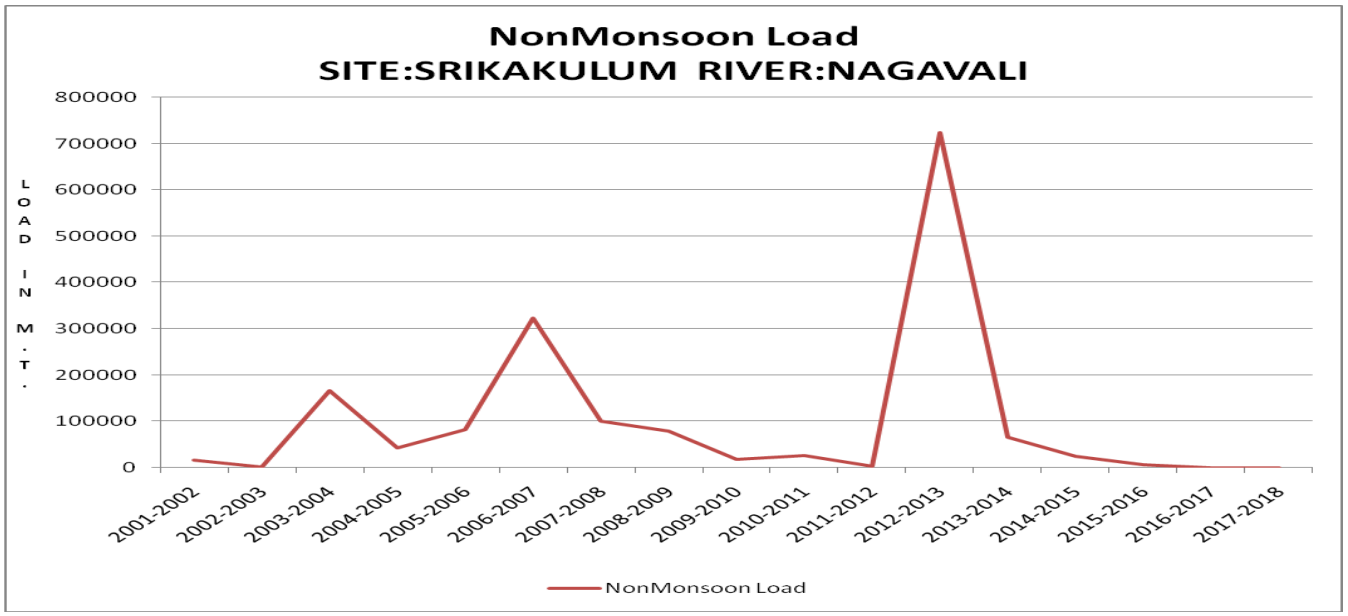

TOTAL ANNUAL DISCHARGE
SITE:SRIKAKULAM RIVER:NAGAVALI
DISCHARGE IN CUMECS
80000.000
70000.000
60000.000
50000.000
40000.000
30000.000
20000.000
10000.000
0.000
1990-1991
1991-1992
1992-1993
1993-1994
1994-1995
1995-1996
1996-1997
1997-1998
1998-1999
1999-2000
2000-2001
2001-2002
2002-2003
2003-2004
2004-2005
2005-2006
2006-2007
2007-2008
2008-2009
2009-2010
2010-2011
2011-2012
2012-2013
2013-2014
2014-2015
2015-2016
2016-2017
2017-2018
Monsoon
Annual Runoff

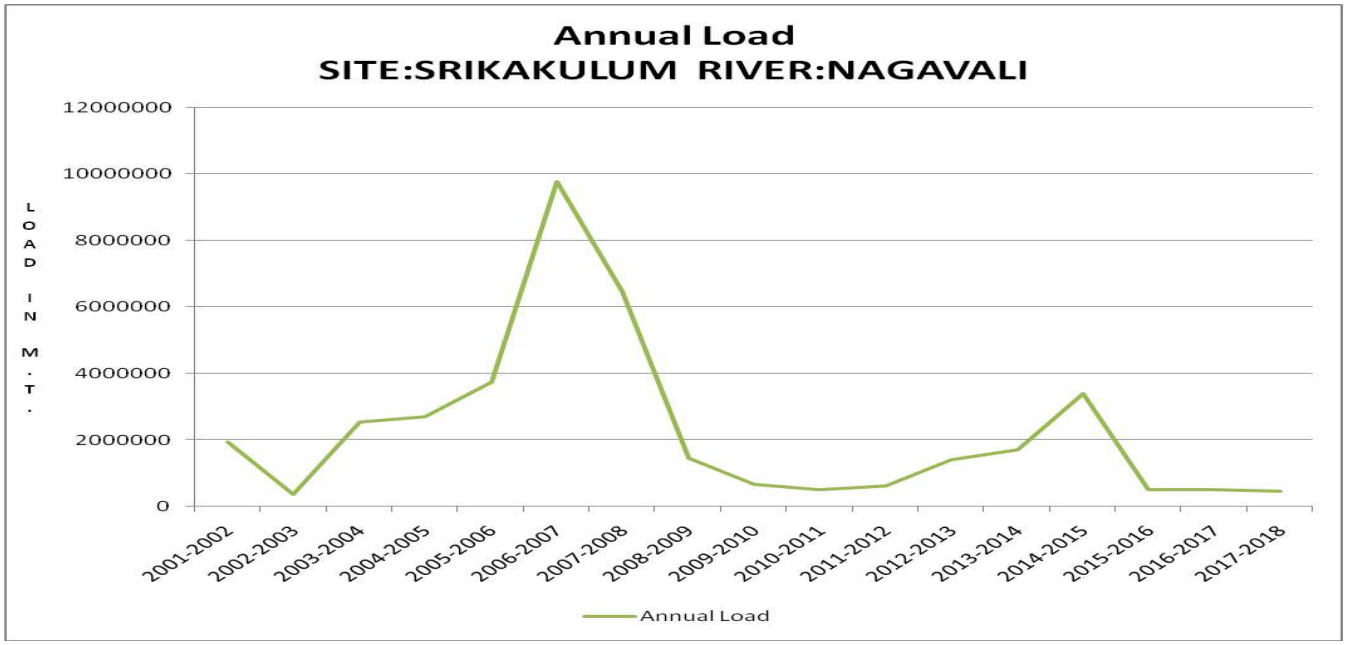

TOTAL ANNUAL DISCHARGE
SITE:SRIKAKULAM RIVER:NAGAVALI
DISCHARGE IN CUMECS
30000.000
25000.000
20000.000
15000.000
10000.000
5000.000
0.000
1990-1991
1991-1992
1992-1993
1993-1994
1994-1995
1995-1996
1996-1997
1997-1998
1998-1999
1999-2000
2000-2001
2001-2002
2002-2003
2003-2004
2004-2005
2005-2006
2006-2007
2007-2008
2008-2009
2009-2010
2010-2011
2011-2012
2012-2013
2013-2014
2014-2015
2015-2016
2016-2017
2017-2018
Non-Monsoon

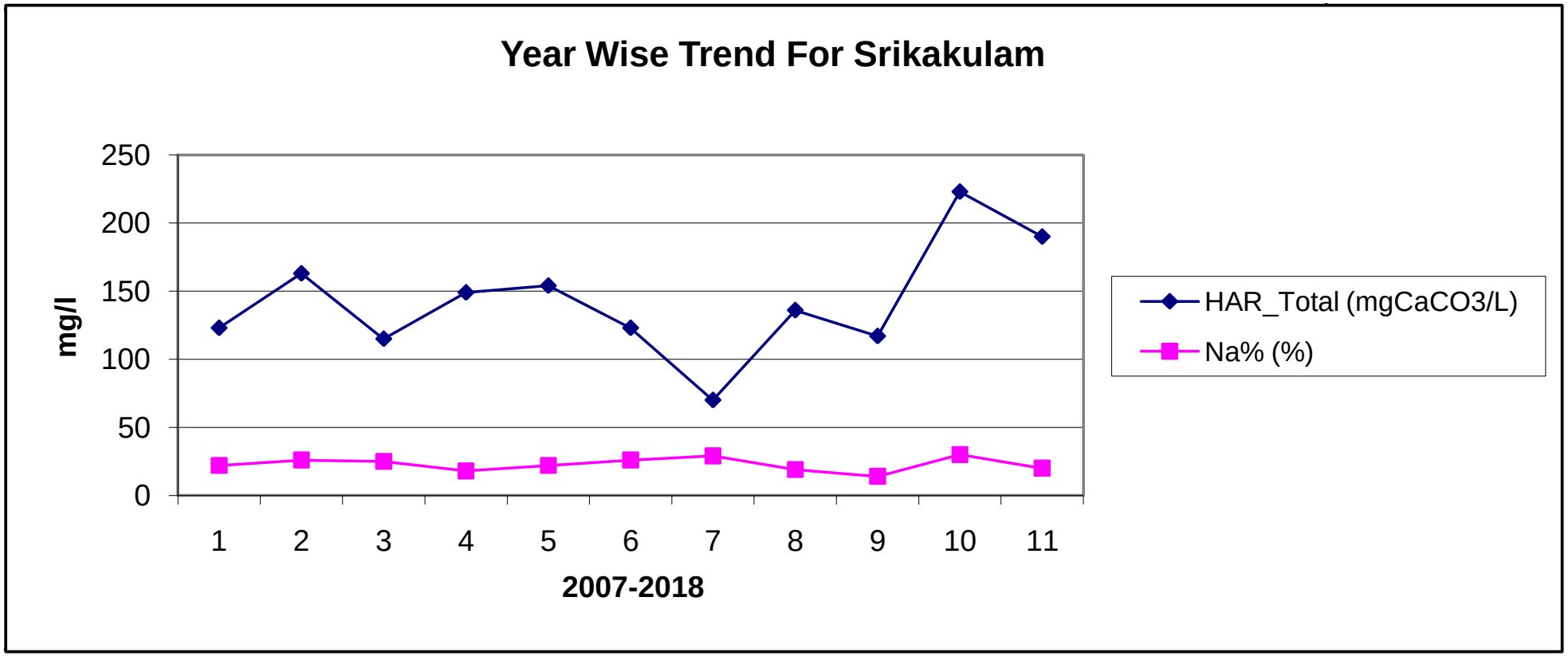

DEPENDIBILITY FLOW FROM JUNE TO MAY
SITE:SRIKAKULUM RIVER:NAGABALI
DISCHARGE IN CUMECS
450.000
400.000
350.000
300.000
250.000
200.000
150.000
100.000
50.000
0.000
June
July
August
September
October
November
December
January
February
March
April
May
75% Dep
50% Dep
25% Dep

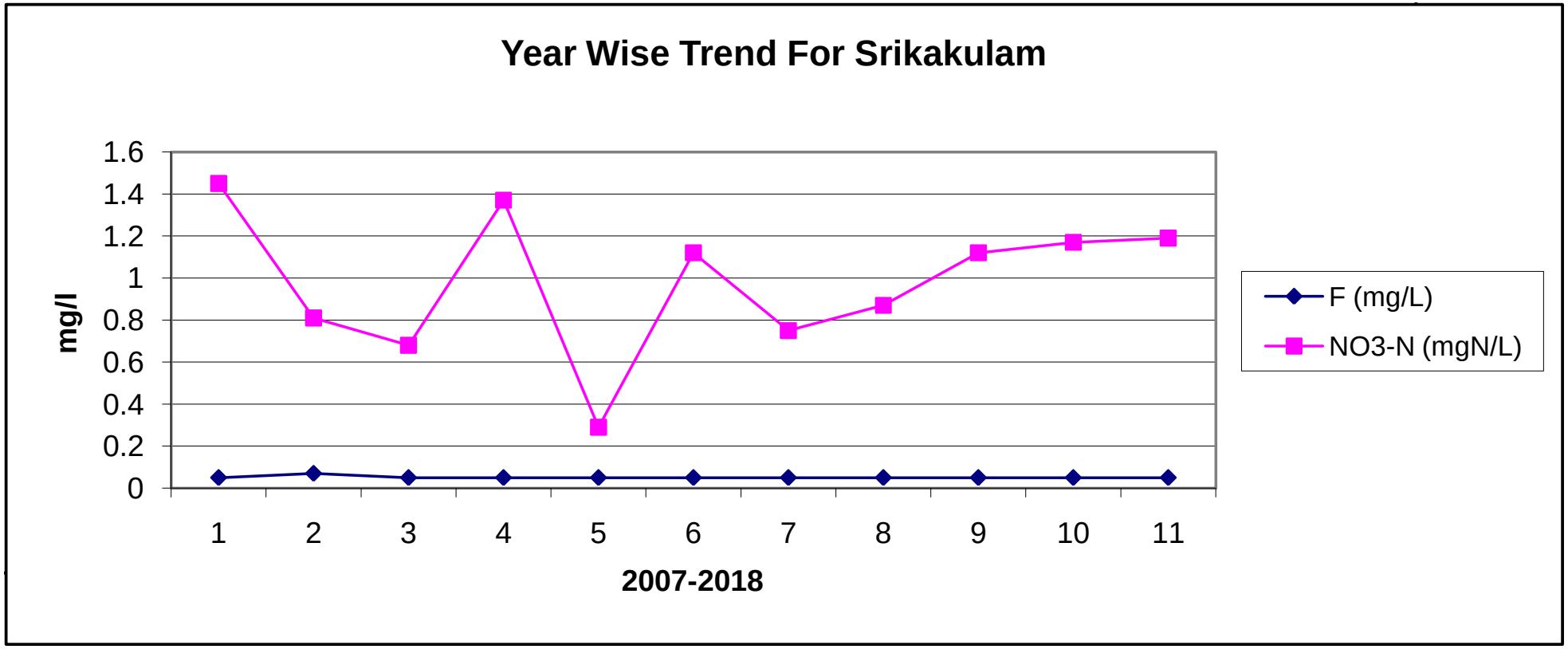

MAXIMUM-MINIMUM FLOW FROM JUNE TO MAY
SITE:SRIKAKULUM RIVER:NAGABALI
DISCHARGE IN CUMECS
800.000
700.000
600.000
500.000
400.000
300.000
200.000
100.000
0.000
June
July
August
September
October
November
December
January
February
March
April
May
Maximum
Minimum

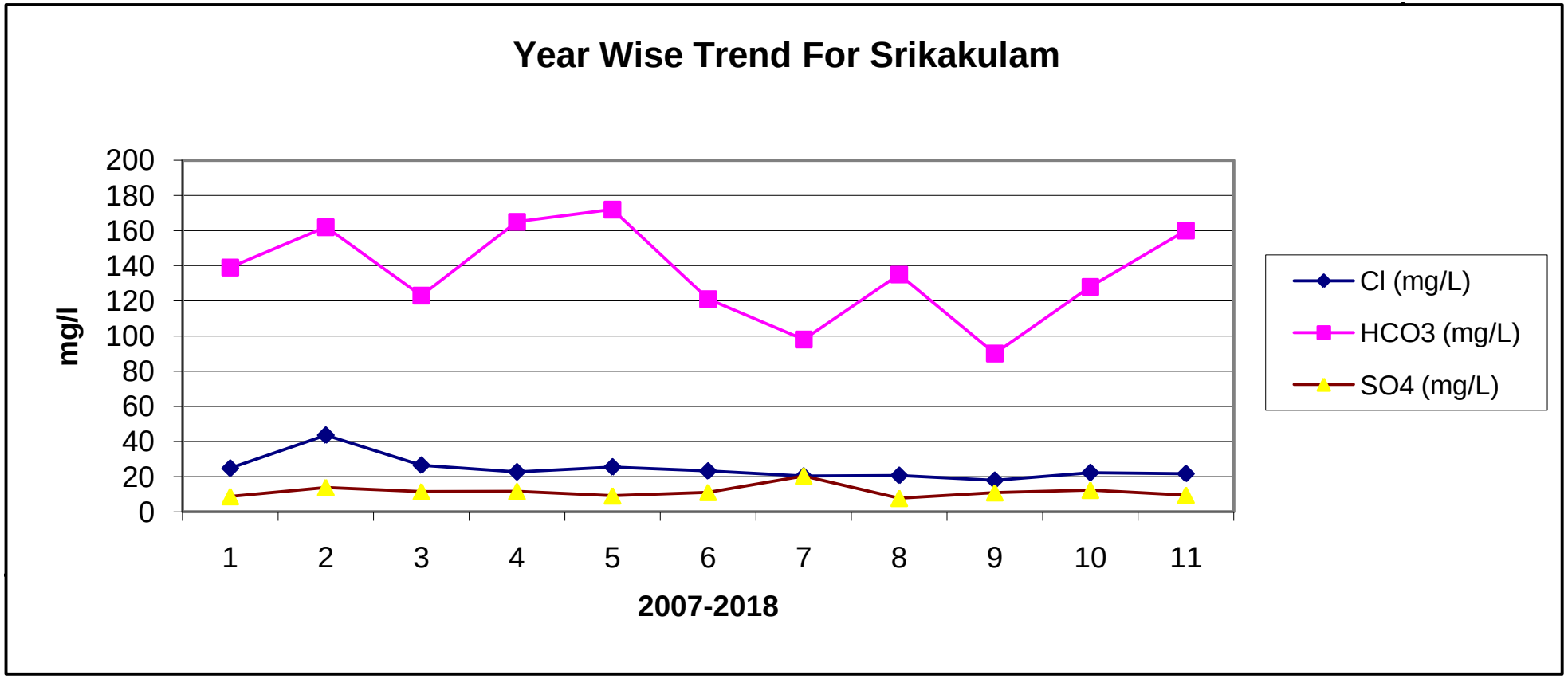

Monsoon Load
SITE:SRIKAKULUM RIVER:NAGAVALI
LOAD IN M.T.
10000000
9000000
8000000
7000000
6000000
5000000
4000000
3000000
2000000
1000000
0
2001-2002
2002-2003
2003-2004
2004-2005
2005-2006
2006-2007
2007-2008
2008-2009
2009-2010
2010-2011
2011-2012
2012-2013
2013-2014
2014-2015
2015-2016
2016-2017
2017-2018
Monsoon Load

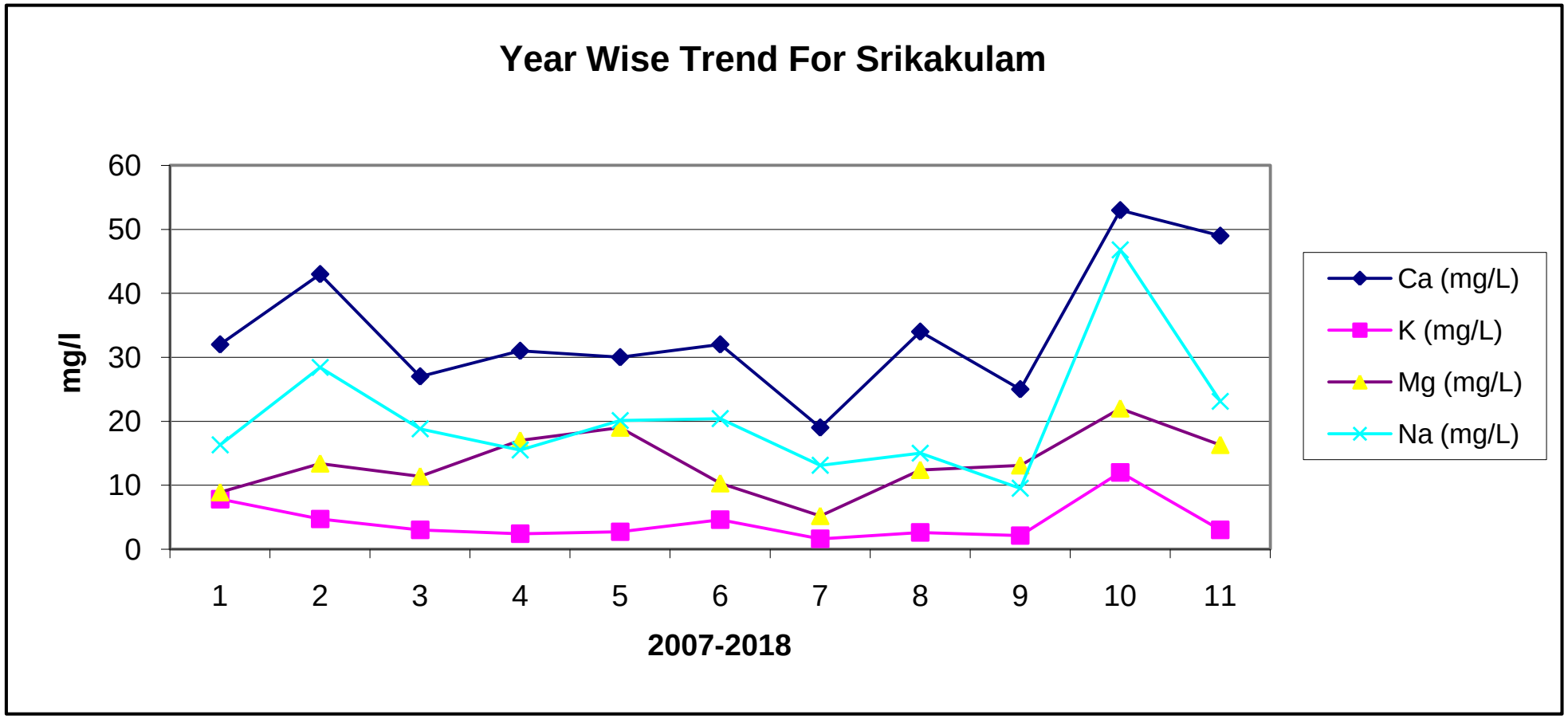

NonMonsoon Load
SITE:SRIKAKULUM RIVER:NAGAVALI
LOAD IN M.T.
800000
700000
600000
500000
400000
300000
200000
100000
0
2001-2002
2002-2003
2003-2004
2004-2005
2005-2006
2006-2007
2007-2008
2008-2009
2009-2010
2010-2011
2011-2012
2012-2013
2013-2014
2014-2015
2015-2016
2016-2017
2017-2018
NonMonsoon Load


Annual Load
SITE:SRIKAKULUM RIVER:NAGAVALI
LOAD IN M.T.
12000000
10000000
8000000
6000000
4000000
2000000
0
2001-2002
2002-2003
2003-2004
2004-2005
2005-2006
2006-2007
2007-2008
2008-2009
2009-2010
2010-2011
2011-2012
2012-2013
2013-2014
2014-2015
2015-2016
2016-2017
2017-2018
Annual Load


Year Wise Trend For Srikakulam
250
200
150
100
50
0
mg/l
1
2
3
4
5
6
7
8
9
10
11
2007-2018
HAR_Total (mgCaCO3/L)
Na% (%)


Year Wise Trend For Srikakulam
mg/l
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
1
2
3
4
5
6
7
8
9
10
11
2007-2018
F (mg/L)
NO3-N (mgN/L)


Year Wise Trend For Srikakulam
mg/l
200
180
160
140
120
100
80
60
40
20
0
1
2
3
4
5
6
7
8
9
10
11
2007-2018
Cl (mg/L)
HCO3 (mg/L)
SO4 (mg/L)


Year Wise Trend For Srikakulam
mg/l
60
50
40
30
20
10
0
1
2
3
4
5
6
7
8
9
10
11
2007-2018
Ca (mg/L)
K (mg/L)
Mg (mg/L)
Na (mg/L)

SARADA BASIN

SARADA BASIN

1 GENERAL

1.1 Introduction

River Sarada, an east flowing medium sized river, lies in the district of Visakhapatnam of Andhra Pradesh. The geographical co-ordinates of the river are North latitude 17 °25′ to 18°17′ and East longitude 82°32′ to 83°06′. The basin is surrounded by Nagavali in the North, Gostari, Gambi Ramgedda, Megadnigedda in the East, Bay of Bengal in the South and Machhkund sub- basin of the Godavari in the West. The catchment area of the basin is 2665 sq. km. It rises at an elevation of 1000 m near Longuparu village and runs a distance of 122 km before out-falling in the Bay of Bengal.

Basin Map of Sarada river system showing the various hydrological and hydrometeorological observation stations maintained by CWC, State Government and the India Meteorological Department is enclosed herewith.

1.2 River system

Details of the important tributaries of the river Sarada is tabulated below:

Name of River	River/Tributary	Length (km)	Catchment area (sq.km)	Percentage of total catchment area
Sarada	Mainstream	122	1,577	59.2
Bodderu	Left Tributary	19	125	4.7
Pedderu	Right Tributary	54	963	36.1
		Total	2,665	100.0

1.3 Climatic Characteristics

This basin is generally influenced by south west monsoon. The average annual rainfall of the basin is around 1000 mm. The maximum temperature in the basin rises up to 42.5°C during May and goes down to 18ºC in December-January.

1.4 Geology

Deposits of the basin are alluvium, beach sands and laterite soils. Bed soil of clay, sand, gravel and boulders stretch all along the coast except near to Visakhapatnam city. Important minerals found in the basin are Manganese, Quartz, Graphite, Mica, Bauxite, Aluminium and Fire Clay.

1.5 Site Details

Sl.No.	Name of Project	River	Status
1.	Raiwada	Sarada	Existing
2.	Konam	Bodderu (Tributary)	Ongoing
3.	Pedderu	Pedderu (Tributary)	Ongoing

2. STREAM FLOW DATA

2.1 Methodology

Area-velocity method is generally adopted for measuring discharge at sites. Cup type current meter is used to measure the velocity of the flow and the depth is measured by

using sounding rod for depths upto 3 m and by log line beyond 3 m. Discharge by area velocity method is being observed once in a day starting at 0800 Hrs. at all the sites except on Sundays and holidays. Besides, silt and water quality observation are also being carried out at sites of CWC, as listed above.

The observed stage and discharge figures for each season (monsoon and non-monsoon) are plotted and a mean Stage V/s. Discharge curve is drawn, giving due attention to the scattered points with reference to area, velocity etc.

The factors responsible for the shifting of the curves are also taken care of by studying the river cross section at regular intervals and with super imposition of previous years' Stage V/s. Discharge curves. Accordingly, the trend of the current curve is finalised. Finally, the discharges of the non observed days are computed from these Stage V/s. Discharge Curves..

2.2 Data Availability

Code No.	Station Name	Type	Data available	
			From	To
AS000S3	Anakapalli	G & D	G-01.12.87 D-06.08.89	Continuing -do-

2.3 Explanatory Notes on Water Year Book

SWDES (Surface Water Data Entry Software), a custom made software for processing hydrological data, has been used for preparation of this volume. The explanatory notes described below can be used for interpretation of data presented in this volume.

i) Water Year ranges from June 1st of one calendar year to May 31st of the next calendar year and covers one complete hydrological cycle.

ii) Discharge is given in cubic meters per second.

iii) Discharges are expressed as 0.000 when river bed is dry and 0.000 N.F. when velocity is observed as 'NIL'.

iv) The zero R.L. of gauge is a datum level fixed for given site, which is kept 1 or 2 m lower than the lowest water level recorded in a perennial stream. In a non-perennial stream, it is kept 1 or 2 m lower than the lowest bed level of the stream.

v) Discharges are rounded off as per standard practice.

vi) Runoff in mm is the notional depth of water in millimeters over the catchment, equivalent to annual runoff volume calculated at the discharge measurement station. It is computed using the relation:

$$\text{Runoff (mm)} = \frac{\text{Annual runoff } (Mm^3) \times 1000}{\text{Catchment area } (km^2)}$$

vii) Peak and lowest flow correspond to the highest and lowest water levels recorded from 'SWDES' entered data.

viii) Measuring Authority refers to the field division of Central Water Commission (Eastern Rivers Division) responsible for the operation of the gauging station.

ix) The gauging station code number is a unique seven column alphanumeric reference number which facilitates storage and retrieval of flow data in data base. The first column is identifier of either an integral river basin or, for the sake of convenience, a region having several contiguous river catchments. This is followed by a column which identifies an independent river system which either has one or more outlets to the sea or crosses international border to enter another country. The third, fourth and fifth column spaces denote first, second and third order tributaries, respectively, from the mouth upstream. The sixth and seventh column spaces indicate the location of the gauging station in one of the 225 slots earmarked on the river. The blank column spaces are filled by zero.

3. HYDROLOGICAL DATA

This volume contains the following information for each site stated above:

i. History Sheet: Site Name, State, District, River Basin, Tributary, Sub-Tributary, Catchment Area, Latitude / Longitude, Opening / Closing date for various types of data.
ii. Annual maximum/minimum discharge since period of observation.
iii. Daily Water level and observed/ computed discharge data including 10-daily, monthly and annual totals etc.
iv. Histogram and Hydrograph showing current year monthly mean discharges, Historical monthly mean discharges, historical monthly minimum and monthly maximum discharges.
v. Histogram showing Annual Run off volume since beginning of observation
vi. Pie-Chart showing monthly mean run off (as percentage of Annual Run off) historical for the current year.
vii. Plot of Pre and Post Monsoon Cross-section of the rivers for current year.
viii. Water Level hydrograph for 3(three) major flood events of current year.

4. SEDIMENT DATA (In case of Sediment Observation sites)

The frequency of sediment observation is carried out daily during monsoon season and once in a week (on Monday) during the non-monsoon period. Data for non-observed days is estimated/ interpolated from the relationship of discharge v/s. sediment load, prepared on the basis of observed sediment concentration and weighted mean discharge of the same year.

Sediment samples are collected from 0.6 depth, using Punjab type bottle sampler, from all the verticals along the hydrological observation sections where velocity is observed for computation of discharge. The collected samples from all the segments are combined in 3 to 7 groups having compartments or groups of equal or nearly equal discharges for analysis. Quantum of suspended sediment load is estimated in three grades, viz. Coarse, Medium and Fine. Coarse and medium grades are separated by sieving process and the fine grade by filtration of left over samples after sieving through filter paper. Grade wise concentration is derived gravimetrically as per standard procedure. The following parameters are derived and recorded:

- Daily Observed suspended sediment (g/l).
- Corresponding discharge.
- Average sediment load in tonnes/day (10 daily & monthly basis).
- Annual sediment load for the current year.
- Annual & Seasonal sediment load and the corresponding volume of inflow for all the years since inception.
- Grain size distribution of bed load.

3. WATER QUALITY DATA (In case of Water Quality Observation sites)

The water samples are collected at a regular interval of once in a month for trend stations and once in two month for base station (on 1st working day), from the main flowing segment of the stream just below the water surface (20 to 30 cm) on the Station Gauge line where depth of flow and velocity are maximum, preferably in the mid stream. The water samples are collected in the pre-rinsed and cleaned one-litre capacity polythene bottle having double stopper (inside and outside) facility. Sampling bottle is filled to its full capacity without entrapping air bubbles inside.

After sampling, the collected samples are sent to the Water Quality Laboratory (Level-II) based at Bhubaneswar (under the Eastern Rivers Division) and to Raipur laboratory (under Mahanadi Division, Burla), along with in-situ physical characteristics, for analysis. The samples received from the sites are preserved in a refrigerator in the water quality laboratories for analysis**.**

Analysis of parameters, namely pH, Electrical conductivity, Sodium, Potassium, Iron, Aluminum, Ammonia, Fluoride, Nitrate, Nitrite, Phosphate, Silicate, Boron, Sulphate, Calcium, Magnesium, Carbonate, Bi-carbonate, Chloride, Dissolved Oxygen, BOD and COD, are carried out at the Level II laboratory by using standard methodology. Micro biological parameters like total colliform and faecal colliform are also being analyzed. For analysis of trace and toxic elements, samples are sent to Level-II+ laboratory at Hyderabad once in a year, in the month of April.

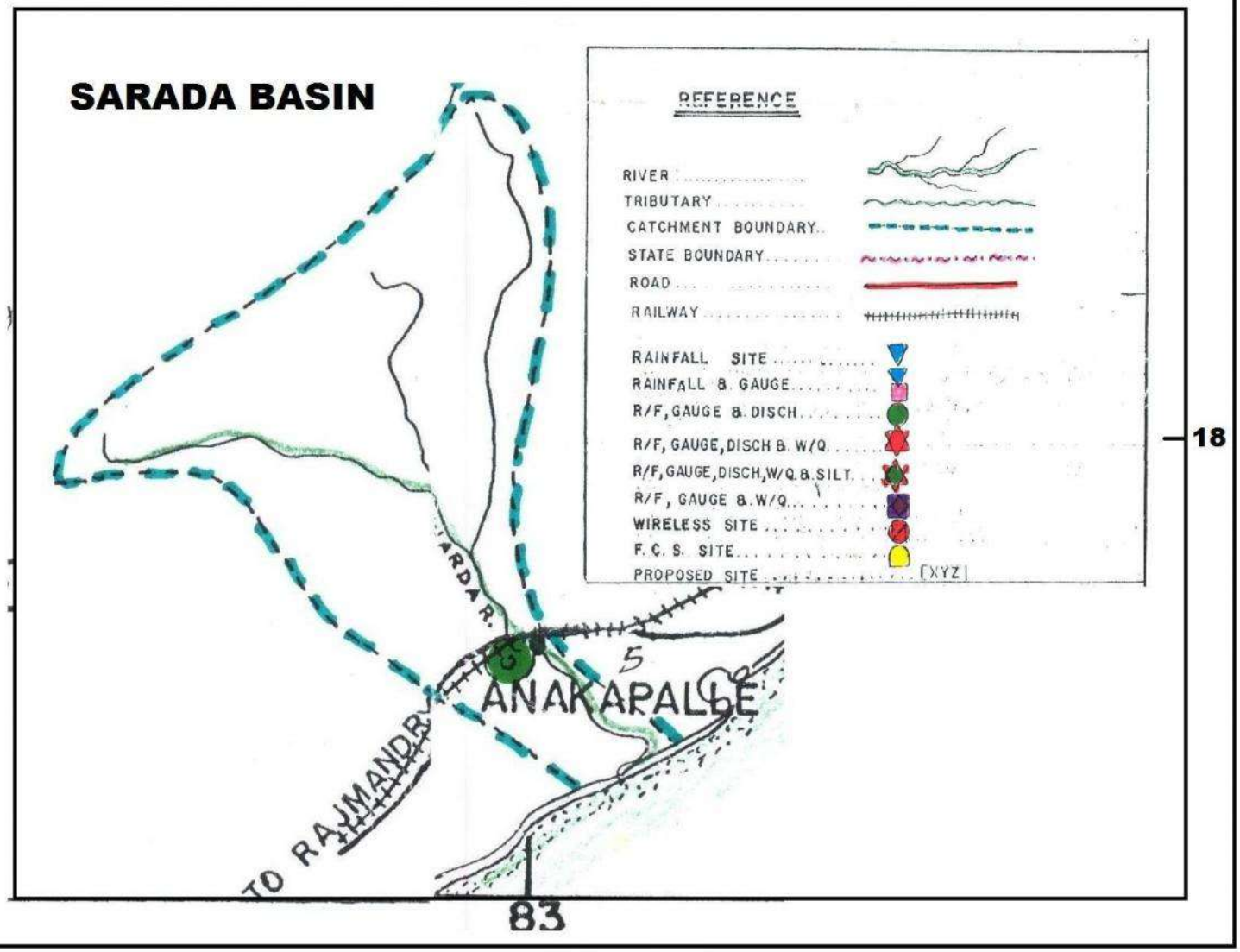
The following parameters are analyzed and recorded:

- Monthly Values: Physical; Chemical (mg/l); Biological (mg/l); Traces & Toxic (mg/l) and Chemical Indices.

- Average Values for the Year: 10 Years data to be given season wise averages:-
  - Average for Summer (March to June).
  - Average for Floods (July to October).
  - Average for Winter (November to February)
  -

NAME OF THE SITE IN OPERATION UNDER SARADA BASIN

Sl. No.	Station Name	River/ Tributary	Type	Latitude	Longitude	Max. Water Level & Discharge upto May,2018			
						WL	Date	Q.	Date
1.	Anakapalli	Sarada	GD	17°-.41-'00"	85°-35-'00"	---	---	3981	04/11/12


SARADA BASIN
REFERENCE
RIVER
TRIBUTARY
CATCHMENT BOUNDARY
STATE BOUNDARY
ROAD
RAILWAY
RAINFALL SITE
RAINFALL & GAUGE
R/F, GAUGE & DISCH
R/F, GAUGE, DISCH & W/Q
R/F, GAUGE, DISCH, W/Q & SILT
R/F, GAUGE & W/Q
WIRELESS SITE
F.C.S. SITE
PROPOSED SITE [XYZ]
ANAKAPALLE
TO RAJMANDRY
83

18

HISTORY SHEET

Water Year : 2017-2018

Site	**:**	**ANAKAPALLI**	**Code**	**:**	**AS000S3**
State	:	Andhra Pradesh	District		Visakhapatnam
Basin	:	EFR B Mahanadi-Godavari	Independent River	:	Sarada
Tributary	:		Sub Tributary	:	
Sub-Sub Tributary	:		Local River	:	Sarada
Division	:	E.E., Bhubaneswar	Sub-Division	:	Behrampur
Drainage Area	:	2090 Sq. Km.	Bank	:	Left
Latitude	:	17°41'00"	Longitude	:	83°01'08"
Zero of Gauge (m)	:	20.4 (m.s.l)	1/1/1987	-	1/12/2090
		Opening Date	Closing Date		
Gauge	:	12/1/1987			
Discharge	:	8/16/1989			
Sediment	:				
Water Quality	:				

Annual Maximum / Minimum discharge with corresponding Water Level (m.s.l)

	Maximum			Minimum		
Year	**Q (cumecs)**	**WL (m)**	**Date**	**Q (cumecs)**	**WL (m)**	**Date**
1991-1992	114.2	22.800	10/12/1991	0.000	20.770	5/23/1992
1992-1993	499.7	24.250	10/10/1992	0.000	20.785	5/21/1993
1993-1994	64.72	22.378	10/22/1993	0.000	20.400	4/7/1994
1994-1995	250.5	23.500	5/11/1995	0.000	20.400	4/3/1995
1995-1996	571.1	23.975	10/11/1995	0.000	20.590	4/24/1996
1996-1997	897.0	25.100	10/3/1996	0.000	20.610	3/24/1997
1997-1998	130.8	22.590	9/25/1997	0.000	20.490	5/17/1998
1998-1999	887.0	25.200	11/16/1998	0.000	20.560	5/5/1999
1999-2000	96.34	22.340	10/11/1999	0.000	20.330	4/17/2000
2000-2001	157.8	22.600	8/26/2000	0.000	20.010	3/21/2001
2001-2002	93.94	22.555	10/8/2001	0.000	19.780	4/28/2002
2002-2003	24.95	22.060	10/16/2002	0.000	19.600	2/26/2003
2003-2004	280.5	23.600	10/25/2003	0.000	20.520	4/21/2004
2004-2005	153.2	23.690	6/14/2004	0.000	20.560	4/13/2005
2005-2006	572.7	23.950	10/15/2005	0.000	20.400	8/2/2005
2006-2007	374.2	23.540	8/4/2006	0.000	20.520	5/10/2007
2007-2008	542.1	24.050	10/6/2007	0.000	21.400	3/7/2008
2008-2009	179.2	22.920	9/12/2008	1.125	20.680	3/6/2009
2009-2010	140.9	22.550	10/3/2009	0.000	20.710	1/26/2010
2010-2011	590.0	23.720	12/9/2010	0.000	20.680	5/7/2011
2011-2012	308.9	22.800	9/3/2011	0.000	20.410	5/19/2012
2012-2013	3981	27.480	11/4/2012	1.070	20.690	4/18/2013
2013-2014	850.5	24.430	10/27/2013	0.000	20.850	4/5/2014
2014-2015	767.9	24.550	10/13/2014	0.000	20.790	7/21/2014
2015-2016	366.3	23.315	9/20/2015	0.000	20.710	4/13/2016
2016-2017	487.4	23.450	9/26/2016	0.000	20.600	4/27/2017
2017-2018	270.1	22.720	8/28/2017	0.000	21.180	1/21/2018

Stage-Discharge Data for the period 2017 - 2018

Station Name : ANAKAPALLI (AS000S3) **Division : E.E., Bhubaneswar**

Local River : Sarada **Sub-Division : Behrampur**

Day	Jun		Jul		Aug		Sep		Oct		Nov	
	W.L	Q	W.L	Q	W.L	Q	W.L	Q	W.L	Q	W.L	Q
1			20.890	0.000	21.060	0.000	22.190	81.82	22.470	134.8 *	21.690	23.79
2			20.850	0.000 *	21.070	0.000	22.040	72.90 *	22.300	103.4 *	21.680	22.26
3			20.850	0.000	21.060	0.000	21.980	60.00 *	22.300	103.1	21.670	21.96
4			20.920	0.000	21.110	0.000	21.920	41.60	22.370	116.5	21.670	21.20 *
5			20.940	0.000	21.210	0.000	21.920	41.99	22.370	116.1	21.660	20.40 *
6			20.930	0.000	21.250	0.000 *	21.940	47.12	22.450	130.1	21.650	19.48
7			21.020	0.000	21.280	0.000	21.920	44.87	23.040	257.5	21.640	19.00
8			21.260	0.000	21.280	0.000	21.850	37.05	22.520	140.0 *	21.630	18.16
9			21.260	0.000 *	21.290	0.000	21.780	33.05	22.460	132.9	21.620	16.76
10			21.240	0.000	21.320	0.000	21.740	31.05 *	22.340	109.3	21.600	14.14
11			21.180	0.000	21.280	0.000	21.700	30.16	22.300	103.2	21.580	10.02
12			21.150	0.000	21.270	0.000	21.680	23.71	22.520	141.0	21.580	10.09 *
13			21.130	0.000	21.290	0.000 *	21.710	29.44	22.340	109.2	21.570	9.288
14			21.120	0.000	21.320	0.000	21.800	31.22	22.330	107.5	21.570	9.326
15			21.110	0.000	21.340	0.000 *	22.130	75.84	22.230	92.50 *	21.570	9.398
16			21.100	0.000 *	21.430	6.597	21.925	51.66	22.440	127.7	21.560	8.435
17			21.120	0.000	21.420	6.043	22.110	75.00 *	22.140	75.95	21.560	8.324
18			21.150	0.000	21.410	5.566	21.960	48.92	22.020	55.34	21.560	8.261
19			21.140	0.000	21.430	6.665	21.880	44.43	21.980	57.61 *	21.560	8.210 *
20			21.120	0.000	21.470	8.660 *	21.800	35.45	22.020	55.25	21.550	6.473
21			21.100	0.000	21.569	9.636	21.730	28.55	21.980	51.06	21.530	5.333
22			21.090	0.000	21.510	7.972	21.680	24.14	21.920	46.10 *	21.520	4.445
23			21.180	0.000 *	21.550	8.439	21.680	24.48	21.860	42.64	21.510	3.473
24			21.220	0.000	22.020	49.70	21.790	35.00 *	21.850	40.81	21.500	2.859
25			21.060	0.000	22.410	121.3	21.970	47.29	21.790	35.10	21.500	2.756
26			21.010	0.000	22.180	76.23	22.240	94.08	21.620	19.02	21.490	2.690 *
27			20.970	0.000	22.120	110.0 *	22.210	85.11	21.760	32.05	21.480	2.602
28			21.040	0.000	22.720	270.1	22.210	87.17	21.760	32.17	21.470	2.275
29			21.020	0.000	22.700	270.1	22.020	60.10 *	21.720	26.40 *	21.460	1.859
30			21.100	0.000 *	22.470	204.1	22.450	130.0 *	21.700	24.97	21.460	1.822
31			21.060	0.000	22.280	137.6			21.700	24.80		
Ten-Daily Mean												
I Ten-Daily			21.016	0.000	21.193	0.000	21.928	49.15	22.462	134.4	21.651	19.71
II Ten-Daily			21.132	0.000	21.366	3.353	21.869	44.58	22.232	92.52	21.566	8.782
III Ten-Daily			21.077	0.000	22.139	115.0	21.998	61.59	21.787	34.10	21.492	3.011
Monthly												
Min.			20.850	0.000	21.060	0.000	21.680	23.71	21.620	19.02	21.460	1.822
Max.			21.260	0.000	22.720	270.1	22.450	130.0	23.040	257.5	21.690	23.79
Mean			21.075	0	21.584	41.89	21.932	51.77	22.148	85.29	21.570	10.5

Annual Runoff in MCM = 611 Annual Runoff in mm = 292

Peak Observed Discharge = 270.1 cumecs on 28-Aug-17 Corres. Water Level :22.72 m

Lowest Observed Discharge = 0.000 cumecs on 01-Jul-17 Corres. Water Level :20.89 m

Q: Observed/Computed Discharge in cumecs WL:Corresponding Mean Water Level(m.s.l) in m *:Computed Discharge

Note:Missing values ignored while arriving at Annual Runoff

Stage-Discharge Data for the period 2017 - 2018

Station Name : ANAKAPALLI (AS000S3) **Division : E.E., Bhubaneswar**

Local River : Sarada **Sub-Division : Behrampur**

Day	Dec		Jan		Feb		Mar		Apr		May	
	W.L	Q	WL	Q	WL	Q	WL	Q	WL	Q	WL	Q
1	21.460	1.787	21.330	0.000 *	21.130	21.13 *	21.010	21.01 *	20.930	0.000 *	20.840	
2	21.450	1.740 *	21.330	0.000 *	21.120	21.12 *	21.010	21.01 *	20.920	0.000 *	20.840	
3	21.450	1.720 *	21.320	0.000 *	21.120	21.12 *	21.000	21.00 *	20.920	0.000 *	20.910	
4	21.440	1.686	21.320	0.000 *	21.110	21.11 *	21.000	21.00 *	20.910	0.000 *	20.930	
5	21.440	1.678	21.310	0.000 *	21.110	21.11 *	21.000	21.00 *	20.910	0.000 *	20.950	
6	21.430	1.661	21.310	0.000 *	21.100	21.10 *	20.990	20.99 *	20.910	0.000 *	20.960	
7	21.430	1.663	21.300	0.000 *	21.100	21.10 *	20.990	20.99 *	20.900	0.000 *	20.960	
8	21.440	1.817	21.290	0.000 *	21.090	21.09 *	20.990	20.99 *	20.900	0.000 *	20.970	
9	21.440	1.749	21.280	0.000 *	21.090	21.09 *	20.980	20.98 *	20.900	0.000 *	20.990	
10	21.440	1.710 *	21.260	0.000 *	21.080	21.08 *	20.980	20.98 *	20.890	0.000 *	21.000	
11	21.430	1.682	21.250	0.000 *	21.080	21.08 *	20.980	20.98 *	20.890	0.000 *	21.000	
12	21.420	1.153	21.240	0.000 *	21.070	21.07 *	20.980	20.98 *	20.890	0.000 *	21.010	
13	21.420	1.147	21.230	0.000 *	21.070	21.07 *	20.970	20.97 *	20.890	0.000 *	21.020	
14	21.410	1.088	21.220	0.000 *	21.060	21.06 *	20.970	20.97 *	20.880	0.000 *	21.040	
15	21.410	1.073	21.210	0.000 *	21.060	21.06 *	20.970	20.97 *	20.880	0.000 *	21.060	
16	21.400	0.000	21.210	0.000 *	21.050	21.05 *	20.960	20.96 *	20.880	0.000 *	21.070	
17	21.400	0.000 *	21.210	0.000 *	21.050	21.05 *	20.960	20.96 *	20.870	0.000 *	21.070	
18	21.400	0.000 *	21.200	0.000 *	21.050	21.05 *	20.960	20.96 *	20.870	0.000 *	21.100	
19	21.390	0.000 *	21.200	0.000 *	21.040	21.04 *	20.960	20.96 *	20.870	0.000 *	21.320	
20	21.390	0.000 *	21.190	0.000 *	21.040	21.04 *	20.950	20.95 *	20.860	0.000 *	21.300	
21	21.380	0.000 *	21.180	0.000 *	21.040	21.04 *	20.950	20.95 *	20.860	0.000 *	21.300	
22	21.380	0.000 *	21.180	0.000 *	21.030	21.03 *	20.950	20.95 *	20.860	0.000 *	21.290	
23	21.370	0.000 *	21.170	0.000 *	21.030	21.03 *	20.950	20.95 *	20.860	0.000 *	21.280	
24	21.370	0.000 *	21.170	0.000 *	21.030	21.03 *	20.940	20.94 *	20.850	0.000 *	21.230	
25	21.360	0.000 *	21.160	0.000 *	21.020	21.02 *	20.940	20.94 *	20.850	0.000 *	21.170	
26	21.360	0.000 *	21.160	0.000 *	21.020	21.02 *	20.940	20.94 *	20.860	0.000 *	21.110	
27	21.360	0.000 *	21.150	0.000 *	21.020	21.02 *	20.940	20.94 *	20.860	0.000 *	21.070	
28	21.350	0.000 *	21.150	0.000 *	21.020	21.02 *	20.940	20.94 *	20.850	0.000 *	21.060	
29	21.350	0.000 *	21.140	0.000 *			20.930	20.93 *	20.850	0.000 *	21.060	
30	21.340	0.000 *	21.140	0.000 *			20.930	20.93 *	20.850	0.000 *	21.050	
31	21.340	0.000 *	21.130	0.000 *			20.930	20.93 *			21.050	
Ten-Daily Mean												
I Ten-Daily	21.442	1.721	21.305	0.000	21.105	21.11	20.995	21.00	20.909	0.000	20.935	
II Ten-Daily	21.407	0.614	21.216	0.000	21.057	21.06	20.966	20.97	20.878	0.000	21.099	
III Ten-Daily	21.360	0.000	21.157	0.000	21.026	21.03	20.940	20.94	20.855	0.000	21.152	
Monthly												
Min.	21.340	0.000	21.130	0.000	21.020	21.02	20.930	20.93	20.850	0.000	20.840	
Max.	21.460	1.817	21.330	0.000	21.130	21.13	21.010	21.01	20.930	0.000	21.320	
Mean	21.402	0.753	21.224	0	21.065	21.07	20.966	20.97	20.881	0	21.065	

Peak Computed Discharge = 140.0 cumecs on 08-Oct-17 Corres. Water Level :22.52 m

Lowest Computed Discharge = 0.000 cumecs on 02-Jul-17 Corres. Water Level :20.85 m

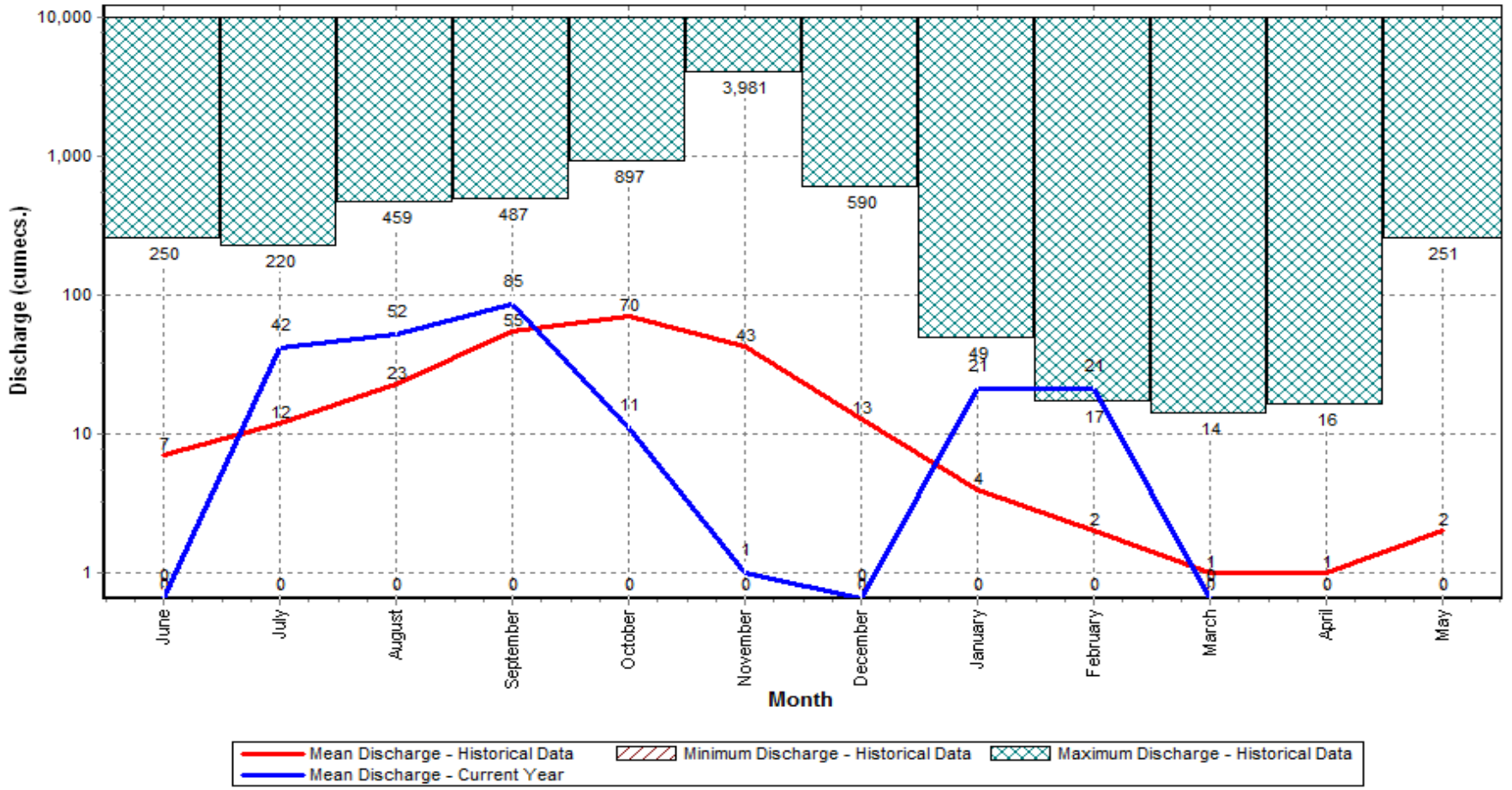
Q: Observed/Computed Discharge in cumecs WL:Corresponding Mean Water Level(m.s.l) in m *:Computed Discharge

Note:Missing values ignored while arriving at Annual Runoff

HISTOGRAM - HYDROGRAPH for Water Year : 2017-2018

Station Name : ANAKAPALLI (AS000S3) | **Data considered : 1991-2018** | **Division : E.E., Bhubaneswar**

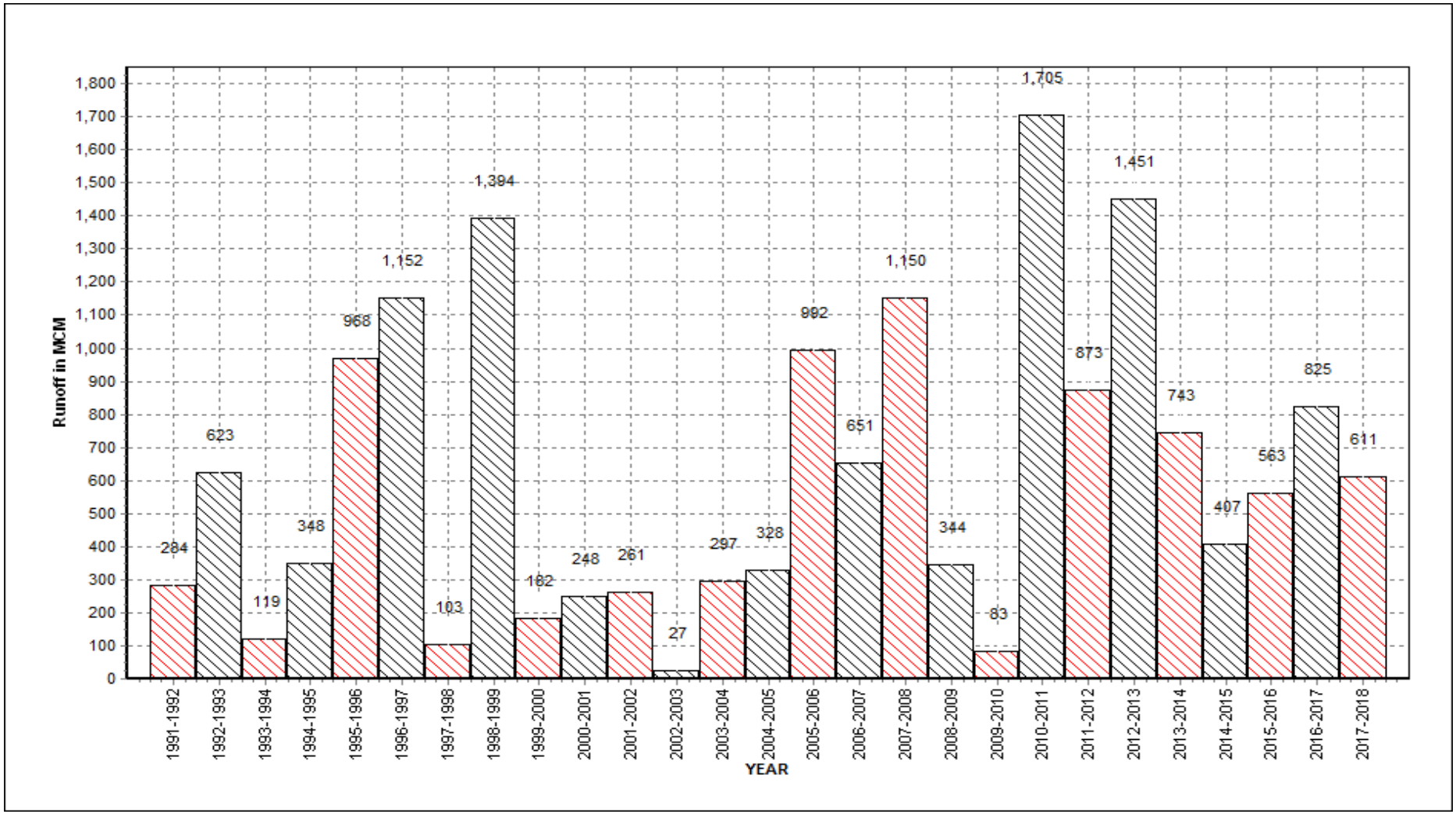
Local River : Sarada | **Sub-Division : Behrampur**



Annual Runoff Values for the period: 1991 - 2018

Station Name : ANAKAPALLI (AS000S3) **Division : E.E., Bhubaneswar**

Local River : Sarada **Sub-Division : Behrampur**

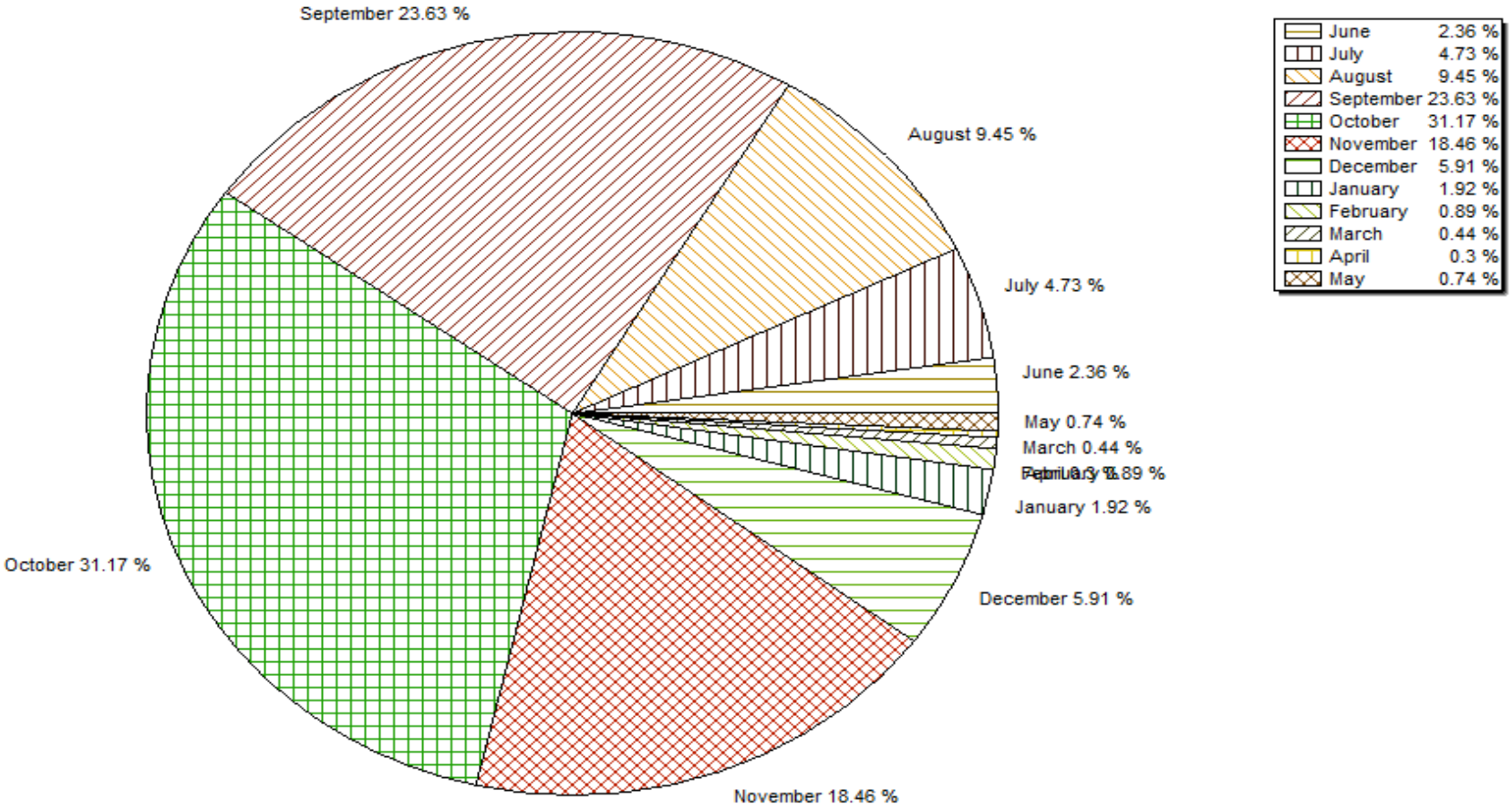


Note: Missing values have not been considered while arriving at Annual Runoff

Monthly Average Runoff based on period : 1991-2017

Station Name : ANAKAPALLI (AS000S3) **Division : E.E., Bhubaneswar**

Local River : Sarada **Sub-Division : Behrampur**



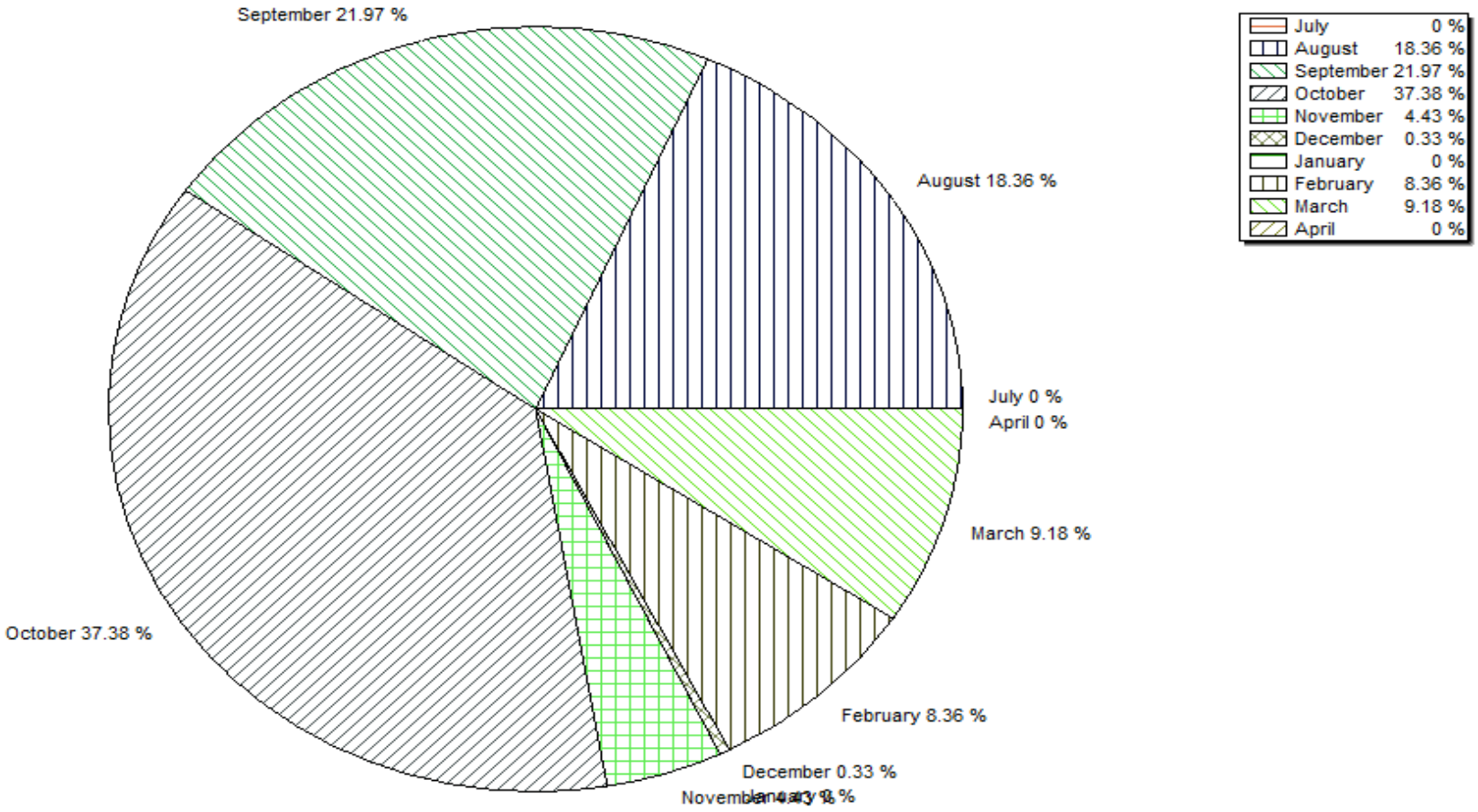
Monthly Runoff for the Year : 2017-2018

Station Name : ANAKAPALLI (AS000S3)

Division : E.E., Bhubaneswar

Local River : Sarada

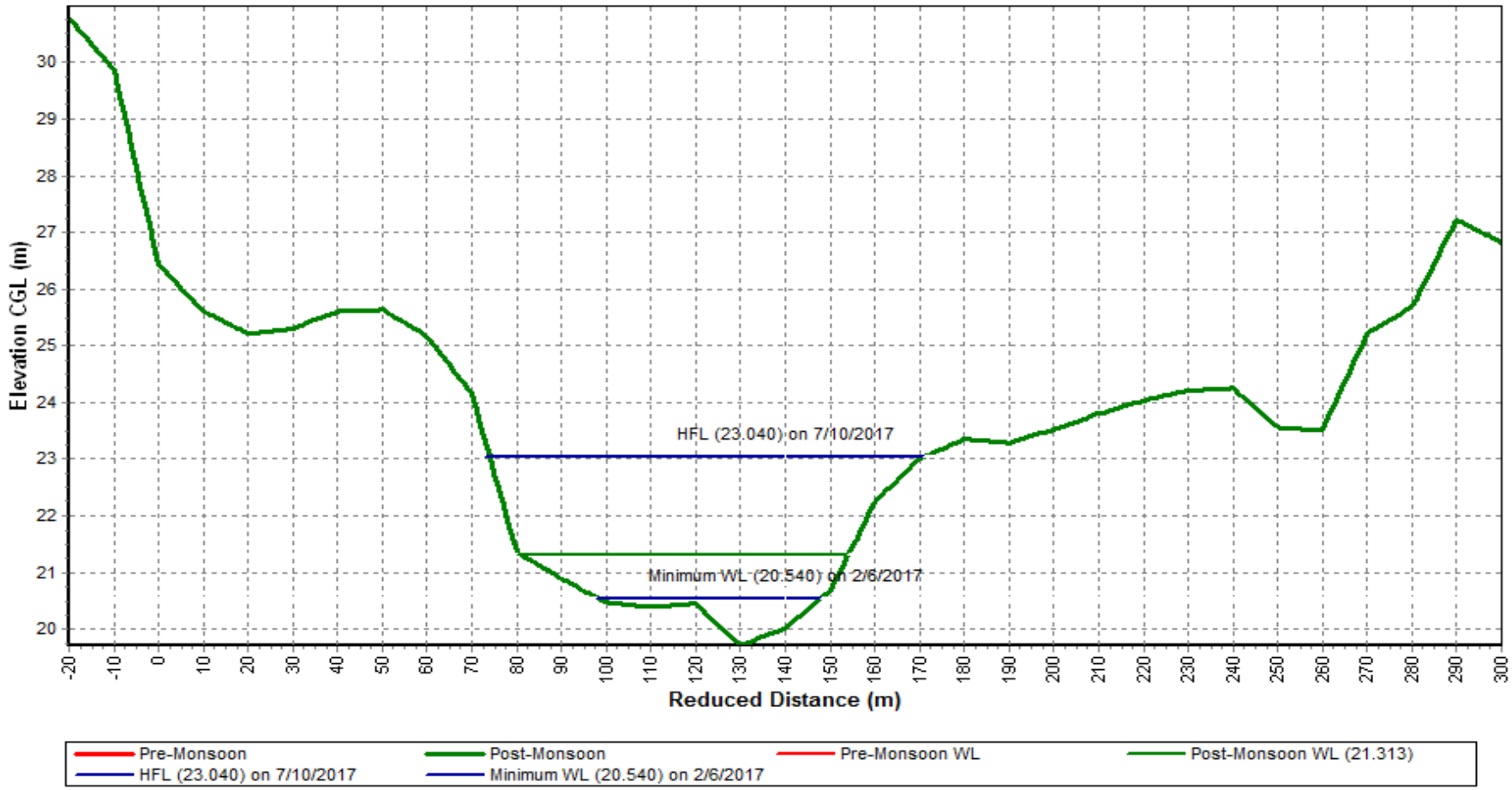
Sub-Division : Behrampur



Pre-Monsoon & Post-Monsoon X-Section for Water Year : 2017-2018

Station Name : ANAKAPALLI (AS000S3) **Division : E.E., Bhubaneswar**

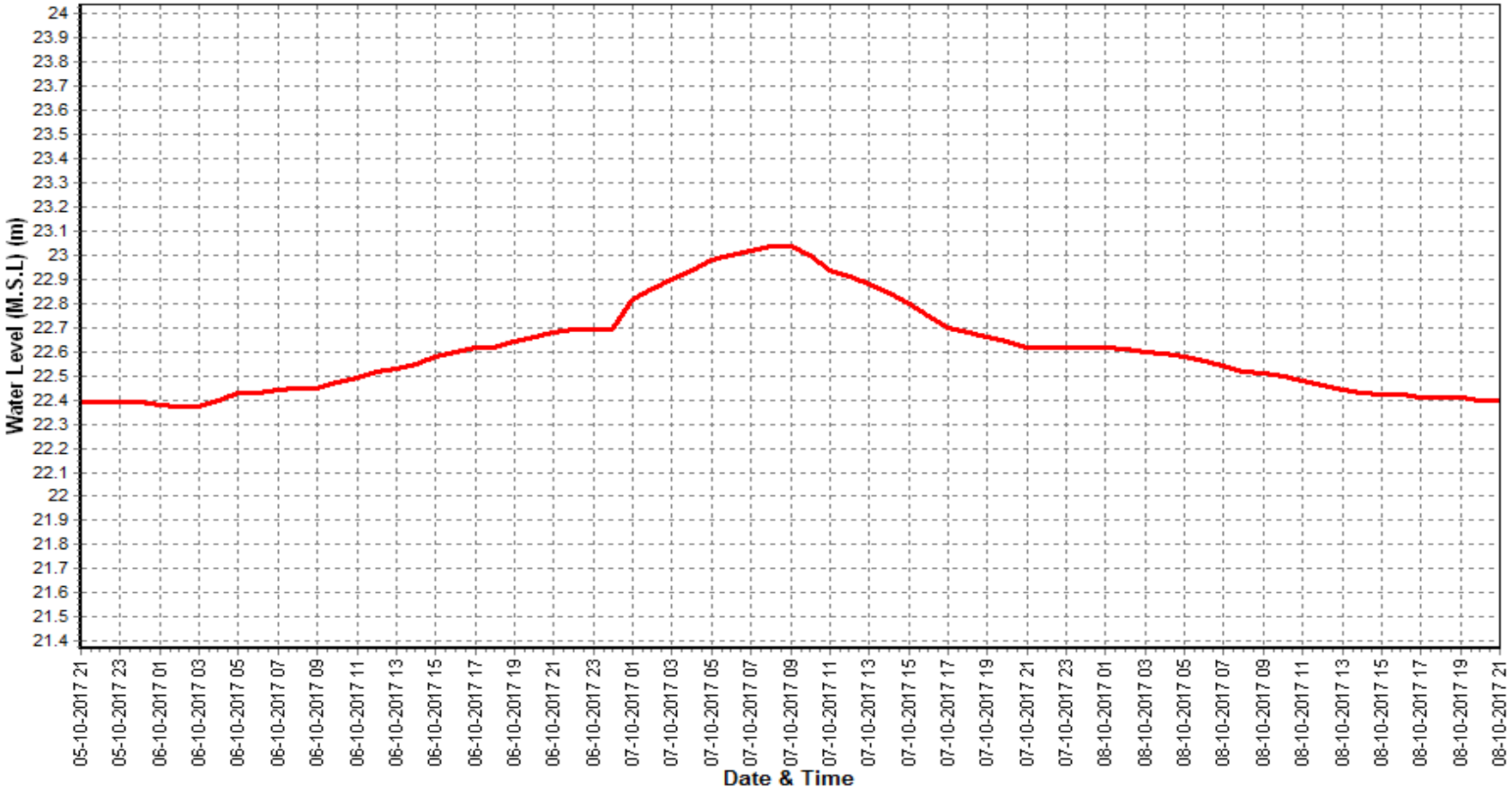
Local River : Sarada **Sub-Division : Behrampur**



Water Level vs. Time - Graph of Highest Flood Peak during the Year : 2017-2018

Station Name : ANAKAPALLI (AS000S3) **Division : E.E., Bhubaneswar**

Local River : Sarada **Sub-Division : Behrampur**

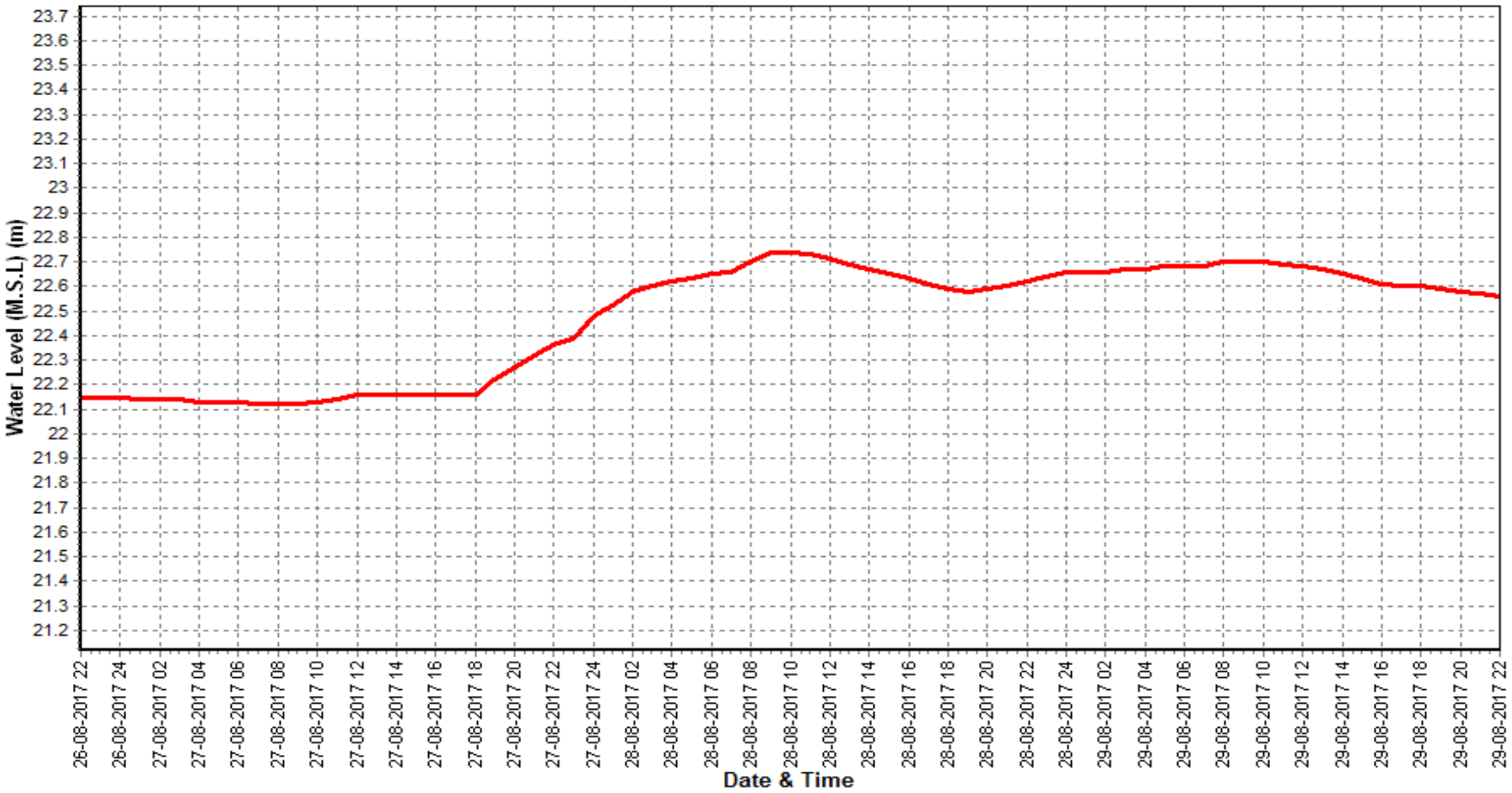


Time Span: 72 Hrs

Water Level vs. Time - Graph of 2nd Highest Flood Peak during the Year : 2017-2018

Station Name : ANAKAPALLI (AS000S3) **Division : E.E., Bhubaneswar**

Local River : Sarada **Sub-Division : Behrampur**

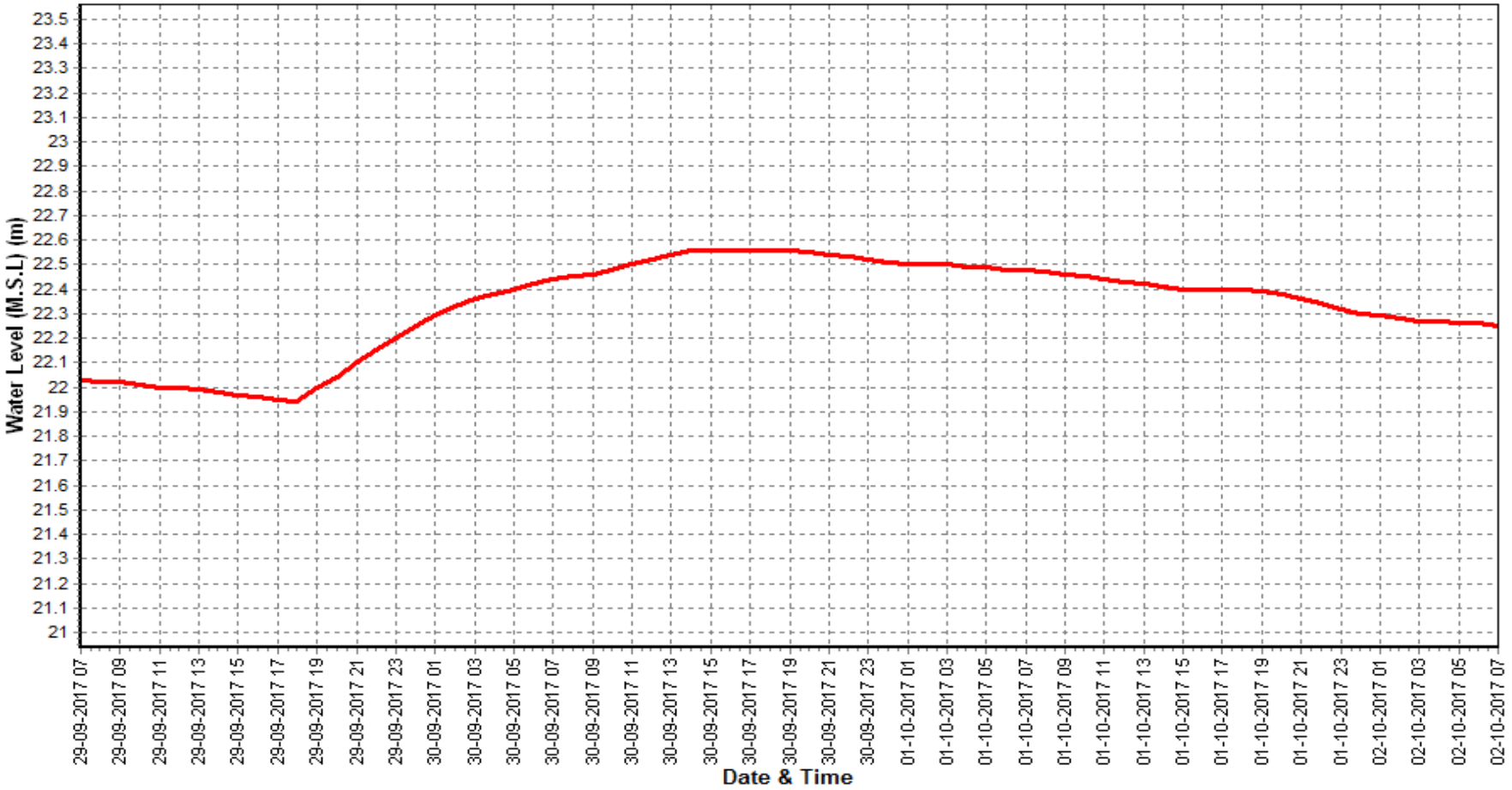


Time Span: 72 Hrs

Water Level vs. Time - Graph of 3rd Highest Flood Peak during the Year : 2017-2018

Station Name : ANAKAPALLI (AS000S3) **Division : E.E., Bhubaneswar**

Local River : Sarada **Sub-Division : Behrampur**



Time Span: 72 Hrs

LIST OF PERSONS INVOLVED IN THE PREPARATION OF WATER YEAR BOOK

1. Sri. N.C. NANDA, Executive Engineer, ERD, CWC, Bhubaneswar
2. Sri. R. Rajsekhar, AEE(HQS), ERD, CWC, Bhubaneswar
3. Sri. S.P. Rao, AEE, Vamsadhara Sub-Division, Berhampur
4. Sri. N.K. Bhuyan, ARO, ERD, CWC, Bhubaneswar
5. Sri. P. Samantara, SA, ERD, CWC, Bhubaneswar
6. Sri. S.S. Mohanty, Sr. Computer, ERD, CWC, Bhubaneswar
7. Sri. Ashok Mishra, SWA,ERD, Bhubaneswar
8. Sri. D.P. Moharana, MTS,ERD, Bhubaneswar
9. Sri. N. Sahoo, SWA,ERD, Bhubaneswar