CURRICULUM VITAE

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Father's Name : Late Prof. Parameswar Sarma

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Professional Qualifications:

i) Ph. D. (Water Resources Development) from University of Roorkee
ii) M.E. (Water Resources Development) from University of Roorkee
iii) P.G. Dip. (Water Resources Development) from University of Roorkee
iv) B.E. (Civil Engg.) from Gauhati University

Professional Career:

- Professor, (Upgraded HAG Level), Indian Institute of Technology (IIT) Roorkee, 2012 - 2015
- Professor, IIT Roorkee, 2001 - 2011
- Associate Professor, Univ. of Roorkee, 1998 – 2001
- Assistant Professor, Univ. of Roorkee, 1995 – 1998
- Reader, Univ. of Roorkee, 1983-1995
- Asst. Executive Engineer / Asst. Engineer, Flood Control & Irrigation Dept., Assam State Govt., 1973 – 1983

Administrative Experience:

- Head of the Department, Water Resources Development and Management, IIT Roorkee during 2010-2012.
- Chief Warden, Khosla International House, IIT Roorkee during 1996-2001.

[A] PROFESSIONAL FIELD EXPERIENCE (From 1973 to 1983):-

In Assam Govt. Flood Control & Irrigation Department (10 years)

- *Joined as Assistant Engineer on 15.3.1973 and later on promoted in 1983 as Assistant Executive Engineer.*

- *Acquired first hand experience of preparation of design and working drawings of several barrages and appurtenant hydraulic structures, canal structures; preparation of project reports, and supervision of construction of barrages in the tributaries of the Brahmaputra.*

- ***Prepared Hydraulic and Structural designs of the following major river hydraulic structures during 1973-83 period in Assam on the tributaries of the Brahmaputra river which had been implemented.***
  i) Dhansiri Barrage and River Training Works.
  ii) Champamati Barrage and River Training Works.
  iii) Sukla Head works and River Training Works.
  iv) Longa Head works and River Training Works.
  v) Kollonga Head works and River Training Works.
  vi) Bardikrai Barrage and River Training Works.
  vii) Dekadong Head works and River Training Works.
  viii) Dikharu Head works and River Training Works.
  ix) Kaldiya Barrage and River Training Works.
  x) Rupahi Head works and River Training Works.
  xi) Boroliya Barrage and River Training Works.
  xii) Golondi Aqueduct and River Training Works.
  xiii) Hydraulic Design of By-pass arrangements of Canal Power House of Dhansiri and Bardikrai Projects.

[B] TEACHING EXPERIENCE AT POST GRADUATE LEVEL (Since 1982-):-

I As a Guest Lecturer in Assam Engineering College (One year) During 1982-83 session, engaged in teaching in the Post graduate course on Flood Control and Watershed Management.

II In Department of Water Resources Development & Management (formerly WRDTC), Indian Institute of Technology, Roorkee, India (Since 1983 till date).

The following courses have been taught since 1983 in The M. Tech Programme of Water Resources Development and Irrigation Water Management courses in Department of WRD&M, IIT-Roorkee.

❖ Subjects Taught And Their Course Content In Brief

1. ***River Engineering***: Mechanics of sediment transport, river morphology, river training structures, river survey and investigations, mathematical and scale models, flood management, Application of remote sensing technique for river analysis.

2. ***WR Structures Design I:*** Design of Barrage, Sediment exclusion and desilting devices, stable channel design.

3. ***Hydro Power:*** Design of anchor blocks, water conductor system (open channel) along with appurtenant works.

4. ***WR Structures Design II:*** Design of spillways & energy dissipation devices.

5. ***Irrigation System Design*** : Layout and design of irrigation distribution system, Irrigation outlets, on farm water measuring devices, estimation and measurement of conveyance and seepage losses, Design of channel and water courses Lining etc.

6. ***Drainage and Land Reclamation***: Surface and sub-surface drainage of agricultural land its investigation and design reclamation techniques.

7. ***Design of Irrigation Works:*** Open channel flow, Irrigation structures design including Barrage Raft, discharge measurement, regulation methods.

8. ***Principles of Irrigation:*** Soil water plant relationship crop water requirement, soil moisture stress, timing of irrigation, irrigation efficiencies, problems of irrigated agriculture irrigation scheduling, canal automation.

9. ***Irrigation, Water Use Management & Flood Control:*** Hydraulic flow over weir and sluices, energy dissipation systems for low heads, raft foundations, abutment and pier designs, irrigation management including canal operation methods, flood control structures.

10. ***Water Use Management:*** Problems of irrigated agriculture, evaluating soil and land for irrigation water distribution systems and management of farm irrigation intensities and cropping pattern, drainage criteria, optimal timing of irrigation, reclamation of water logged and saline lands etc.

11. ***Numerical Methods:*** Numerical algorithms for computer programmes, solution of simultaneous equations, Iterative methods, polynomials, finite difference formulations for differential equations, applications to engineering problems etc.

12. ***Masonry and Concrete Dam:*** Gravity Dams: Forces acting on a dam including uplift and wave forces; Design criteria for stability; Determination of dam profile; Computation of stresses by gravity analysis; Elastic analysis by finite element method and structural modelling techniques; Seismic design and analysis. Foundation treatment: Preparation of foundation including consolidation; Curtain grouting and treatment of faults and weak zone; Foundation cutoffs and drainage arrangements; Layout and location of spillway; Powerhouse and other appurtenances. Hollow and buttress dams: Principles of hollow gravity dams; Stability criteria. Arch dams: Classification, principles of layout and factors affecting layout; Theories for arch dam analysis. Roller Compacted Concrete dam.

13. **(CT-615) Inland Navigation and Water Transport (in Centre For Transportation Systems (CTRANS)) *:* Inland Navigation Waterways:** Definitions & classifications of waterways, Navigation requirements, Waterway alignment and cutoffs, Multipurpose utilization of waterways; **River Training Techniques:** Erosion control structures, Drifting channel closure methods, Bandalling, surface panels, Bottom panels, submerged vanes, Case studies of river training; **Canalization and Navigation Canals:** Canalization, Navigation Canals; **River Modelling:** Numerical modelling techniques for fairway, Physical modelling of waterways; **Locks:** Locks with direct filling, Locks with indirect filling and emptying, Hydraulics of locks, Lifts and inclined planes, Lock approaches; **Dredging:** Dipper dredges, Hydraulic suction dredges, Cutter head dredges; **Transport on Inland Waterways:** Utilization of inland waterways, Traction, push tow barges, Resistance of ships; **Economics of Water Transport Systems:** Inter-model system, Private Public Partnership; **Inland Ports and Terminals:** Site selection, Physical infrastructure & design.

14. **WR-552: Construction Planning and Management:** Network systems in project planning; use of CPM in planning scheduling and controlling of construction projects. Network development and monitoring of construction projects. Use of PERT in construction planning- PERT analysis; project evaluation and construction planning and management.

❖ **Diagnostic Analysis Of Irrigation Systems**

Conducted Diagonistic Analysis of irrigation systems along with the M. Tech students of Irrigation Water Management course during April, 1998; Jan-Feb. 1989 and in April 1990, April 1991, April 1992, April 1993 and April 1994 in the Command Area of Upper Ganga Canal (near Roorkee)

[C] LIST OF Ph.D. THESES SUPERVISION:-

Sl. No.	Ph.D. Topic	Name of Ph.D. Student	Name of Co-Guides	Status
1.	Study of scour around permeable spurs	Ms. Shagoofta Rasool Shah	CSP Ojha IIT-R, India	Completed
2.	Experimental study on mechanics of braided stream and their characteristics	Mohd. Abdullah	CSP Ojha IIT-R, India	Completed
3.	Optimal water utilization and intra-basin water transfers in Cauvery basin, India	M.D. Patil	D. K Srivastava IIT-R, India	Completed
4.	Study of performance of submerged vanes with collar	U.P. Gupta	CSP Ojha IIT-R, India	Completed
5.	Experimental Investigation into flow around island	Utpal Kumar Mishra	CSP Ojha IIT-R, India	Completed
6.	ANN based spatio-temporal morphological model of the river Brahmaputra	R. N. Sankhua	P. K. Garg & A. D.Pandey IIT-R, India	Completed

7.	Analysis of Seepage from Irrigation Furrows	Ms. Kshyana Prava Samal	G. C. Mishra IIT-R, India	Completed
8.	Experimental Study of Piano Key Weir	Gopal Das Singhal	CSP Ojha IIT-R, India	Completed
9.	Energy Dissipation using Block Ramps	Ng. Romeji Singh	Z. Ahmad IIT-R, India	Completed
10.	Runoff and Sediment Modelling in part of the Brahmaputra Basin	Archana Sarkar	R. D. Singh NIH, India	Completed
11.	Land use and Land cover modelling in a part of Brahmaputra basin using Geoinformatics	Md. Surabuddin Mondal	P. K. Garg IIT-R, India & Martin Kappas Goettingen, Univ., Germany	Completed
12.	2-D Depth Averaged Modelling for Curvilinear Braided Stretch of Brahmaputra River	Md. Parwez Akhtar	CSP Ojha & R. P. Singh IIT-R, India	Completed
13.	Experimental Study of RCC Jack Jetty Systems for River Training	Ms. Anupama Nayak	Kerry Mazurek Univ of Saskatchewan Canada	Completed
14.	Experimental Investigations on channelization of River Kosi from Chatra to Nirmali	Mr. Sanjay A. Burele	Z. Ahmad & I.D. Gupta IIT-R, India	Completed
15.	Study of Climate Change and Its Impact on a part of Brahmaputra Basin	Ms. Pratibha Warwade	Bodo Ahrens Goethe-Univ. Germany & A. Pandey IIT-R, India	Completed
16.	Hydrological Modelling of a River Basin Using Multi-Satellite Precipitation Estimates	Mr. Dheeraj Kumar	A. Pandey IIT-R, India & Wolfgang Albert Fluegel FSU, Germany	Completed
17.	Simplified Derivation of UH and SUH for Runoff Estimation	Mr. Patil Pravin Rangrao	S. K. Mishra IIT-R, India	Completed
18.	Experimental Study of Turbulence Characteristics near Piano Key Weir in Open Channel	Mr. Harinarayan Tiwari	Sébastien Erpicum Univ. of Liege Belgium	Completed

19.	Experimental Study on Braiding and Its Control in a Brahmaputra River Reach	Md. Amir Khan	A. Jacob Odggard, IIHR Univ. of Iowa USA	In Progress
20.	Benefit Sharing in Transboundary River in South Asia	Mr. Subash Prasad Rai	Aaron T. Wolf Oregon State Univ. USA	In Progress
21.	Landscape Evolution and Flood Inundation Modelling in Large, Complex Braided River Brahmaputra, A Case Study of Majuli Island, North-East India	Prasujya Gogoi*	Colin Thorne Nick Mount The University of Nottingham, UK	In Progress

*As an External Supervisor for the Ph.D. student registered in The University of Nottingham, UK

[D] EXTERNAL EXAMINER OF THE FOLLOWING Ph.D THESES:-

Sl. No.	Topic	Name of Candidate	University/Year
1.	Study of two-dimensional flow propagating from an opening in the river dike	Arup Kumar Sarma	Gauhati University, 1999
2.	Finite element analysis of the effect of impervious core wall inclination on the behaviour of steady state phreatic line (In isotropic and homogeneous earth dam)	Preetam Kumar Pathak	Gauhati University, 2003
3.	Water quality modelling in an untreated dominated urban river	Ms. Girija T. R.	IIT Guwahati 2007
4.	Downstream local scour and sediment flushing characteristics of river diversion barrages	Malay Kanti Ghosh	IIT-Kharagpur 2008
5.	Modification of infiltration characteristics of natural ground formations using Horton's model	Saroj Kumar Verma	NIT, Patna 2008
6.	Effect of exceptional flow conditions on river diversion barrages and performance improvement using depressed secondary aprons	Kapileswar Mishra	IIT Kharagpur 2009
7.	Evaluation of scour depth around bridge piers	Pankaj Goswami	Guwahati University 2013
8.	Assessment and Management	Pheerawat	Asian Institute of

	of Soil Erosion under Land and Climate Change Scenarios in the Nan River Basin, Thailand	Plangoen	Technology (AIT) Bangkok, Thailand 2014
9.	Deterministic Approach for Reservoir Inflow Forecasting Using Geospatial Tools	Suryawanshi Ramakrishna Kisan	Indian Institute of Technology, Bombay 2015
10.	Multiobjective Optimization of Urban Drainage Network	Sandeep Vivek Kanitkar	College of Engineering Pune, 2016
11.	Assessment of Innovative Technology Intervention in Livelihood Strategies for Sustainable Rural Development: an Exploratory Study of District Rudraprayag, Uttarakhand	Rekha Dhanai	Dept. of Rural Technology School of Agriculture & Allied Sciences, H. N. B. Garhwal Univ. Srinagar
12.	Performance of MGNREGA in Sustainable Livelihood of Rural Community in District Pauri Garhwal Uttarakhand	Santosh Singh	Dept. of Rural Technology School of Agriculture & Allied Sciences, H. N. B. Garhwal Univ. Srinagar
13.	Integrated Remote Sensing and GIS Based Study on Urban Storm water Flooding in Guwahati	Ruby Das	Department of Civil Engineering, Assam Engineering College, Guwahati

[E] DELIVERED INVITED LECTURES / TALKS:-

- Delivered the inaugural Kavita Goswami Memorial Invited Lecture on *"Erosion By The River Brahmaputra In Dibrugarh District- A New Look At The Problem"* in **Dibrugarh University** on 30th December, 2002.
- Delivered invited talk on *Morphology of the Brahmaputra River* in **Central Water Commission, Govt. of India,** New Delhi on 12th February 2003.
- Delivered keynote address on *Interlinking of Indian rivers and the Brahmaputra* in **Indian Science Congress Association Workshop, Guwahati**, 28th March, 2005.
- Delivered keynote address on *Modelling of the Brahmaputra River* in National Workshop on "*Geology of the Sub-Himalayan Alluvium and Numerical Simulation of River Dynamics"* organized by **Indian Statistical Institute in Kolkata** during June 24-25, 2005.
- Delivered invited talk on invited paper on *"Management of Bank Erosion of the river Brahmaputra"* at International Water Management Institute – **TATA Annual Meet** held at Anand during Feb. 24-26, 2005.
- Delivered invited talk on *"Modelling and Management of the Brahmaputra River in India"* in **EPFL, University of Lausanne, Switzerland** on 11th October 2005.
- Delivered invited talk on *"Mathematical Modelling and Managing the Brahmaputra River in India"* in Civil & Environmental Engg. Deptt., **The University of Edinburgh, Scotland** on 21st August, 2006

- Delivered invited talk on *"Mathematical Modelling and Managing the Brahmaputra River in India"* in Deptt. of Civil & Environmental Engg., **The Imperial College, London** on 23rd August, 2006.
- Delivered invited presentation on *"Water conservation and management with reference to Brahmaputra river in India"* in **21st Indian Engineering Congress held in Guwahati** during December 22-24, 2006.
- Delivered invited presentation on *"Submerged Vanes – A Recent Development In Stream Bank Erosion Control"* in the Seminar on "River Erosion Control & Use of Gabions/Geosynthetics held in New Delhi on 8th June 2007 organized by **Bureau of Indian Standards.**
- Delivered invited presentation on *"Some Core Issues on River Linking in India"* in the **Indo-French Seminar on "Water" held in Ahmedabad** during January 29-31, 2008.
- Delivered invited talk on *"Morphodynamics: navigation and river training of Brahmaputra and Ganga Rivers in India",* in **EPFL, University of Lausanne, Switzerland** on 26th June 2008.
- Delivered Key Note lecture on *"Modelling and Management of Channel Instability of Brahmaputra and Ganga Rivers",* in the **Workshop on Inflow Forecasting Hydrology held in IIT Delhi, New Delhi** on 29th August, 2008.
- Delivered invited special presentation on *"Tackling Flood and Erosion problems of the Brahmaputra River",* for **Thirteenth Finance Commission, Govt. of India, New Delhi** on 4th February 2009.
- Delivered invited talk on *"Morphodynamics and Management of Brahmaputra and Ganga Rivers in India"* in **University of Southampton, UK** on 20th July 2009.
- Delivered invited talk on *"Performance Evaluation of Piano Key Weir for Dam Safety", in IIHR, **University of Iowa, USA** on 24th July 2009.*
- *Delivered Dr. K. L. Rao Memorial Lecture on "Climate Change and Some Adaptive Technology for Water Resources Sector", in the 26th National Convention of Civil Engineers, **Institution of Engineers (India), held in Guwahati** on Oct. 9-10, 2010.*
- *INNO-ASIA kickoff meeting dated Feb. 07-10, 2011, held in Friedrich-Schiller-University, Jena (FSU-Jena), Germany.*
- **Himalayan Climate Change Adaptation Programme (HICAP),** International Centre for Integrated Mountain Development (ICIMOD), 28-30 March, 2011 Kathmandu, Nepal.
- Delivered Key Note lecture on *"Water Resources Potential Of Brahmaputra And Barak Basins",* in the **National Conference on Water, Energy and Biodiversity** with special reference to North Eastern Region Institution of Engineers (India) held in Agartala, Tripura on 20-22 August, 2011.
- Delivered Talk on *"Morphdynamics and River Training of the Brahmaputra River in India"* in **University of Gottingen, Germany** on 2nd October, 2012.
- Delivered expert talk *on "Study of Climate Change and Certain Adaptation Technologies in Water Resources Sector"* **in National Institute of Technology, Kurukshetra** on 30th October, 2012 as part of Golden Jubilee Celebration of the Institute.

- Presented Invited Talk *on "Prospects and Imperatives for Water Management in South Asia"* in **ASEAN Delhi Dialogue V**, held in Delhi during February 19-20, 2013 organized by Indian Council of World Affairs, and FICCI.
- Delivered 2nd Dr. Sailadhar Gogoi Memorial Lecture on "Some Advances in Hydraulic Structures and River Engineering", in **Assam Engineering College Alumni Association, Guwahati,** Assam on 27th April, 2013.
- Delivered Key-Note Address on "Use of Technology for Accelerated Development of Assam and NE Region", in the National Conference on 'Emerging Global Trends in Engineering and Technology' held in **Assam Don Bosco University, Guwahati** on 7th March, 2014.
- Delivered Invited talk on "Novel Unified Technology for Hazard Mitigation with Water Management for Mountain Streams" in **INAE-Engineers Conclave-2014 at Indian Institute of Science, Bangalore** during October 30 – Nov. 1, 2014.
- Delivered Invited talk on "Harnessing The Brahmaputra: Key To Northeast India's Economic Regeneration" organized by Centre for Development and Peace Studies, in **Tezpur Central University,** during March 16-17, 2015.
- Delivered Invited talk on "Applications of Advances in Hydraulic Structures and River Engineering – (Also Potential Use for Jiadhal River)" in **Tezpur Central University,** during May 8-9, 2015.
- Delivered Key Note Lecture on "Prime Environment and Sustainable Development Issues In The Brahmaputra River Basin" in National Conference on Social Sector Development and Governance Issues in the North East, held during November 28-29, 2015 in **Krishna Kanta Handiqui State Open University, Guwahati Assam.**
- Delivered Key Note Lecture on "Musing of Policy and Governance Issues for Ganga River" in National Seminar on **'R & D Perspective for Rejuvenation of River Ganga' during December 16-17, 2015 at National Institute of Hydrology, Roorkee.**
- Delivered Invited Talk on "Wetland Study for Brahmaputra Plains and Kashmir Highlands" in International Conference on **'Geospatial Technologies and Wetland Management, during February 25th to 27th, 2016 at Centre for Studies on Bay of Bengal, Andhra University, Visakhapatnam.**
- Delivered S. N. Gupta Memorial Lecture on "**Some critical research areas in water resources management"** in **HYDRO-2016 INTERNATIONAL Conference** held in CWPRS, Pune during December 8-11, 2016 organized by **The Indian Society of Hydraulics.**
- Prof. Nayan Sharma, WRD&M delivered Key Note Lecture on **"Prime Sustainability Issues on Brahmaputra River Management"** in 1st International Conference on Civil Engineering for Sustainable Development - Opportunities and Challenges (CESDOC 2016), 19-21 December, 2016 at Civil Engineering Department, Assam Engineering College, Guwahati, Assam India.

[F] VISITING PROFESSORSHIP & OTHER ACHIEVEMENTS / ACTIVITIES / AWARDS:-

(i) Awarded Visiting Professorship in **Swiss Federal Institute of Technology (EPFL),** Lausanne, Switzerland during June – July, 2008 to further develop hydraulically efficient Piano Key Spillway, under Indo-Swiss Bilateral Research Initiative (ISBRI) Award.

(ii) **The University of Nottingham, UK** has conferred the **Honorary Professorship** of River Science in recognition of eminence in the field for three years starting from August, 2016.

(iii) Adjudged **STAR PERFORMER** & awarded EXCELLENT rating on overall performance for the year 2005-06 by IIT_Roorkee (evaluation made in 2008).

(iv) Chairman Organizing Committee, **International Workshop on River Management (IWRM-2010)** held in NASC Complex, New Delhi during Dec. 14-16, 2010.

(v) Chairman Organizing Committee, **International Workshop on Piano Key Weir for In-stream Storage and Dam Safety (PKWISD-2012)** held in India Habitat Centre, New Delhi during May 30 – June 1, 2012.

(vi) **Prof. Nayan Sharma,** IIT Roorkee has been conferred **S. N. Gupta Memorial Award** by *The Indian Society of Hydraulics* in their HYDRO-2016 INTERNATIONAL Conference held in CWPRS, Pune during December 8-11, 2016.

(vii) In HYDRO-2016 INTERNATIONAL Conference held in CWPRS, Pune during December 8-11, 2016. *The Indian Society of Hydraulics* awarded **JALVIGYAN PURASKAR** jointly to **Mohammad Aamir & Nayan Sharma** for their research paper **"Riverbank protection with Porcupine systems: development of rational design methodology", published in ISH Journal of Hydraulic Engineering.**

[G] BOOK PUBLICATIONS:-

- V. P. Singh, Nayan Sharma & C.S.P. Ojha, Jointly Edited a book titled ***"The Brahmaputra Basin Water Resources"*****,** Published by **Springer (*Kluwer) Publishers, P.O. Box 17,3300 AA Dordrecht, The Netherlands***, **Feb. 2004.**
- Nayan Sharma & Rajpal Singh, Co-Authored book titled **"History of Irrigation in Uttar Pradesh"** published by **INCID, Ministry of Water Resources, Govt. of India in 2011.**
- Nayan Sharma and Wolfgang Albert Flugel jointly Edited book titled **"Applied Geoinformatics for sustainable Integrated Land and Water Resources Management (ILWRM) in the Brahmaputra River basin. Results from the EC-project BRAHMATWINN"** – published by **Springer Publishers, Heidelberg, Germany, 2015**.
- Nayan Sharma edited book titled **"River System Analysis and Management"** published by **Springer publishers in 2016.**

[H] LIST OF RESEARCH PAPERS / PUBLICATIONS:-

JOURNAL PAPERS

1. Sharma Nayan (1992): Flood Flow Characteristics of the Brahmaputra River, Jalvigyan Sameeksha published by *Indian National Committee on Hydrology,* Vol. VII, No.1, June 1992.
2. Supanat Pariyachat and Sharma Nayan (1996): Evaluation of Water Distribution Practice of an Irrigation System in Thailand, *Journal of India Water Resources Society,* Vol 2 No. 3, July 1996, pp.65-72.

3. M. D. Abdullah, Nayan Sharma & C.S.P. Ojha, Performance Evaluation of Certain Braiding Indicators Using Data of a Reach of The Brahmaputra River in Bangladesh, *Journal of Indian Water Resources Society,* Vol 19 No. 3, July 1999, pp.21-27.

4. Rasool Shagoofta, Nayan Sharma & C.S.P. Ojha (1999): Re-estimation of Equilibrium Scour Depths For Single Solid Spurs, *Journal of Indian Water Resources Society,* Vol 19 No. 4, Oct. 1999, pp.32-39.

5. Kumar Venkatesh, Sharma Nayan, and Pandey A. D. (2002): Modelling of Brahmaputra River Cross-Sections Using ANN Technique, *Water and Energy International Journal, CBIP, New Delhi,* Vol. 59, No 3, July-Sept. 2002, pp.20-29.

6. Sharma Nayan (1982): A Broad Appraisal of the Exploitable Water Resources and the Projected Water Needs of the Brahmaputra Basin, India's North East – A Multi-Faced View pp. 169-177, *Prakash Publishing House,* 1982.

7. Nayan Sharma, A. D. Pandey & Kumar Venkatesh (2004): ANN Model Development for Bank-line Migration of River Brahmaputra Using Remote Sensing Data, *Journal of Hydraulic Engineering, Indian Society of Hydraulics,* Vol. 10 No. 1, March -2004, pp. 56-64.

8. Sharma Nayan (2004): Spatio -Temporal Morphological Features, The Brahmaputra Basin Water Resources, pp. 214-228, Water Science and Technology Library, Vol. 47, *Kluwer Academic Publishers, Dordrecht, The Netherlands,* Feb. 2004.

9. Sharma Nayan (2004): Mathematical Modelling and Braid Indicators, The Brahmaputra Basin Water Resources, pp. 229-260, Water Science and Technology Library, Vol. 47, *Kluwer Academic Publishers, Dordrecht, The Netherlands,* Feb. 2004.

10. Sharma Nayan (2004): Scour Around Spurs at Gumi Site, The Brahmaputra Basin Water Resources, pp. 274-298, Water Science and Technology Library, Vol. 47, *Kluwer Academic Publishers, Dordrecht, The Netherlands,* Feb. 2004.

11. Sharma Nayan (2004): Irrigation Development, The Brahmaputra Basin Water Resources, pp. 419-435, Water Science and Technology Library, Vol. 47, *Kluwer Academic Publishers, Dordrecht, The Netherlands,* Feb. 2004.

12. Gupta U. P., Sharma Nayan and Ojha C. S. P. (2004): Use of Submerged Vanes For River Training: A Critical Review For Further Research, *Journal of Indian Water Resources Society,* Vol. 24 No. 2, April, 2004, pp.53-63.

13. Sharma, Nayan., Das, D.; Shukla, R. (2004): A Review of Design Aspects for Stepped Spillways, *International Water Power and Dam Construction Journal, Wilmington Publishing Ltd., U. K.,* December 2004 Vol. XV, Issue 3, pp 219-233.

14. Pandey A.D, Sharma Nayan, Kumar Venkatesh, Kulkarni M.D. (2005): Comparative Study on Analysis of Barrage Raft by Hetenyi's Method and FEM, *Water and Energy International Journal, CBIP, New Delhi,* Vol. 62, No 1, pp.40-47, Jan.-Mar, 2005.

15. Gupta U. P., Sharma Nayan and Ojha C. S. P. (2005): Modelling of Local Scour Around Rectangular Submerged Vane, *ISH Journal of Hydraulic Engineering, Indian Society of Hydraulics,* Vol. 11, No. 1, pp. 57-66, March -2005.

16. Mittal S. and Sharma Nayan (2005): Control of Rainfall Induced Stream Bank Erosion by Soil Nailing, *Hydrology Journal of Indian Association of Hydrologists (IAH),* Vol. 28, No. 1-2, March-June 2005, pp.33-45.

17. Sankhua R.N, Sharma N. and Pandey A.D. (2005): Use of Remote Sensing and ANN in Assessment of Erosion Activities in Majuli –the World's Largest River Island, *International Journal of Remote Sensing, UK,* Vol. 26, No. 20, October 2005 pp 4445-4454.

18. Gupta U. P., Sharma Nayan and Ojha C. S. P. (2006): Economic analysis: Riprap with geo-filter vs. collar as scour protection around submerged vanes, *Water and Energy International Journal, CBIP, New Delhi,* Vol. 63, No 1, pp.39-45, Jan.-Mar, 2006.

19. Gupta U. P., Sharma Nayan and Ojha C. S. P. (2006): Vorticity with different shapes of submerged vanes*, ISH Journal of Hydraulic Engineering, Indian Society of Hydraulics,* Vol. 12, No. 1, pp. 13-26, March-2006.

20. Gupta U. P., Sharma Nayan and Ojha C. S. P. (2006): Performance evaluation of submergence ratio of a rectangular submerged vane with a collar, *International Journal of Sediment Research, Beijing, China,* Vol. 21, No.1, March- 2006, pp 42-49.

21. Sankhua R.N, Sharma Nayan and Pandey A.D. (2006): Application of artificial neural network for daily river stage forecast in the Brahmaputra River, *Water and Energy International Journal, CBIP, New Delhi,* Vol. 63, No 3, pp.55-62, Jul.-Sep., 2006.

22. Gupta U. P., Sharma Nayan and Ojha C. S. P. (2006): Decay of strength of vortex down stream of submerged vane, *ISH Journal of Hydraulic Engineering, Indian Society of Hydraulics,* Vol. 12, No. 2, pp. 37-48, Sep-2006.

23. Gupta U. P., Sharma Nayan and Ojha C. S. P. (2006): Dike formation with submerged vane, *International Journal of Sediment Research, Beijing, China,* Vol. 21, No. 3, pp 200-208, September 2006.

24. N. Rama Rao, M. Kapoor, N. Sharma and K. Venkateswarlu (2007): Yield prediction and water-logging assessment for tea plantation land using satellite image-based techniques, *International Journal of Remote Sensing, U. K.* Vol. 28, No. 7, pp 1561–1576, April 2007.

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38. Das D. and Sharma Nayan (2001) : Upgradation of Small Hydro Power Plant at Maniyar, India, proc. International Conference on Hydropower in the New Millennium, Honningsvag, Norway 2001.

39. Sharma Nayan (2002): Irrigation Games for Efficient Main System Management, proc. 18th Congress of International Commission on Irrigation and Drainage (ICID), Montreal July 20-28, 2002.

40. Sharma Nayan (2002): An Approach For Developing Spatio-Temporal Model of the River Brahmaputra, proc. 18th National Convention of Civil Engineers, Institution of Engineers (INDIA), Nov. 9-10, 2002, Guwahati, Assam.

41. Sharma Nayan and Singhal G. D. (2003): Experimental Study on Labyrinth Spillways, proc. International Conference on Engineering of Dams And Appurtenant Works Including Power Houses & Transmission Systems – 29-31 January, 2003, New Delhi.

42. Sharma Nayan (2003) The River Linking Project Vis-a-Vis The Brahmaputra Basin, proc. National Seminar on Linking the Major Rivers of India: Possibilities and Apprehensions, 29thApril, 2003, Guwahati.

43. Shukla Rajesh and Sharma Nayan (2003): Hydraulic Model Experimentation on Multi-Slope Stepped Spillways, International Conference on Water & Environment, Bhopal, India, Dec. 2003.

44. Sharma Nayan and Singhal G. D. (2003): Interim Findings on Experimentation on Labyrinth Spillways for Higher Discharges, International Conference on Water & Environment, Bhopal, India, Dec. 2003.

45. Sharma Nayan (2003): Development of Irrigation Games as Tool for PIM for Efficient Main System Management, Water Summit 2003, New Delhi, Oct. 2003.

46. Sharma Nayan (2004): Application of Computational River Hydraulics, ANN and Remote Sensing Techniques for Effective River Management in India, Seminar on Silting of Rivers Problems and Solutions, New Delhi, 12-13 February 2004.

47. Sharma Nayan and Kumar Venkatesh (2004): Monitoring of Morphological Changes of Indian Rivers through ANN Based Spatio-Temporal Model-An Approach, Seminar on Silting of Rivers Problems and Solutions, New Delhi, 12-13 February 2004.

48. Sharma Nayan and Gupta U. P. (2004): Submerged Vanes: A Modern Technique For Sediment Management, Seminar on Silting of Rivers Problems and Solutions, New Delhi, 12-13 February 2004.

49. Sharma Nayan & Singhal G. D. (2004): Experimental Research On Piano Key Weir, International Conference Water India-4, 3-4 February 2004, New Delhi (India)

50. Sharma Nayan (2004): Flood Management Through Structural and Non-Structural Measures, proc. Workshop on Flood And Drought Management, CBIP, New Delhi, Sept. 16-17, 2004, PP FM 108-119.

51. Sharma Nayan and R. K. Biswal (2004): Inter Basin Water Transfer and Water Balance Study of Mahanadi Basin, proc. National Conference on Hydraulics & Water Resources, HYDRO-2004, Dec. 27-28, 2004, Nagpur (India), pp 79-84.

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53. Sharma Nayan (2005): Spatio-Temporal Modeling of Hydrological Variability for the River Brahmaputra using Artificial Neural Network, proc. International Symposium on Role of Water Sciences in Transboundary River Basin Management, Ubon Ratchathani, Thailand, March 10-12, 2005, pp 25-31.

54. Sharma Nayan, Singhal G.D. and Das D. (2005): Experimental Study On Labyrinth Spillways For Higher Discharges, proc. Development of Hydro Power Projects - A Prospective Challenge, organized by CBIP & HPSEB, Shimla, April 20-22, 2005.

55. Sharma Nayan (2005): Problems of the Trans-Boundary Brahmaputra River Ecosystem Imperilling Eco-Security and Livelihoods of the Riparian States, for International Symposium in Dali, Yunnan Province China, December 10-15, 2005.

56. Sharma Nayan, B. R. Parida and B. Oinam, (2006): Assessment of Annual Soil Erosion Rate of Brahmaputra Basin in India Using Remote Sensing and GIS, International Symposium on Sediment Management in South & South East Asia, AIT Bangkok, April 24-25, 2006.

57. Sharma Nayan, B.Oinam and B.R.Parida(2006): Remote sensing based study on channel changes and wetland eco-system dynamics of the Brahmaputra River in India, proc. International Conference On 'Riverine Hydroecology: Advances in Research and Applications', Stirling University, Scotland, August 14-18, 2006, pp 84-85.

58. Ng. Romeji Singh and Sharma Nayan (2007): Fluvial Patterns in the Loktak Lake Sub-basin through Two Interlinking Channels, proc. XII World Lakes Conference - Theme (Special Group of Lakes and Wetlands) Jaipur, Ministry of Environment & Forest (Govt. of India) & International Lake Environment Committee (ILEC) Foundation, Japan, India, 28th Oct -2nd Nov, 2007.

59. Sharma Nayan and Singhal G. D. (2007): The Piano Key Weir : A New Dam Safety Solution for Enhanced Spillway Capacity", International Conference on Dam Safety 2007, 9-13 September, 2007 Austin, Texas, United States.

60. Sharma Nayan (2008): A dam safety solution by Piano Key Weir for enhanced spillway capacity, International Conference on Hydro Vision 2008, July 14-18, 2008 Sacramento, California, USA.

61. Sharma Nayan (2009): Performance Evaluation of Piano Key Weir for a Hydro Electric Project in India, proceedings of Waterpower XVI held in Spoken, Washington, USA on July 27-30, 2009.

62. Md. Surabuddin Mondal, Nayan Sharma,P K Garg, R P Singh., (2009).Satellite Data Based Analysis of Wetland Dynamics Focusing on Flood Management. Second India Disaster Management Congress 2009, National Institute of Disaster Management, New Delhi, India.

63. Sharma Nayan and Akhtar Parwez (2010) A Satellite Data Based Approach to Study Braiding Behaviour for Monitoring and Management of the Brahmaputra River, published in proceedings of 3rd International Perspective on Current & Future State of Water Resources & the Environment, January 4-6, 2010 organized by American Society of Civil Engineers in IIT Madras, Chennai, India.

64. Rakesh Kumar, A. Sarkar, R.D. Singh, N. Sharma, "Application of ANN Technique in Rainfall-Runoff Modelling", 14th National Symposium on Hydrology with focal theme on "Management of Water Resources under Drought Situation; 01/2010.

65. Singhal G. D. and Sharma Nayan (2011): "Rehabilitation of Sawara Kuddu Hydro Electric Project Model studies of Piano Key Weir in India", International Workshop on Labyrinth and Piano Key Weirs Liege, Belgium 9-11 February 2011.

66. Sharma Nayan and Akhtar Parwez (2011): Satellite Data Based Impact Assessment of Basin Characteristics for Brahmaputra River System of India, World Environmental and Water Resources Congress 2011, ASCE, May 22-26, 2011, Palm, Springs, CA, USA, pp 3792-3802.

67. Archana Sarkar, R. D. Singh and Nayan Sharma (2011): Spatial Pattern of Rainfall Trends in a Part of Brahmaputra Basin, Proceedings of National Conference on Water, Energy and Biodiversity with special reference to North Eastern Region, The Institution of Engineers (INDIA) held in Agartala, Tripura on 20-22 August, 2011, pp 92-102.

68. Sharma Nayan and Singhal Gopal Das (2012): Physical Modelling of Piano Key Weir for Sawara Kuddu Hydro Electric Project in India, Proceedings of International Workshop on Piano Key Weir for In-Stream Storage Creation and Dam Safety (PKWISD-2012), May 30th – June 1, 2012, New Delhi.

69. Md. Surabuddin Mondal, N. Sharma, M. Kappas, P. K. Garg. CA Markov modeling of dynamics of land use land cover and sensitivity analysis to identify sensitive parameter(s), 32nd International Geographical Congress of International Geographical Union (IGU) - IGC Cologne 2012, 26 - 30 August 2012, University of Cologne, Koln, Germany.

70. Md. Surabuddin Mondal, N. Sharma, M. Kappas, P. K. Garg. Modelling of Spatio-Temporal Dynamics of Land Use Land Cover and assessment of filter effects on prediction results using Multi-Temporal Satellite Images and GIS, Annual Conference of American Society for Photogrammetry and Remote Sensing, ASPRS 2012: Imaging and Geospatial Technologies Into the Future, 19-23 March, 2012, Sacramento, California, U. S. A.

71. Md. Surabuddin Mondal, Nayan Sharma, Martin Kappas, P K Garg. Modelling and validation of Land Use Land Cover Dynamics in a part of Brahmaputra River Basin using Geoinformatics Techniques, Annual meeting of Association of American Geographers (AAG – 2012), 22-28 February, 2012, New York, U. S. A.

72. Md. Surabuddin Mondal, N. Sharma, M. Kappas, P. K. Garg, Modeling of Spatio-Temporal Dynamics of Land Use and Land Cover Using Geoinformatics Techniques,Climate Change, Deforestation 7 and the Future of African Rainforests Conference at the University of Oxford, United Kingdom (U. K.),4-6 January 2012.

73. Md. Surabuddin Mondal, Nayan Sharma, Martin Kappas, P. K. Garg. Statistical Independence Test and Validation of Land Use Land Cover Prediction Results when using CA Markov LUCC Model, Annual conference of Remote Sensing & Photogrammetry Society - RSPSoc 2011: Earth Observation in a Changing World, 13-15 September, 2011, Bournemouth University, United Kingdom (U. K.).

74. Harinarayan Tiwari and Nayan Sharma (2012), "A Case Study of Wangchu (Bhutan) Reservoir Sedimentation using HEC-RAS", Proceedings for Seminar on "Sedimentation in Reservoir", 21st December 2012, Water Resources Department, Bureau of Indian Standards, New Delhi, pp-122-127.

75. Archana Sarkar, R. D. Singh, Nayan Sharma, "Climate Variability and Trends in parts of Brahmaputra Basin", Proc India Water Week 2012, April 10-14, 2012, New Delhi, India.

76. P. R. Patil, S. K. Mishra, N. Sharma, D. Das, and A. Sharma (2013). "Two-Parameter Gamma-Based SUH Derivation for Design Flood Estimation." International Seminar on Hydro Power and Sustainable Development, Organized by OHPC in Association with CBIP, 124-133, 21st -22nd February 2013, Bhubaneswar.
77. Archana Sarkar, R. D. Singh and Nayan Sharma (2013), "Suspended Sediment Flux Modeling in a Transboundary Himalayan River Basin", published in Proceedings of H04, IAHS-IAPSO-IASPEL Assembly, Gothenburg, Sweden, July 2013 (IAHS Publ. 361, 2013) pp 286-293.

78. Shukla V. K., Nagendra T. and Sharma Nayan (2014), "Numerical modeling technique for tracking of disposed dredged material in offshore area" Published in the Proceedings of the Fifth Indian National Conference on Harbour and Ocean Engineering (INCHOE2014), 5-7 Feb. 2014, CSIR-NIO, Goa, India.

79. Dheeraj Kumar, Ashish Pandey, Nayan Sharma and Wolfgang-Albert Flügel (2014): "Evaluation of TRMM- Precipitation With Raingauge Observation Using Hydrological Model J2000" Published in the Proceedings of EWRI- International Weather Radar and Hydrology Symposium to be held April 7-10, 2014, in the Washington, DC Metropolitan Area.

80. Abhigya Shriwastava, and Nayan Sharma (2014), "Investigation of RCC Jack Jetty as a Cost Effective River Training Structure" Published in the Proceedings of International Conference on Agricultural, Environmental and Biological Sciences (AEBS-2014) April 24-25, 2014 Phuket (Thailand), pp 42-46.

81. Pooja Singh and Nayan Sharma (2014), "Investigation of impacts of Chevron as a river training measure on river hydraulics" Published in the Proceedings of International Conference on Agricultural, Environmental and Biological Sciences (AEBS-2014), April 24-25, 2014 Phuket (Thailand).

82. Sanjay A. Burele, Nayan Sharma, Z. Ahmad and I. D. Gupta (2014), "Morphological Changes Of River Kosi From Chatra To Nirmali" published in the Proc. in Hydraulics, Water Resources, Coastal and Environmental Engineering (HYDRO 2014), Dec. 18-20th, 2014, pp 109-123.

83. Sanjay A. Burele, Nayan Sharma, Z. Ahmad and I. D. Gupta (2014), “Use Of Artificial Intelligence For Sediment Rating And Gauge-Discharge Curves” Proc. in Hydraulics, Water Resources, Coastal and Environmental Engineering (HYDRO 2014), Dec. 18-20th, 2014, pp 109-123.

84. Tiwari, Harinarayan; Sharma, Nayan (2014), “Gaps and Scope of Turbulence Study Near Piano Key Weir (PKW)” Proc. In Hydraulics, Water Resources, Coastal and Environmental Engineering (HYDRO 2014), Dec. 18-20th, 2014, pp 486-492.

85. Mohd Aamir, Nayan Sharma (2014), “Sediment Trap Efficiency of Porcupine Systems for Riverbank Protection” Proc. In Hydraulics, Water Resources, Coastal and Environmental Engineering (HYDRO 2014), Dec. 18-20th, 2014, pp 688-698.

86. Harinarayan Tiwari & Nayan Sharma (2015) “Interpretation of near bed RMS velocity & shear stress in the approach flow of Piano Key Weir (PKW)”, Proc. In 2nd International Workshop on Hydraulic Structures: Data Validation, Coimbra, Portugal, 7-9 May, 2015, pp 31-39.

87. Nayan Sharma (2015) “Harnessing the Brahmaputra: Key to Northeast India’s Economic Regeneration, Proc. In Shared Rivers in South Asia: Challenges & Prospects in Lower Riparian States, Tezpur, Assam, 16-17th March, 2015, pp 86-111.

88. U. P. Gupta, C. S. P. Ojha and Nayan Sharma "Submerged Vanes As Sediment Management Device In Hydro Schemes”, 20th International Conference on Hydraulics, Water Resources and River Engineering, Hydro 2015 International, 17-19 December, 2015, Paper ID HYD-400.

89. Ashish Chaudhary, Nayan Sharma, Ujjwal Singh, Radha Krishan , "Analytical Study of Some Himalayan Cloud Burst Events", 20th International Conference on Hydraulics, Water Resources and River Engineering, Hydro 2015 International, 17-19 December, 2015, Paper ID HYD-188.

90. M. A. Khan, Harinarayan Tiwari, Nayan Sharma, "A Review of Reynolds Stress Models for Turbulent Flow", 20th International Conference on Hydraulics, Water Resources and River Engineering, Hydro 2015 International, 17-19 December, 2015, Paper ID HYD-124.

91. Mohammad Aamir, Nayan Sharma, "Efficiency of Triangular and Prismatic Porcupines in Capturing Sediment for River Training", 20th International Conference on Hydraulics, Water Resources and River Engineering, Hydro 2015 International, 17-19 December, 2015, Paper ID HYD-316.

92. R. K. Choudhary, S. P. Rai, Harinarayan Tiwari, Pooja Singh, Nayan Sharma, "Hydropolitics between India & China: Status vs. Perspectives", 20th International Conference on Hydraulics, Water Resources and River Engineering, Hydro 2015 International, 17-19 December, 2015, Paper ID HYD-049.

93. S. A. Burele, Nayan Sharma, Zulfequar Ahmad, I. D. Gupta, "Mathematical Model to Study Channelization by Lowering the River Bed Through Excavation", 20th International Conference on Hydraulics, Water Resources and River Engineering, Hydro 2015 International, 17-19 December, 2015, Paper ID HYD-253.

94. P. R. Patil, S. K. Mishra, Nayan Sharma and V. P. Singh “Nondimensional UH Based Smoothing OF S-Curve Derived UH Oscillations”, International Conference on Water, Environment, Energy and Society (ICWEES-2016), March 15 – 18, 2016.

95. P. R. Patil, S. K. Mishra and Nayan Sharma, “Oscillation Free Altered Duration UH Derivation Using Nondimensional Approach” ICEMS 2016, Jaipur, India, March 17-19, 2016.

Accepted in International Conference

Subash Rai, Nayan Sharma and Aaron Wolf, “India-Nepal Transboundary Water Management: A Critical Case of Hydro-Diplomacy” International Conference on the Status and Future of the World's Large Rivers, Delhi, India, April 18-21, 2017

[I] ATTENDED TRAINING PROGRAMMES:-

(i) Attended a 7-day training programme at Delhi organized during October, 1998 by NIIT-ESRI INDIA on GIS ARC-INFO & ERDAS Image Processing software

(ii) Attended a 4-day training programme at Roorkee organized during September 5-8, 2001 by Civil Engg. Deptt. IIT, Roorkee on Global Positioning System

[J] MEMBER / OFFICE BEARER OF PROFESSIONAL BODIES:-

1. Secretary, **Indian Water Resources Society** during 1990-92.
2. Executive Vice President **Indian Water Resources Society** during 2010 - 2012
3. Fellow, **Indian Water Resources Society.**
4. Member, **Indian Geotechnical Society**.
5. Member, **Indian Society of Hydraulics.**
6. Member of **International Association of Hydrological Sciences**, U. K.

[K] MEMBER OF TECHNICAL COMMITTEES

1. Member of the **Barrages and Weirs Sectional Committee**, RVA 20 Bureau of Indian Standards, Govt. of India.
2. Member of Sectional Committee on **Spillways Including Energy Dissipators**, WRD10 of Bureau of Indian Standards, Govt. of India.
3. Member of Sectional Committee on **Water Conductor System**, WRD14 of Bureau of Indian Standards, Govt. of India.
4. Member of Sectional Committee on **Canals and Cross Drainage Works**, WRD-13 of Bureau of Indian Standards, Govt. of India.
5. Member of Sectional Committee on **River Training and Diversion Works**, WRD-22 of Bureau of Indian Standards, Govt. of India.
6. Member of Sectional Committee on **Lakes & Reservoirs**, WRD-10 of Bureau of Indian Standards, Govt. of India.

7. Member of Sectional Committee on **Water Resources Planning**, Management and Evaluation WRD 6 of Bureau of Indian Standards, Govt. of India.

8. Member of Panel - 3 for revision of IS 6966 (Part 2), WRD 22/P3, Hydraulic Design Of Barrages And Weirs – Guidelines, Part 2 Gravely And Bouldery Reaches of **Bureau of Indian Standards, Govt. of India, 2011.**

9. Member of Panel - 1 for revision of IS 8408:1994 Guidelines for Planning and design of permeable spurs in alluvial river, WRD 22/P1, of **Bureau of Indian Standards, Govt. of India, 2011.**

10. Member of Panel - 6 for revision of IS 10751, IS 12094 & IS 14262 WRD 22/P6, of **Bureau of Indian Standards, Govt. of India, 2011.**

11. Member of **Dams and Spillways** Sectional Committee, WRD 9, **Bureau of Indian Standards, Govt. of India, 2011.**

12. Member of Panel for preparation of draft for **Guidelines for Planning and Design of River Power Houses integrated with Barrages,** Part 2 Design Criteria (as part 2 of IS 14592), WRD 22/P2 of Bureau of Indian Standards, Govt. of India.

13. Member of Panel for preparation of draft for **Criteria for Selection of type of Anti erosion works,** WRD 22/P4 of Bureau of Indian Standards, Govt. of India.

14. Member of Panel for revision of IS 10084(Part 2):1994 **Design of Diversion Works - Criteria: Part 2 Diversion channel and Open cut or Conduit in the body of Dam,** WRD 22/P5 of Bureau of Indian Standards, Govt. of India, 2011.

15. Member of Panel for revision of IS 10751:1994, IS 12094:2000 & IS 14262:1995, WRD 22/P6 of **Bureau of Indian Standards, Govt. of India, 2011.**

16. Member of Hydrometry Sectional Committee, WRD 01, **Bureau of Indian Standards, Govt. of India**, 2013-.

17. Member of Hydraulic Structures Instrumentation sectional Committee, WRD 16, **Bureau of Indian Standards, Govt. of India**, 2013-.

18. Member of ***High Power Committee on Inter Linking of Rivers***, constituted by Govt. of Assam in 2003.

19. Member of **Committee on Morphological Studies of River Brahmaputra,** constituted by Central Water Commission, Govt. of India, 2004.

20. Member of International Program Committee for **EMS 2004** held in Virgin Islands, U. S. A. during November, 2004 organized by The International Association of Science & Technology for Development, Calgary, Canada.

21. Member of International Research Working Group on **Disaster Reduction and Eco-system for Mekong River Basin Development**, constituted by United Nations University, Tokyo, during 2005.

22. Member, Editorial Board of **Assam Science Society** Journal.

23. Member of **Panel Of Experts** constituted by Himachal Pradesh State Electricity Board for Uhl State-III HEP, Sawra-Kuddu HEP, & Sainj HEP.

24. Member of Technical Committee on **Inland Water Transport** constituted by Inland Waterways Authority of India 2008-2009.

25. Member of International Program Committee for **EMS 2006** held in St. Thomas, United States Virgin Islands during December, 2006 organized by The International Association of Science & Technology for Development, Calgary, Canada.

26. Member of **Core Group on Floods of National Disaster Management Authority**, Govt. of India 2006-2007..

27. Team Leader of **River Expert Committee** constituted for Protection of Tezpur Central University from Flood & Erosion by Jia Bhoreli River in Assam in 2007.

28. Member of **High Level Steering Committee for National Water Mission**, Ministry of Water Resources, Govt. of India 2009-2010.

29. Member of **Sub-Committee on Basin Level Planning & Management**, National Water Mission, Ministry of Water Resources, Govt. of India 2009-2010.

30. Member of **High Level Expert Team** constituted by Ministry of Water Resources for advising on the flood and course change of Kosi river in Bihar 2009-.

31. Member of Management Committee of Bharat Singh Chair for **Water Resources of IIT_Roorkee.**

32. Member of **Task Force on Restoration of Sunderbans Embankments** damaged by the cyclone “Aila” in West Bengal, constituted by Ministry of Water Resources, Govt. of India 2009-2010.

33. **Charter Member of High Himalayan Forum (HHF),** New Delhi

34. Visiting Expert for Panel of **Experts for Sainj HEP,** Himachal Pradesh Power Corporation Ltd.

35. Visiting Expert for Panel of **Experts for Shongtong Karcham HEP,** Himachal Pradesh Power Corporation Ltd.

36. **Nomination Council Member for Infosys Prize** constituted by Infosys Science Foundation 2010-.

37. Member of **International Scientific Committee for International Workshop on Labyrinth and Piano Key Weirs,** 9-11 February 2011, Liege, Belgium.

38. **Member of Assam Flood and Erosion Management Commission, Govt. of Assam, 2010-2012.**

39. **Panel Expert for Kosi Bandh Katan Judicial Enquiry Commission, Govt. of Bihar, 2010 - 2012.**

40. **Member of Core Group on Climate Change Related to National Water Mission, State Water Resources Agency, U. P. Govt., 2011.**

41. **Member of Committee on water harvesting projects for Ranthambhore Tiger Reserve, constituted by Govt. of Rajasthan, 2011.**

42. Member of **Advisory Board of National Water Academy**, CWC, Govt. of India, 2010.

43. Member of **Apex Advisory Committee on R&D** for Planning/ Monitoring, of various R&D activities related to Hydro Sector, **Tehri Hydro Development Corporation India Ltd. (THDCIL)**, Rishikesh, 2012.

44. Member of **Board of Studies for Department of Rural Technology,** Hemvati Nandan Bahuguna Garhwal University, Srinagar, Uttarakhand (A Central University) 2012

45. Member of **Expert Committee for Scientific Assessment of Flood Prone Areas in India,** Constituted by Ministry of Water Resources (Ganga Wing), Govt. of India 2012.

46. Member of **Technical Expert Committee** for Review of Asiganga-I and Asiganga-II Small Hydro Projects in district Uttarkashi, Uttarakhand State, constituted by **Uttarakhand Jal Vidyut Nigam Ltd**., August 2012.

47. Member of **Indian National Committee on Surface Water (INCSW),** constituted by Central Water Commission, INCSW Secretariat, New Delhi, September 2012.

48. Member of **Advisory Group of Experts on Flood and Erosion and Water Management,** constituted by Govt. of Assam on November 2012.

49. Member of the **Expert Committee for Preparation of Bihar Flood Hazard Atlas,** constituted by National Disaster Management Authority, Govt. of India in 2012

50. Member of **ITRA – Water Review Panel under initiative entitled IT Based Innovations to Sustainability of Water Resources,** constituted by Information Technology Research Academy (ITRA), Govt. of India, 2013 - .

51. Member of the **International Scientific Committee** for Workshop on Labyrinth and Piano Key weirs – PKW 2013 held in Paris during November 2013.

52. Member of **Committee to Review the Procedure of Project Appraisal in Central Water Commission (CWC),** constituted by Ministry of Water Resources, Govt. of India, April 2013.

53. Member of Faculty Selection Committee for Civil Engineering Department, **IIT Guwahati** during 2007.

54. Member of Faculty Selection Committee for Water Resources Development & Management Dept., **IIT Roorkee** during 2010-2012.

55. Member of International Advisory Committee of the **4th International Conference on Water and Flood Management (ICWFM-2013),** organized by Institute of Water and Flood Management (IWFM), Bangladesh University of Engineering and Technology (BUET) held during 9-11 March, 2013 in Dhaka, Bangladesh.

56. Member of International Advisory Committee of the **5th International Conference on Water and Flood Management (ICWFM-2015),** organized by Institute of Water and Flood Management (IWFM), Bangladesh University of Engineering and Technology (BUET) to be held during 6-8 March, 2015 in Dhaka, Bangladesh.

57. Member of Committee to Suggest Remedial Measures on **Flood Problem of Guwahati,** Constituted by Govt. of Assam, 31st July, 2014.

58. **Distinguished Fellow of Centre for Development and Peace Studies**, Guwahati.

59. Expert Advisor to DHI for **Uttarakahnd River Morphology study and design of river bank protection,** 2016.

60. Member of **Committee constituted on Ganga Act,** by National Mission of Clean Ganga, Ministry of Water Resources, River Development & Ganga Rejuvenation, Govt. of India, 2016.

61. Member of **Committee for suggesting measures for Revival of River Bhagirathi,** by National Mission of Clean Ganga, Ministry of Water Resources, River Development & Ganga Rejuvenation, Govt. of India, 2016.

62. Panel Member of WRD22/ P1&6 dealing with revision of IS:8408 (Planning and design of Groynes/ spur in Alluvial river), IS 10751 (Planning and design of Guide banks for Alluvial river) and IS 14262 (Planning and design of Revetments), **constituted by Bureau of Indian Standards, Govt. of India, 2016.**

[L] REVIEWER / EDITORIAL BOARD MEMBER OF JOURNALS / PROJECTS

1. Reviewer of the Journal of the **American Water Resources Association**.

2. Reviewer of Research Proposals for **Indo-U.S. Science and Technology Forum**
3. Referee of Leverhulme Trust, London, U. K. for evaluation of project proposal.

4. Reviewer of **Flood and Erosion Protection Works in Assam**, executed under National Rural Employment Guarantee Act (NREGA).

5. Reviewer of **Institution of Engineers** (India) Journal

6. Expert Reviewer of IGCS Research Proposal on “Modeling the effects of land use and climate change upon in-stream hydraulics in mountainous streams in rapidly urbanizing regions (close to Pune) of the Western-Ghats” of **Indo-German Centre for Sustainability, IIT Madras,** January 2014.

7. Reviewer of Geocarto International Journal, **Taylor & Francis Group, London UK, 2014. .**

8. Review of Manuscript "Beyond The Transboundary River -Issues Of Riparian Responsibilities" **Journal of The Institution of Engineers (India): Series A, Springer, India**

9. **Member of Editorial board of "Journal of Ecology"** STM Publications, Noida, India

10. Member of **Editorial Board in The Agriculturist International Journal,** Nigeria

11. Member of **Editorial board of "Journal of Advance Research in Civil and Environmental Engineering",** India.

12. Reviewer of **Sky Journal of Agricultural Research (SJAR),** Ghana / Kenya.

13. Reviewer of **Universal Journal of Geosciences, Horizon Research Publishing, USA.**

14. Reviewer of **Journal of Earth Science Informatics**, Springer Publishers.

15. Reviewer of **Journal of Flood Risk Management, John Wiley & Sons, Inc., UK**

16. Reviewer of Book Manuscript for **OXFORD University Press.**

17. Reviewer of Journal, Civil Engineering and Architecture, Horizon Research Publishing, USA.

18. Reviewer of Asian Journal of Atmospheric Environment, Korea

19. Reviewer of Journal, Neural Computing and Applications, Springer Publishers.

20. Reviewer of Journal, Sādhanā published by Springer Publishers.

21. Reviewer of **Applied Geography Journal**, Elsevier.

22. Reviewer of **Geomorphology Journal,** Elsevier

23. Reviewer of **International Journal of River Basin Management,** Taylor & Francis, Australia.

24. Reviewer of **Journal of Hydrological Processes, John Wiley & Sons, Inc., UK.**

[M] LIST OF CONSULTANCY PROJECTS (COMPLETED):-

1. Principal Investigator of Consultancy to ***Engineers India Ltd./Inland Waterways Authority of India*** for the Project on Improvement of Navigation of the River Ganga Between Patna and Munghyr - Stage I 1997.

2. Members of Consultancy Team on Planning & Design of Micro/Mini Hydel Projects Deo Right (1.0 lakh) Projects for ***Orissa Power Generation Corporation*** – 1996.

3. Members of Consultancy Team on Planning & Design of Micro/Mini Hydel Projects Deo Left (1.0 lakh) Projects for ***Orissa Power Generation Corporation*** – 1996.

4. Members of Consultancy Team on Planning & Design of Micro/Mini Hydel Projects Baghua (1.0 lakh) Projects for ***Orissa Power Generation Corporation*** – 1996.

5. Member of Consultancy Team on Planning & Design of Mini Hydel Station at the Balancing Reservoir of Ramagundam Super Thermal Power Station of ***National Thermal Power Corporation, India*** (1.1 lakh) – 1995.

6. Member of Consultancy Team for Development of Digital Terrain Model for ***Arunachal Pradesh Power Department*** (0.3 lakh) – 1995.

7. River Training of the Beas River at Manali (SASE) for ***Defence Research Development Organization, Govt. of India*** *(*1.5 lakh) 1996-97.

8. Upgradation for Improved Generation of Maniyar Small Hydro Project of *Carborundum* ***Universal Ltd.,*** *Chennai* (Rs. 10.3 lakhs) 1998-2000.

9. River Training Works in the Beas River for Safeguarding Bhuntar Airport and Runway Extension near Kullu, for ***Airports Authority of India*** (Rs. 4.5 lakhs) 1998-1999.

10. Investigations for Locating Intake and Desilting Chamber for Jaldhaka Hydroelectric Project of ***WBSEB*** (Rs. 1.15 lakhs) 2001.

11. Design of Diversion Headworks on the Dilli River for Water Intake of *Namrup Plant of* ***Hindustan Fertilizer Corporation Ltd****.* (5.55lakhs), 2000.

12. Scale Model Experiments of Stepped Spillways for Rammam Stage - II Hydel Project of ***W.B.S.E.B****.* (Rs. 6.62 lakhs), 1998-2002.

13. Design of Stepped Spillways and Energy Dissipator Arrangements for Rammam Stage – II Hydel Project (Rs. 6.00 lakhs) of ***W.B.S.E.B,*** *200-2003.*

14. Renovation of Suringad SHP, sponsored by ***Uttaranchal Jalvidyut Nigam Ltd.*** *Pithoragarh,* 2003-2004.

15. River Training Works for Chor Nallah Near SASE Manali sponsored by ***AGE, MES****, R&D, Manali.* (0.80 lakh) 2003-2004.

16. Structural Analysis of Barrage for Larji Hydroelectric Project, sponsored by ***H.P.S.E.B*** (Rs. 5 lakhs) 2000-2004.

17. Hydraulic Model Study for Uhl Stage-III Hydro-Electric Project sponsored by ***HPSEB,*** *Sundernagar* (Rs. 7.85 lakhs) 2003-2004.

18. Feasibility Study on Runway Extension for Kullu-Manali Airport sponsored by ***Airports Authority of India****, New Delhi* (Rs. 9.03 lakhs) 2003-2004.

19. Flood Protection Works Along Beas River At SASE Manali sponsored by ***AGE, MES,*** *R&D, Manali* (Rs. 3.2 lakhs) 2003-2004.

20. Structural Design of Stepped Spillways for Rammam Hydel Project Stage –II, sponsored by ***W.B.S.E.B***. (Rs. 7.00 lakhs), 2003-2006.

21. *Consultant to Williamson Magor Co. Ltd. from 1989 to 2000 for protection of* ***Tea Estates*** *from bank erosion in several tributaries of the Brahmaputra River in Assam.*

22. *Consultant to Tata Tea Ltd. in 1996 to provide protection of their* ***Namroop Tea Estate*** *from bank erosion by Disang River near Dibrugarh.*

23. *Consultant to Assam Company Ltd. in 2000-2001 to protect their* ***Rungagorah Tea Estate*** *from bank erosion by Brahmaputra near Tinsukia.*

24. Consultancy Project on Spillway Model Studies for Assessment of Erosion & Abrasion Resistance of Fibre Reinforced Concrete & Ordinary Concrete, sponsored by ***Reliance Industries Limited, Mumbai*** *(Rs. 2.74 lakhs).*

25. Numerical Model Studies with Field Data Observation for Sarda Sahayak Remodelling Project sponsored by **Tahal Consulting Engineers Ltd., Lucknow** *(Rs. 9.58 lakhs)* 2005-2006.

26. Hydraulic Model Studies with Laboratory Analysis of Field Data Samples for Sarda Sahayak Remodelling project sponsored by **Tahal Consulting Engineers Ltd., Lucknow** *(Rs. 17.57 lakhs) 2005-2006*.

27. Hydraulic Analysis of Tail Race Tunnel of Baglihar Hydroelectric Project sponsored by **Jaiprakash Associates Limited, New Delhi** (Rs.2,24,720) 2007

28. Renovation and Design of Bottom Intake Structure and Desiliting Chamber for Jaldhaka Hydro Electric Project, sponsored by ***W.B.S.E.B*** (Rs. 30 lakhs) 2001-2007

29. Development of Digital Terrain Model (DTM) of Kullu Airport for **Airports Authority of India,** *(Rs. 9.12 lakhs)* 2006 -2008.

30. Consultancy project on Evaluation Study of Completed Research Schemes under **R&D Programme of Ministry of Water Resources, Govt. of India,** *(Rs. 1.5 lakhs)* 2006-2008.

31. Hydraulic analysis of flow in Lodhoma Interconnection tunnel and construction planning for tunnel excavation of Rammam Hydel Project, Stage -II,, for ***W.B.S.E.B***. *(Rs. 5.38 lakhs)* 2006-2008.

32. Physical model studies of the interconnection zone of Lodhoma and Rammam tunnels of Rammam Hydel Project, Stage -II, for ***W.B.S.E.B***. *(Rs. 14.59 lakhs)* 2006-2008.

33. Physical model study for modified layout of diversion barrage for Sawara Kuddu Hydel Project (111 MW), sponsored by **HPSEB,** (Rs. 35.75 Lakhs), 2007-2008.

34. Hydraulic Model Study For Water Conductor System & Spillway Of Thirot Hydro Electric Project**, HPSEB,** Pandoh, (Rs.14,61 Lakhs), 2009-2010.

35. Hydraulic study of Piano Key Weir for Lhasi Irrigation Project, sponsored by **Water Resources Department Rajasthan,** (Rs.4.96 Lakhs), 2009-2010.

36. Pre-feasibility report for Rehabilitation of Upper Ganga Canal for Inland Navigation, for **Water Resources Department, U. P.,** (Rs.10 Kakhs), 2010.

37. Preparation of DPR for "In stream water storage" on River Brahmani near Kharagprasad using Piano Key Weir(PKW) Barrage in Orrisa, sponsored by **LANCO Babandh Power Private Ltd.,** Phase – 1, (Rs.28.38 Lakhs), 2009-2011.

38. Analytical design and physical modelling of the river Gandak for the construction of the RCC Bridge (under construction) between Dhanha Ghat and Ratwal Ghat in West Champaran District of Bihar, sponsored by **Bihar Rajya Pul Nirman Nigam Ltd., Patna,** (Rs.24.37 Lakhs) 2009-2011.

39. Physical Model Study For RCC Gandak Bridge In Bishunpur Panchayat Of Gopalganj District Of Bihar, sponsored by **Bihar Rajya Pul Nirman Nigam Ltd., Patna,** (Rs.17.60 Lakhs) 2010-2011.

40. Mathematical Modelling of Pollavaram project, for **C & Q C S & Dam Safety, Govt. of Orissa,** (Rs.9.50 Lakhs), 2010-2011.

41. River training measures to control drifting behaviour of the Gandak river for the Bridge near Gopalganj – Bettiah in Bihar for **State Bridge Corporation Ltd.** , **Bihar**, (Rs.27Lakhs), 2010-2011.

42. Study of the Brahmaputra river erosion and its control, sponsored by **National Disaster Management Authority of India**, Govt. of India, (Rs. 32 Lakhs), 2008-2011.

43. Vetting Of Revised Cost Of Karcham Hydro Electric Project, Sponsored by **J. P. Karcham H.E. Ltd.,** (Rs.15 Lakhs), 2011.

44. Hydraulic model study for Desanding arrangements of Sawra Kuddu Hydro Electric Project, sponsored by **HPPCL,** Shimla (Rs.11.75 Lakhs), 2009 – 2011

45. Mathematical & Hydraulic Model Studies for Surge Shaft & Tail Race System of Sawra Kuddu Hydro Electric Project, sponsored by **HPPCL,** Shimla (Rs.28 Lakhs), 2009 –2011

46. Assessment of carrying capacity for the conveying system of ECPL and evaluation of the structural stability, sponsored by **Ms ECPL, Vadodra** (Rs.6.34 Lakhs) 2011-2012.

47. Hydrological Analysis and Design of Hydrualic Structure at River Nandna Choe and Lake at Panchkula, Sponsored by **HUDA, Panchkula** (Rs.10 Lakhs), 2011- 2012.

48. Mathematical Modeling For Reservoir Sedimentation of Wangchu Dam Project in Bhutan, Sponsored by **SJVN Limited Shimla, (**Rs.10 Lakhs) 2011-2012.

49. Model Study for Silt Flushing Intake Gate of Sawra Kuddu HEP, sponsored by **Director Project, Aarti Infra Project Pvt. Ltd.** (Rs. 1 Lakhs), 2011-2012.

50. Design of Kanhar Dam and Spillway along with structural details, sponsored by **HES Infra Pvt. Ltd.** (Rs.14 Lakh), 2011-2012.

51. Expert Opinion On Hydro Power Components, Sponsored by **J. P. Karcham H.E. Ltd.,** (Rs.10 Lakhs), 2011-2012.

52. Mathematical Modelling for Bridge (Aarah-Chhapra) on Ganga River, Sponsored by **M/s S. P. Singla Constructions Pvt. Ltd., Panchkula, Haryana**, (Rs.1.00 Lakhs) 2011-2012.

53. Mathematical Modelling for Bridge Over River Koshi at Vijay Ghat, Sponsored by **M/s S. P. Singla Constructions Pvt. Ltd., Panchkula, Haryana**, (Rs.1.00 Lakhs) 2011-2012.

54. Vetting of designs and drawings of Aqueduct cum viaduct of Kanhar Project Sponsored by **HES Infra Pvt. Ltd, Hyderabad,** (Rs.20.40 Lakhs) 2011-2012.

55. Solani River Training For Solar Power Plant Near Roorkee Sponsored by **M/S RV Akash Ganga Infrastructure Ltd.** (Rs. 2.02 Lakhs) 2012-2013.

56. Short term river training measures for river Brahmani at IPH, for **NALCO, Govt. of India,** (Rs.2.25 Lakhs), 2010-2012.

57. Flood Routing studies for release of water through Tehri Dam, sponsored by **THDCIL, Risikesh** (Rs.4.5 Lakh), 2011-2012.

58. Hydraulic model studies for Dam spillways of Chandan reservoir Sponsored by **APRL, Ranchi** (Rs. 36 Lakhs) 2012-2012.

59. Kaliganga-11 SHP- Examination Of Changed Proposal From Those In The DPR, Sponsored by **DGN (ADB Projects), UJVNL, Rishikesh** (Rs. 2.2 Lakhs) 2012-2013.

60. River Training for Right Guide Bund HL Bridge over River Gandak between Gopalgunj and Bettiah, Sponsored by **Bihar Rajya Pul Nirman Nigam Ltd., Bettiah, Bihar,** (Rs.10.67 Lakhs), 2013.

61. Mathematical model studies for Reservoir Sedimentation and Reservoir Flushing of Luhri HEP, Sponsored by **SJVN Limited Shimla, (**Rs.10 Lakhs) 2012- 2013.

62. Comprehensive and Flume Hydraulic Model Studies for Chhatru Hydroelectric Project (126 MW) in Chenab River Basin, Sponsored by **DCM Shriram Infrastructure Ltd. New Shimla** (Rs. 55 Lakhs) 2012-2013.

63. Comprehensive River Engineering Study for River Diversion of Beas River for Proposed Runway Extension of Kullu Manali Airport Sponsored by **Dept. of Tourism & Civil Aviation, Himachal Pradesh** (Rs.33.7 Lakhs), 2013.

64. Vetting of Design and Drawings for Bhaoni Dam in Lalitpur, U. P., Sponsored by **HES Infra Pvt. Ltd., Hyderabad**, (Rs.18 Lakhs), 2013.

65. River Protection Works along Subansiri River, Sponsored by **National Hydropower Corporation Ltd. (NHPC),** (Rs. 25 Lakhs), 2013-2014.

66. Mathematical Modelling of Brahmaputra River Study reach to help fix Intake well location for JICA funded Guwahati Water Supply Project, Sponsored by **M/S Prescient Flow Control India Private Limited, New Delhi** (Rs. 14.04 Lakhs), 2013.

67. Physical model study for Telwa Bridge on Bahti River, Sponsored by **Bihar Rajya Pul Nirman Nigam Limited, Patna** (Rs.37.07 Lakhs), 2013-2014.

68. Design of Apron for Guide Bund Protection for H. L. Bridge across Gandak at Sattarghat, Sponsored by **Bihar Rajya Pul Nirman Nigam Ltd., Bettiah, Bihar,** (Rs.13.50 Lakhs), 2013-2014.

69. Design & Monitoring of River Training Measures for Navigation Development in River Ganga at Six locations between Farakka – Varanasi stretch of National Waterway - 1 for Navigation Channel Development, sponsored by **Inland Waterways Authority of India,** (Rs. 1.53 Crore) 2007-2014 .

70. Satellite Imagery and analytical study for construction of CD works on Rapti Main Canal at Ch.Km. 7.180, Sponsored by **Saryu Nahar Khand –III, Bahraich, U. P. Irrigation Department,** (Rs. 5.618 Lakhs), 2014.

71. Satellite Imagery and analytical study for construction of CD works on Rapti Main Canal at Ch.Km. 14.680, Sponsored by **Saryu Nahar Khand –III, Bahraich, U. P**. **Irrigation Department**, (Rs. 5.618 Lakhs), 2014.

72. Comprehensive River Hydraulic Study & Mathematical Modelling for Gandak river Bridge connecting Gopalganj & Bettiah with River Training Works, Sponsored by **Bihar Rajya Pul Nirman Nigam Ltd., Patna,** (Rs.89.88 Lakhs), 2014-2015.

73. Koshi Mahasetu Bridge built by NHAI in Dist. Supaul on Koshi River – regarding review & vetting of protection works of eastern guide bund, Sponsored by **Water Resources Department, Bihar Govt.,** (Rs.22.47 Lakhs), 2014 - 2015.

74. Vetting of Drawings of Spillway, Earth Dam and Two Head Sluices for Bandai Dam Project by **HES Infra Pvt. Ltd., Hyderabad,** (Rs.6.74 Lakhs), 2014- 2015.

75. Gandak Bridge at Ratwal Ghat – Protection of Left Guide Bund with Modelling, Sponsored by **S. P. Singla Construction Pvt. Ltd., Panchkula** (Rs. 13.50 Lakhs), 2015.

76. Physical Model Study for Ganga River Bridge near Sultanganj, Bihar Sponsored by **S. P. Singla Construction Pvt. Ltd., Panchkula** (Rs. 33.14 Lakhs), 2015.

77. Study for Impact of multi modal terminal on Ganga river near Varanasi, Sponsored by **Inland Waterways Authority of India, Noida** (Rs.7.8 Lakhs), 2015.

78. Study for Opinion regarding Piano Key Weir (PKW) option for Subansiri Dam (SLHEP), Sponsored by **National Hydro Power Corporation Limited, SLP** (Rs.2.28 Lakhs), 2015.

79. Construction of Kanhar Project – LKC & RKC aqueduct (10nos) and Sluice (1 No) Design and Drawing Vetting sponsored by **HES Infra Pvt. Ltd., Hyderabad,** (Rs.5.15 Lakhs), 2016.

80. Vetting of Design of Surplus Weir for Storage Reservoir 1 & 3 – PMIS – Gandikota, Sponsored by **Megha Engineering & Infrastructures LTd., Hyderabad,** (Rs.6.87 Lakhs), 2016.

81. Vetting of Design of Stability Calculations for Storage Reservoir 2 near Yallanur Reservoir, Sponsored by **Megha Engineering & Infrastructures LTd., Hyderabad,** (Rs.6.87 Lakhs), 2016.

82. Rehabilitation & Upgradation of NH-216 from Raigarh to Saraipalli section in Chhattisgarh state & scour modelling of bridge over Mahanadi river, **Era Infra Engineering Limited, Noida,** (Rs. 5,75 Lakhs), 2016.

83. Vetting of By-pass Canal Based drawings of 2MW and 1.5MW Power Project in Orissa, sponsored by **Indravathi Power Private Limited, Guntur, A. P.,** (Rs.12.595 Lakhs), 2016.

84. Field Study of Anti Erosion works using Woven Geobags, Sponsored by **Techno Fabrics, Surat, Gujarat,** (Rs.11.45 Lakhs), 2016.

85. Vetting of Pre-feasibility study for Identification of Water Bodies in the Periphery of KNIC, Sponsored by **Sutra Consulting Pvt. Ltd.,** (Rs.2.30 Lakhs), 2016.

[N] LIST OF CONSULTANCY PROJECTS (NEW / IN PIPELINE)

1. Preparation of Vision Document for Dal Lake in Srinagar Sponsored by **J&K Lake & Waterways Dev. Authority,** (Rs. 1.10 Crore), 2016 -

2. Analytical Study on High Level Bridge over River Teesta with approaches near Haldibari, connecting Mekhliganj with Par-Mekhliganj/Haldibari in the district of Coochbehar, West Bengal Sponsored by **S. P. Singla Construction Pvt. Ltd.,** (Rs.23Lakhs), 2016 -

3. Physical Model Study on High Level Bridge over River Teesta with approaches near Haldibari, connecting Mekhliganj with Par-Mekhliganj/Haldibari in the district of Coochbehar, West Bengal Sponsored by **S. P. Singla Construction Pvt. Ltd.,** (Rs.17.25Lakhs), 2016 –

4. River Bank Erosion Control Measures on Barnadi River (Tributary of Brahmaputra River) for Protection of Nagirjuli T. E., **Rossel Tea Pvt. Ltd.**

[O] LIST OF SPONSORED RESEARCH PROJECTS (COMPLETED):-

1. Research project on *"Remote Sensing Aided Idealisation of Space Time Variant Behaviour of Channel Geometry of the River Brahmaputra",* sponsored by ***Ministry of Water Resources, Govt. of India*** for **Rs. 13,33,200.**

2. Research project on *"Performance Evaluation of Piano Key Weirs"* with sponsorship and **collaboration of *HYDROCOOP, Paris, France*** for **US $11,500.**

3. Research project on *"History of Irrigation in Uttar Pradesh"*, sponsored by ***Ministry of Water Resources, Govt. of India*** for **Rs. 4,06,743.00.**

4. *BRAHMATWINN International Research Project on "Integrated Study of the Brahmaputra and European Rivers (Rhine & Danube)",* funded by **European Commission** in research collaboration with Friedrich-Schiller University of Germany and 17 International Partners from Europe and Asia for **Euro1,27,000,** 2005-2010.

5. Research Project on "*Experimental Study on Labyrinth* Spillway*"* sponsored by Indian National Committee on Hydraulics, ***Ministry of Water Resources, Govt. of India. Rs. 17.79 Lakh,*** *2006-2010.*

6. Research Project on *"Preparation of Action Plan for Improvement of Irrigation Water Use Efficiency"* sponsored by *INCID,* ***Ministry of Water Resources, Govt. of India. Rs. 2.53 Lakhs,*** *2010-2011.*

7. Indian Team Leader of International Project on **Assessing Health, Livelihoods, Ecosystem Services and Poverty Alleviation in Populous Deltas** sponsored by **Natural Environment Research Council, DFID & ESPA, UK;** with Univ. of Southampton as the Project Coordinator and Univ. Of Oxford, Univ. Of Dundee, Univ. Of Exeter, Univ. Of East Anglia, Normal Univ. Shanghai, BUET and IITR as partners of the International Research Consortium 2011-2013. **(£242,196.17)**

8. INNO-Asia Networking Project Consortium sponsored by **Federal Ministry of Education and Research (BMBF), Germany 2010- 2014.**

[P] LIST OF RESEARCH PROJECTS IN ONGOING / IN PIPELINE:-

1. Research Project on *"Experimental Study of Jack Jetty and Porcupine Systems for River Training"* sponsored by *Indian National Committee on Hydraulics,* ***Ministry of Water Resources, Govt. of India (Rs. 29.35 Lakhs)*** *2011-*

2. Collaborative Research in Pipeline with **School of Geography, The University of Nottingham, UK** on Modelling Flood and Erosion Risk on Majuli Island on the Brahmaputra river.

[Q] DRAFTING OF NEW INDIAN STANDARDS GUIDELINES UNDER DAMS AND SPILLWAYS SECTIONAL COMMITTEE, WRD 9, FOR BUREAU OF INDIAN STANDARDS, GOVT. OF INDIA:-

- Drafted new working draft of IS guidelines on ***"Preliminary Design of Stepped Spillways"*** for Sectional Committee on **Dams and Spillways, 2015.**

- Drafted new working draft of IS guidelines on ***"Design of Piano Key Weir"*** for Sectional Committee on **Dams and Spillways, 2015.**

[R] LIST OF MASTER'S DISSERTATIONS SUPERVISED:-

S. No	Tittle of M. Tech Thesis	Name of M.Tech Student	Country
1.	On farm water use pattern in Salawa command	S. S. Ghosh	India
2.	Study of variation of roughness coefficient in canals	Bachtarudin	Indonesia
3.	Design of irrigation games	P. P. Changkakati	India
4.	Evaluation of regulation of a canal system with special reference to Eastern Yamuna Canal	Ajit Bujarbarua	India
5.	Computer aided gaming simulation for main canal operation	A. K. Ingle	India
6.	Main Canal operation model-A case study	D. K. Sawant	India
7.	Effect of land consolidation on irrigation water management- A case study	M. K. Sharma	India
8.	Simulation of soil moisture status with reference to wheat crop	Fauzi Putra	Indonesia
9.	Evaluation and improvement of operation of Bordikrai irrigation system in Assam	R. Kakati	India
10.	Computer programming for crop water requirement	G. P. Soni	India
11.	Reclamation of swampy areas to support transmigration programme in South Sumatra	E. Sembiring	Indonesia
12.	Organizational framework for effective irrigation water management in Assam	K. G. DebKrori	India
13.	An estimation of projected irrigation water requirement of the Brahmaputra basin	B. N. Goswami	India
14.	Analysis of transient flow in canal	D. N. Kumar	India
15.	Feasibility study of automatic regulation of an irrigation canal-A case study	P.V. Purandare	India
16.	Hydraulic computations for automated irrigation canal	Shyam Sunder	India
17.	Study of Looseness factor for barrages	N. C Mohanty	India
18.	Causes of failure of Kankai Headworks –A case study	Ashok Kumar	Nepal
19.	Comparative analysis of raft foundations for barrages	C. S Mathur	India
20.	Earth pressure distribution on barrage abutment	P. G. Rochlani	India
21.	Estimation of kentledge requirement for sinking	S. C. Sahu	India

	of well foundations		
22.	Computer aided design of barrage	M. K. Hamed	Sudan
23.	Design and construction problems of deep well foundation of New Solani Aqueduct	K. Ravindran	India
24.	Watershed modelling of Pagladiya – A tributary of the Brahmaputra	A. K. Sharma	India
25.	Study of watershed characteristics between Hirakund Dam and Manibhadra using LANDSAT imageries	S. Behera	India
26.	Implicit modelling of flood wave propagation	Md. J. A. Hye	Bangladesh
27.	Case study of flood routing in a selected reach of the Brahmaputra	A. Kalita	India
28.	Implicit flood routing for movable bed channel - A case study	U. K.Chaudhary	India
29.	Study of solution techniques used in river Modelling	S. M Hidayatullah	India
30.	Sedimentation study of Sree Ramsagar reservoir using satellite imageries	G. Devdas	India
31.	Flood Plain study of Brahmaputra river using Satellite imageries	P. R Murty	India
32	Study of the effects of river training works on the Brahmaputra	Dwipen Bhagawati	India
33.	Spacing of spurs as bank protection measure - A case study	D. K. Singh	India
34.	Evaluation of the changes in channel configuration of the Brahmaputra river from Kobo to Tezpur using satellite imageries	M. Kalita	India
35.	Investigation of morphological changes of the Brahmaputra river from Tezpur to Dhubri using satellite data	Iltaf Hussain	India
36.	Study of plan form changes in a selected reach of an alluvial river (Ganga) using remote sensing data	Ashok Kumar	India
37.	Off-line and on-line of a conceptual rainfall run-off model-tank model	Zhang Jian Min	China
38.	Computer aided hydraulic design of spillways and appurtenant structures	G. V. Surendra	India
39.	Silting performance of solid and permeable spurs	A. K. Singh	India
40.	Morphological study in a reach of river Ganga using satellite data	A. K. Kher	India
41.	Computer application of entropy-based river morphological studies	Md. Nazrul Islam	Bangladesh

42.	Entropy-based analysis of sediment discharge predictors	Sultan Ahmed	Bangladesh
43.	Computer aided design of some structural components of Hydro Electric Project	P. C. Pradhan	India
44.	Drainage of irrigated agriculture lands –A Case Study	D. K. Bhagoria	India
45.	Development of expert system for canal management	C. D.Gulhane	India
46.	Computer modelling of alluvial stream for levee spacing	V. Shanker	India
47.	Implementation of interactive data management software for hydrological modelling	S. K. Balabantaray	India
48.	Socio-economic evaluation of an irrigation system with special reference to farmers organisation –A case study	S. K. Manandhar	Nepal
49.	Performance evaluation and effective irrigation project management of Kraseio Project in Thailand	Supanat Pariyachat	Thailand
50.	Analysis of satellite derived maps and hydrological data for identification of navigation problems in the river Brahmaputra	H. P. Ishar	Nepal
51.	Mathematical modelling of gravel bed rivers	S. K. Sharma	Nepal
52.	Design of stable channel for non-uniform alluvial sediments	Rajesh Gupta	India
53.	Critical analysis of steel liner design for pressure shaft with special reference to Nathpa Jhakri Hydro Electric Project	A. K. Sood	India
54.	Mathematical modelling of curved channels	C. S. Padhi	India
55.	Study of river behaviour and control with suitable training works–A case study for the Disang river in Assam	S. K. Talukdar	India
56.	Sedimentation studies for lower Maniar and Kaddam reservoirs in Andhra Pradesh	Bhoopal Reddy	India
57.	Spatio-temporal idealisation of typical cross-sections of a large braided alluvial river	G. P. Singh	India
58.	Dam breach flood wave analysis	S. Sah	India
59.	Morphological analysis for identification of river training sites in a stretch of the Ganga river using satellite imagery	Mohd. Arsad	India
60.	Techno-economic appraisal of hydropower plants – A case study (Disang river)	N. Subramanian	India
61.	A case study of drainage problem for tea	P. Goswamee	India

	garden in Assam		
62.	Effect of sediment on channel dimensions- A case study of Chatara canal in Nepal	P. Paudel	India
63.	Computer modelling for border irrigation	A. C. Debnath	India
64.	Mathematical modelling for alluvial river with secondary flow	Samanta Deb	India
65.	Design analysis of river training works for gravel bed river- A case study	Krishna Raj Timilshena	Nepal
66.	Computer aided analysis of substructure of Surface power house	Kumud Goswami	India
67.	Computer aided design of desilting arrangements for river valley projects	Suresh Chandra Dalai	India
68.	Study of scour around spurs at Gumi in the Brahmaputra river	Vinod Kumar Talwar	India
69.	Hydro-morphological study of the river Kosi in a selected reach using extremal hypotheses and satellite data	Kaushal Kishore Mishra	India
70.	Mathematical modelling of hydraulic transients in power channel	Niranjan	India
71.	Dynamic regulation study for a reach of Upper Ganga canal	Rajesh Kumar	India
72.	Developing interface of drip irrigation in canal command in Maharashtra	Pradeep Bhalage	India
73.	Mathematical modelling of gravel bed river with armouring	Keshab Dhoj Adhikari	Nepal
74.	Study of watershed management of Kholanadong basin in Assam	M. Talukdar	India
75.	A case study of sprinkler irrigation application for tea plantation in Assam	Arup Kumar Sharma	India
76.	Numerical modelling of river flow simulation with embankment breach	Kankan Goswami	India
77.	Unsteady flow modelling of alluvial streams with flow curvature	Z. R. Khan	India.
78.	Modelling of braided streams	R. P. Poddar	India
79.	Estimation of resistance to flow in gravel bed streams	Sanjay Sharma	Nepal
80.	Evaluation of stochastic models of sediment transport	Dinesh Prasad	India
81.	Pakkhangoung irrigation project: role of farmer’s association in Lao PDR	Khamphat Sourinphoumy	Laos
82.	Optimal waterway of Barrage	A. B. Nayak	India

83.	Role of farmers organisation in irrigation water management – A case study of Western Gandak Project (Nepal)	B. K. Thapa	Nepal
84.	Analysis of river control measures in gravel bed streams - A case study	H. P. Hemchuri	Nepal
85.	Experimental investigation of submerged vanes as anti bank erosion measures	P. K. Manandhar	Nepal
86.	GIS based analysis of fluvial landform changes of a large braided river	R. N. Sankhua	India
87.	Analytical study for remodelling of water conductor system of a small hydel project – A case study	S. P. Mishra	India
88.	Experimental study of flow resistance in gravel bed streams	S. Upadhyay	Nepal
89.	Computer simulation analysis of tailwater level in a small hydel project – A case study	T. K. Bhadury	India
90.	Modelling of advance phase in border irrigation using dimensional approach and kinematic wave approximation	M. S. Alam	India
91.	Modelling of infiltration characteristics through Soil	S. K. Verma	India
92.	Numerical modelling for snow avalanche motion	Rakesh Kumar Gupta	India
93.	Morphological analysis for management of boulder bed stream – A case study	Ajeet Kumar Jain	India
94.	Design analysis of diversion head-works for water intake of HFCL at Namrup	D. Venugopal	India
95.	Hydraulic analysis for high head water conveyance system and energy dissipater for Rammam Stage-II Hydel Project	Tushar Kanti Sarkar	India
96.	Case study of drainage problem of plantation area using remote sensing and GIS techniques	K. Vamsikrishna Naidu	India
97.	Use of uplift pressure in design of floor and rib foundation of barrage	Junaedi	Indonesia
98	Design of vortex settling basin for Jaldhaka Hydro Electric project- A case study	Alfan Rianto	Indonesia
99.	A study of morphological behaviour of Brahmaputra river from Dibrugarh to Majuli island	U. P. Gupta	India
100	Artificial neural network based spatio temporal study for a typical reach of Brahmaputra river	T. S. Patil	India
101	Study of water logging within a flood plain area using remote sensing data	Vijai Shanker Jauhari	India

102	Study on erosion control using jute geo-textile	Desta Eshete	Ethiopia
103	F. E. M. analysis of barrage with varying sub-soil condition	Subrata Sarkar	India
104.	Spatio temporal morphological analysis using satellite data for a reach of river Brahmaputra	Mithilesh Kumar Singh	India
105.	Analysis of flow resistance in braided river -A case study	Christoforus Mardjono T. Lasmono	Indonesia
106.	Analysis of model studies for desilting basins	Manoj Kumar Verma	India
107	Modelling on river morphology using remote sensing techniques	Gopi Madana	India
108.	Study of simulation models to analyze stream bed variations	Moti Raj Gautam	Nepal
109.	Development of numerical model for alluvial streams with multi-channel configuration	Binod Kumar Sinha	India
110.	Morphological analysis of Brahmaputra river using GIS and satellite data	Lakshman Singh	Nepal
111.	Experimental study of hydraulics of labyrinth weir with different shapes	Rajive Nandan Mourya	India
112.	Study of river channel modification using numerical technique	Patitpaban Das	India
113.	A Comparative study of analytical methods for raft foundation	Moushami D. Kulkarni	India
114.	Channelisation in a reach of Beas river –A case study	R. B. Shrestha	Nepal
115.	Experimental study of flow pattern in multi-slope stepped spillways	P. C. Pokharel	Nepal
116.	A case study on dam break for inundation analysis	H. Mahanty	India
117.	Assessment and management of water utilisation in Mahanadi basin	R. K. Biswal	India
118.	Application of Geo-synthetics in river bank erosion control	A. K. Biswas	Bangladesh
119.	Flood plain modelling of the Brahmaputra river in Assam	Ambuj Dwivedi	India
120.	Study on vortex type sediment extractor for Jaldhaka Hydel Project	Monirul Islam	Bangladesh
121.	Neuromorphic study of Longitudinal profile of the River Brahmaputra	Raghunath Shrestha	Nepal
122.	Hydrologic response of Kankaimai watershed in Eastern Nepal	Mekh Nath Sharma	Nepal
123.	Fluvial regime of the Manipur river basin and	Ng. Romeji Singh	India

	Loktak Lake with study of backflow		
124.	Computer Based Flow Simulation of Sarda Feeder Channel	Adesh Kumar	India
125.	Study Environmental Impacts and Climate Change in Aral Sea Basin Using GIS	U. B. Maratovich	Uzbekistan
126.	Numerical model studies of river Ganga for fairway development between Allababad & Sirsa	Md. Parwez Akhtar	India
127.	Study erosion and protection of river bank	Ngliyen Ha Thanh	Vietnam
128.	Experimental studies on channel improvements through use of submerged vanes	Deepak Kumar	India
129.	Remote sensing based study of River Avulsion of Brahmaputra near Dibrugarh	Ajay Kumar	India
130.	Analytical study for sediment control and discharging capacity of water intake	Binod Kumar Chapagain	Nepal
131.	Harnessing of fresh water in western ghat regions – A proposal for interconnected	Sudheer S. Chavan	India
132.	Hydraulic modelling and sediment inflow forecasting to newly constructd almatty reservoir on river Krishna	R. Azhagesan	India
133.	Study for navigation development at six locations in river Ganga	Anupama Nayak	India
134.	Study of morphology and river management of Ganga and Koshi rivers at few sites	Md. Perwez Akhtar	India
135.	Neural network model for runoff and sediment yield	Md. Zakaullah	India
136.	Fixation of bridges on alluvial braided river – A case study, Kosi river	S. A Burele	India
137.	Role of numerical models in designing the feasible layouts for ports and harbours	V. K. Shukla	India
138.	Ecological modelling of oxidation pond	Sushil Chandra Devkota	Nepal
139.	Flow simulation of Brahmaputra river using 2D modelling approach	Deepak Swami	India
140.	Study off in-stream storage system using Piano Key Weir	Dipali Ramesh Harpale	India
141.	Silt control in reservoir using diversion Tunnel & Blank Panels	Mohd. Ziaul Qamar	India

142.	Numerical Modelling and Simulation of River Channel Improvement for Flood Moderation	Belay Zeleke Desta	Ethiopia
143.	Experimental Study on Spatial Flow Characteristics of Piano-Key Weir	Himanshu Arora	India
144.	Remote Sensing Based Sedimentation for Sheravati Reservoir Karnataka	Harsha M. Chaudhary	India
145.	Design Analysis for Channel Rectification Of Gandak River in Bihar	Anirban Dutta	India
146.	Investigation of Artificial Channelization for Brahmaputra River in selected reaches by Numerical modelling	Afework Ashagrie	Ethiopia
147.	Experimental Study of Flow Resistance in Alluvial Channel	Harinarayan Tiwari	India
148.	Mathematical Model Studies for Reservoir Sedimentation and Reservoir Flushing Techniques (A case study for Luhri Hydroelectric Project)	Eskinder Tadesse Esubalew	Ethiopia
149.	Sediment control in an estuarine harbour basin using Submerged Vanes and a Current Deflecting Wall	Adrian Montero Banuelos	Mexico
150	Experimental study of Blunt Nosed Chevron for Channel Improvement in Fairway	Amanda Devianty	Indonesia
151	Design analysis for river diversion of the Beas river near Kullu	Ahmad Shadab	India
152	Development of Water Sharing Model for Trans-boundary rivers – A Fuzzy Logic Approach	Subash Prasad Rai	India
153	Investigation of Jack Jetty field for River Channelization	Abhigya Shrewastava	India
154	Experimental Study of Triangular and Prismatic Porcupine Systems for River Training	Mohd. Aamir	India
155	Modeling of River Restoration Analysis – A Case Studies	Nilanshi Gupta	India
156	Experimental Study on Effect of Chevron System On Channel Changes	Pooja Singh	India
157	Modelling of a Reach of Gandak River	Aditya Gupta	India
158	Performance Analysis of Trail Dyke and Jack	Alok Kumar	India

	Jetty systems using laboratory and field data in Solani river		
159	Snowmelt Runoff Modelling for an Indian Himalayan river basin	Arun Kumar Soni	India
160	Assessment of Jiadhal river along with its watershed to achieve river channelization	Nangtiaki Tariang	India
161	Analytical Study of selected reach of Ganga River for harnessing its water resources	Ritesh Kumar Jaiswal	Nepal
162	Analysis of cloud burst events using archived multi-satellite precipitation estimates	Ashish Chaudhary	India
163	Design analysis of Fuse Gates applications for dam safety and storage enhancement	Mukti Narayan	India
164	Evaluation of TRMM precipitation estimates Vis-à-vis terrestrial measurements	Neha Rathore	India
165	Analysis of multimodal inland navigation system on Ganga River	Ujjwal Singh	India
166	Comparative study and performance analysis Of Roller Compacted Concrete dam (RCC)	Md. Faizan Khan	India
167	Study of Pump Storage Schemes	Prakhar Mishra	India
168	Development of Lake hydrodynamic Model – Case Studies	Sunil Kumar S	India
169	Ground Validation of GPM data – A Case Study	Anil Kumar	India
170	Performance of Woven Geosynthetic Products for Stream Bank Erosion Control – Case Study	Saurav Patwal	India
171	Experimental Study of Bed Forms using Turbulent Ratio Approach	Deepak Dhakal	Nepal
172	Experimental Study of Piano Key Weir: Different Structure Configuration for Optimal Results	Pawan Adhikari	Nepal
173	Comparative Analysis Canal Lining	Vishnu Bhandari	Nepal
174	Canal Automation of Irrigation System for Optimal Water Use	Manoj Prasad Patel	Nepal
176	Case Study on Urban Flooding and Impact Analysis	Upananda Rath	India
177	Hydraulic Structures Impact on Morphology	Ankush Kumar	India

[S] LIST OF SPECIAL PROBLEM REPORTS:-

The Topics of Special Problem Reports are listed below

1. Critical review of water measuring devices.
2. On farm measuring devices.
3. Analysis of drainage system by simulation method.
4. Evaluation of Jagiroad lift irrigation scheme in Assam.
5. Economics of crop production - A comparatative study of Indonesia.
6. Study of performance of Chatra canal in Nepal.
7. Operation and maintenance problems of Eastern Yamuna Canal.
8. Operation and maintenance of irrigation canal system under Cotton Barrage on the Godavari.
9. Techno-economic analysis of Gravity and Raft floor of a barrage.
10. Comparative study of barrage abutment wall.
11. Unconventional approach of design of raft foundation for barrages.
12. Performance of spur as an Anti-Erosion measures for the Brahmaputra river near Dibrugarh.
13. Performance evaluation of Anti-Erosion measures of the Brahmaputra river near Gumi.
14. Problems of energy dissipation in spillways.
15. Design of A system of measuring devices for the demonstration farm of WRDTC (Indian Institute of Technology, Roorkee).
16. Calibration of Replogle Flume on the computer.
17. Design of Anti water logging measures of the Tawa Command in Madhya Pradesh.
18. Study of irrigation practices for Tea crop in Assam.
19. Unconventional design of spur.
20. Critical review of sediment discharge predictors.
21. Study of channel processes of Gravel - Bed Rivers.
22. Critical review of solution techniques used in river modelling.
23. Computerized design of well foundations.
24. Problems of hill slides of power channel of Micro Hydel Project in Arunachal Pradesh.
25. Feasibility study of application of dynamic regulation method to Jagiroad Irrigation Scheme in Assam.
26. Computer aided design of bottom intake structure for Mountain streams.
27. Computer aided analysis of river bank stability

28. Computer modelling of river channel changes.
29. Computer programming for dam degradation model.
30. Computer aided design of run-of-river mini hydel scheme.
31. Remote sensing application for crop yield assessment.
32. Study of gauge discharge relation of a alluvial river (Ganga).
33. Restructuring of irrigation project management in Indonesia.
34. Compute programming for load calculations of barrage raft foundation.
35. Pre-investment feasibility study of Cisapane river basin development project in Indonesia.
36. Stream bed profile modelling Using Legendre Polynomial.
37. Computerized design of cross-drainage Works.
38. Study of land use in and around Roorkee using satellite data.
39. Design of suspension bridges on hilly rivers.
40. Mekong river morphological study Vientione Nongkhai reach.
41. Gabions maccaferri in earth retaining works and as lining for channelized water channelized water course.
42. Design of stable channel - recent advances.
43. Review of drainage design works.
44. Design of sprinkler irrigation system.
45. Irrigation through underground C. C. Pipe.
46. Optimal design of head race channel for small hydro electric projects.
47. Analysis of hydrographic data of the Brahmaputra river in India
48. Hydrological analysis and water budgeting of a Peninsula sub catchment - A case study.
49. Design of canal transition to reduce scour downstream of hydraulic structures.
50. Hydrological data analysis of the Brahmaputra river as Pandu.
51. Modernization of Mortand Canal in Kashmir
52. Hydrological study and hydraulic design of urban drainage channels for Papang area flood control project in Indonesia.
53. Computerized design of IOWA vanes for river bank protection.
54. Problems in design construction and maintenance of trench weirs lin Hilly streams with reference to Nepal.
55. Case study of simulation for reservoir sedimentation characteristics.
56. Interactive computerized design of vortex settling basin.
57. Design of barrage for sub-surface flow with drainage arrangement - A case study of Polavaram barrage.
58. Experimental study of surface pannel.
59. Experimental study of flow separation solid and permeable groyne.

60. Experimental study of bottom panel.
61. Experimental study of velocity distribution with solid spurs in series.
62. Computerized design of silting basin.
63. Critical review of energy loss phenomenon in water conductor system.
64. Review of design of raft foundation for hydraulic structures.

[T] LABORATORY RESEARCH INFRASTRUCTURE DEVELOPED IN IIT ROORKEE

- In WRD&M Dept., IIT Roorkee the following laboratory infrastructure developed since 1998 - .
  - **Indoor River Engineering Lab with following experimental infrastructure**
    - 20 m long, 2.4 m wide, 2 m deep brick flume with perspex wall, sediment feeder, sediment collector, recirculating & storage tanks
    - 3 nos. of tilting steel experimental flumes with perspex side walls
    - Acoustic Doppler Velocimeter for 3D velocity measurements.
    - Laser Doppler Velocimeter for non-intrusive 3D velocity measurements.
    - Fluorometer for discharge measurement by fluorescent dye
    - Electronic bed profiler
    - Electronic multipoint water level indicator
  - **Outdoor River Engineering Lab / Demonstration Farm with following experimental infrastructure developed in 2009**
    - Deep tubewell water source
    - Large underground water storage tank
    - Surface tanks with discharge measuring V-Notch weir
    - Large experimental tray for comprehensive model studies
    - Surface channel network for water recirculation

[U] CURRENT AREAS OF RESEARCH INTEREST:-

- River Engineering / River Management compatible with eco-friendly aquatic habitat
- Multi-slope Stepped Spillways
- Labyrinth Spillways / Piano Key Weir
- Submerged Vanes / Jack Jetty & other River Training Works
- Desilting Basin / Vortex Type Sediment Extractor
- Braided Stream Morphology and Modelling
- Watershed Management and Modelling

- Application of Remote Sensing and Neuromorphic Techniques for Water Resources Development & Management.
- Hydraulic Structures / Dams / Barrages used in Hydel and Irrigation Projects
- Irrigation Management
- Ecosystem Services / Wetlands
- Climate Change
- Inland Navigation
- Concrete Dams

[V] EXTRA CURRICULAR ACTIVITIES:-

1. Member of the Assam State Table Tennis Team in the National Inter-State Table Tennis Championships held during 1967, 1968-69, 1969-70, 1972 & 1974.

2. Member of the Gauhati University Table Tennis Team in the Inter-Varsity Table Tennis Tournament held during 1967 and 1971.

3. Junior Table Tennis Champion of Assam in 1967.

4. Awarded “College Colour” for proficiency in Table Tennis by Assam Engineering College.

5. Staff Adviser for Table Tennis of I. I. T. Roorkee in 2003-2004.

[W] COUNTRIES VISITED:-

U.S.A., MEXICO, NEPAL, ENGLAND, FRANCE, BELGIUM, LUXEMBOURG, GERMANY, SWITZERLAND, CANADA, THAILAND, SCOTLAND, CHINA, AUSTRIA. PORTUGAL, BANGLADESH, BHUTAN

April - 2017 **Prof. NAYAN SHARMA, Ph.D.**