



## *Geographic Information Systems*

# *gis*



*"better information leads to  
better decisions"*

## Earthcad Environment GIS CELL

Earthcad Environment has been involved in environmental consultancy projects of repute in association with national and international organizations. These environmental projects desired the use of maps in large scale and hence the use of computer aided mapping became a part of the GIS Cell. Built on the strong fundamentals of mapping technology the GIS CELL has acquired excellence in due course of environmental projects. The GIS CELL stands head above the crowd of GIS peers. For us, opening the expertise in GIS technology to the world was like a pearl taken out of its shell, the GIS CELL lived upto the expectations by successfully executing a string of projects.

Equipped with the state of the art GIS technology and equipments our GIS CELL intends to emerge as world class **"Centre for Excellence"** providing Geographic Information and Solutions. This GIS CELL actively promotes an innovative and performance oriented environment and participates in all the aspects of Project Development and Management resulting in excellent, high quality **"Total Solutions"**, formulated and implemented in strict budgetary and time schedule. I Water Technologies GIS CELL has an on going and sustained commitment to quality assurance and we are closely associated with International Consulting Organizations to bring to our client's state of the art knowledge and experience in this field.

### GIS CELL - CONSULTING & PROJECT SERVICES

Our GIS Cell is an answer to the total solutions. The digital data can be provided in ARC/Info, Mapinfo, Arcview, AutoCAD and AutoCAD Map or any other GIS/CAD file format. EGC has access to over 40 programmers, analysts, application engineers and consultants. The use of STATE-OF-THE-ART equipment allows you to get ASSURED QUALITY. Our consulting and project services include:

- GIS Needs Assessment / Project Implementation Plan
- Scanning & Vectorization
- Data Preparation & Cleanup
- Format Conversion
- Satellite Image Processing

### Total Quality Management

**Quality Assurance:** There are two level quality assurances by GIS Engineer & Project Manager. This multilevel Quality Assurance ensures that the product handed over to the customer meets the specifications mentioned in the work order.

**Quality Control:** The two levels of quality control by Technician and Supervisor are prerequisite to any GIS work carried out at EarthCAD's GIS Cell.

### GIS CELL - EXPERTISE Computer Aided Mapping:

The practice of using digital maps at I Water Technologies, is more than ten years old. In the initial days digital maps were prepared for in-house use in the environmental consultancy projects. The experience of these projects was used to set up a GIS Cell'. Today, besides meeting the internal job requirements in GIS, our Cell is engaged in a number of other projects. We have or are in the process of using GIS in the following fields:

### Use of GIS for design and development of Environmental Projects:

- Environmental Auditing
- Environmental Impact Assessment
- Pre Feasibility Reports
- Detailed Project Reports
- UASB Treatment Plant Designs
- Waste Water Treatment Systems
- Environmental Planning and Infrastructure Master Plans

### Use of GIS for Architecture & Engineering:

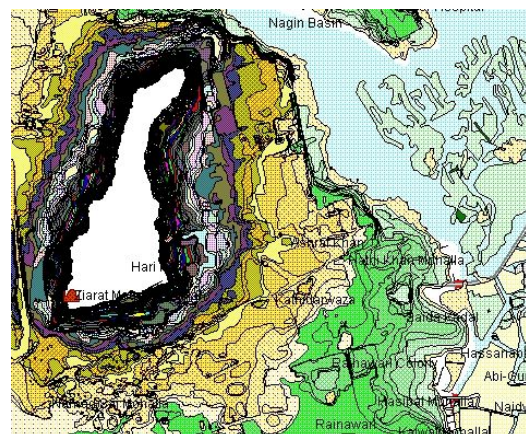
- Landscape & Environmental Planning
- Human settlements planning and development
- Quantity survey and cost estimates
- Infrastructure Planning / Development/Execution
- Natural Resource Management
- Conversion of paper maps into digital format
- Disaster (Fire, Earth Quake, Flood etc.) Assessment & Management System
- Digital Terrain Modelling/ Digital Elevation Modelling
- Automated Mapping/Facility Management

### System Integration - System Analysis/Designing & Application Development

- ◆ MapBasic
- ◆ Visual C++, C, C++, Visual Basic, Oracle.

### Map generation and updating using

- Satellite Imagery & Global Positioning System
- Aerial Photography
- Satellite Imagery/Physical Survey
- Land survey



## DEVELOPMENTS IN GIS

The field of GIS is rapidly advancing. GIS is able to read, record display and enhance different resource and environment data formats, including satellite, aerial and radar imagery. Digital data that can be processed are, amongst others, LANDSAT, SPOT and NOAA/AVHRR imageries. These satellite borne images are recorded on Computer Compatible Tape and can be read directly into the computer. Other digital data can be stored on cartridge tape and compact disk and can also be read into the computer.

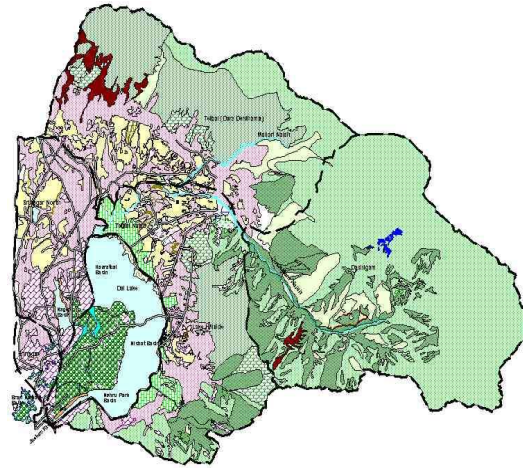
Using GIS state of the art modeling & simulation, prediction of possible developments can be calculated and visualized. One of the models implemented is the Land Evaluation Computerised System (LECS). In this model, all FAO Land Evaluation procedures are used to calculate land suitability. All information necessary for the calculation is extracted from thematic maps, available in the system.

## APPLICATIONS OF GIS

- Environmental Projects
- Urban Infrastructure Development and Planning
- Defence
- Telecommunication Applications
- Agricultural Produce Estimation
- Natural Resource Management
- Mining operations
- Market and Sales Analysis
- Materials Management
- Road Information & Transportation
- Travel & Tourism
- Hospitals, Fire Emergency Services
- Disaster Management Systems
- Disease Assessment, Control & Prevention
- Life and property insurance

## REFERENCES

- Dal & Nagin Lake Conservation Project, Srinagar. Jammu & Kashmir State and National Lakes Conservation Plan, Ministry of Environment and Forests, Govt. of India. GIS was extensively used in the project for:
  - a. Digitization and Development of base maps of Dal Lake Project Area and Lake Catchment Area
  - b. Identification of areas for marginal dredging in order to improve the water circulation.
  - c. Afforestation & soil conservation
  - d. Peripheral sewerage system planning
  - e. Solid waste management for Dal & Nagin lake.



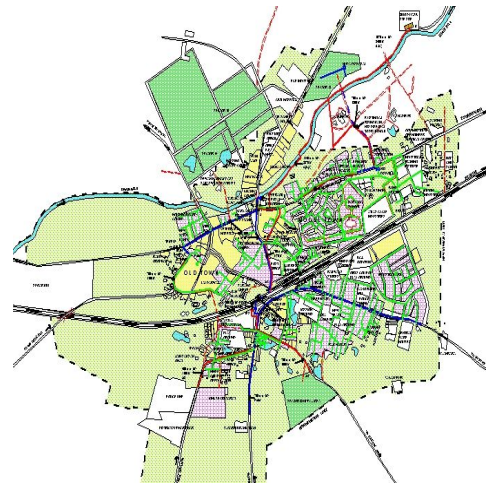
## GIS CELL - PROJECTS EXECUTED

- Computerised Mapping, GIS Development and Utilities Computerization for Bangalore Water Supply and Sewerage Board (BWSSB), Bangalore, India under Indo - French Protocol.



- Digitization and preparation of 1:1000 scale digital maps of Srinagar. These maps are further being updated using IRS 1C Satellite Imagery. The basemaps of Srinagar will be used for the Dal Lake Conservation Project. The 31 schemes under the DLCP will be integrated using these common base maps of Srinagar. This is to be followed by setting up of a GIS Centre on behalf of LWDA by EarthCAD and IRAMconsult for further monitoring and conservation of the Lake. Total number of maps being digitized is 100.
- Preparation of 1:5000 scale digital maps of Hyderabad including the area marked by Hyderabad Urban Development Authority. The maps are further being updated using the satellite imagery. The digital maps of Hyderabad shall be used for planning and schemes for monitoring of pollution and conservation of Hussain Sagar Lake at Hyderabad.

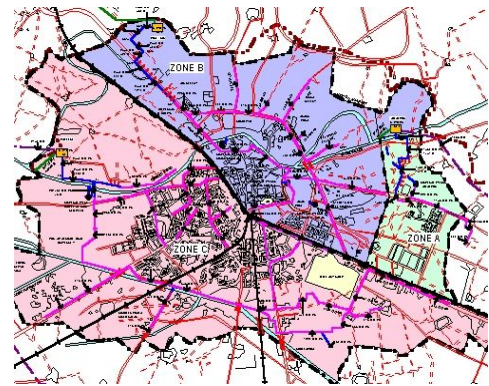
- Preparation and digitization of maps of Kanpur city for planning and design of wastewater conveyance system, 200 MLD UASB Wastewater Treatment Plant and Water Supply System for Kanpur South Area. The scheme is being funded by the Netherlands Govt. and is the part of the Indo-Dutch Ganga Action Plan Support Program for Kanpur South.
- Hussain Sagar Lake Conservation Project, Hyderabad under NLCP, MoEF.
- Environmental Aspects of Tannery Waste Management: An Indo-Dutch Environmental & Sanitary Engineering Project at Kanpur. The digital map preparation of Mirzapur in Uttar Pradesh was carried out in MapInfo. The base map used was Survey of India map at 1:50,000 scale.



- Digitization and preparation of site maps for planning of conveyance system, Main Pumping Stations and Sewage Treatment Plants at Rajamundry, and Ramagundam, Bhadrachalam in Andhra Pradesh as part of the consultancy services for Godavari River Conservation Projects of Ministry of Environment and Forests, Govt. of India.
- GIS Development and Utilities Computerization for Vijaywada Municipal Corporation (VMC), Vijaywada (Andhra Pradesh, India), under French Grant for Studies; Basemaps were created through field Surveys using Total Station method and data was converted into digital formats, The basemaps were then used for utility data collection in the field. The utility data collected includes water supply network data as well as sewerage system data. The front end was customized to suit the needs of Water & Engineering Department of VMC.



- Jhelum River Conservation Plan in Baramula, Anantnag, Sopore & Srinagar, Jammu & Kashmir.
- UASB Wastewater Treatment: The scopes of work where GIS components are extensively used are Design, DPR and monitoring of the project. IRAMconsult has successfully commissioned more than 14 UASB STPs at Kanpur, Mirzapur, Panipat, Yamunanagar, Faridabad, Sonipat, Gurgaon, Chapra and Karnal.



- Digitization and preparation of site maps for planning of conveyance system, main pumping stations and Sewage Treatment Plants at Jalandhar, Ludhiana and Phagwara in Punjab as part of the consultancy services for Sutlej River Conservation Projects of Ministry of Environment and Forests, Govt. of India.