

# **TITLE: Geospatial Visualization of Water Samples and Water Quality Indexes**

## **INTRODUCTION:**

Water quality assessment plays a pivotal role in environmental management and public health. However, traditional methods often lack spatial context, making it challenging to visualize and understand the distribution of water quality parameters across geographic regions. This research proposal aims to leverage geospatial visualization techniques to map water samples and corresponding water quality indexes (WQIs), providing insights into spatial variations and facilitating informed decision-making for water resource management.

## **OBJECTIVES:**

- Implement geospatial visualisation techniques to map water quality parameters and WQIs.
- Assess spatial patterns and variations in water quality indexes to identify potential pollution hotspots and prioritize management actions.
- Validate the accuracy and reliability of geospatial visualization techniques through comparison with traditional assessment methods.

## **METHODOLOGY:**

1. **Geospatial Visualization:** Utilize Geographic Information Systems (GIS) software to visualize water quality parameters spatially, generating thematic maps depicting spatial variations.
2. **Water Quality Index Calculation:** Compute WQIs for each sampling site based on established assessment models (WQIS, WQIL, and WQIW) using optimized parameter weights and aggregation functions.
3. **Integration and Analysis:** Integrate WQI values into the geospatial database and overlay them onto the thematic maps to visualize spatial patterns and variations.
4. **Validation:** Validate the accuracy and reliability of geospatial visualization techniques by comparing results with traditional assessment methods and field observations.

## **EXPECTED OUTCOMES:**

- Creation of geospatial maps illustrating spatial distributions of water quality parameters and WQIs.
- Identification of spatial patterns and pollution hotspots based on geospatial analysis, enabling targeted intervention strategies.
- Enhanced understanding of the spatial-temporal dynamics of water quality, facilitating proactive management and monitoring efforts.
- Validation of geospatial visualization techniques as valuable tools for water resource management and environmental decision-making.

## **TIMELINE:**

- **Week 1-2:** Development of the geospatial database and integration of water sample locations
- **Week 3-4:** Implementation of geospatial visualization techniques and computation of WQIs
- **Week 5-6:** Spatial analysis and identification of pollution hotspots
- **Week 7-8:** Validation of geospatial visualization techniques and preparation of final reports

**CONCLUSION:**

Geospatial visualization of water samples and WQIs offers a powerful tool for understanding the spatial distribution of water quality parameters and identifying priority areas for intervention. By integrating spatial analysis with water quality assessment, this study aims to contribute to more effective and sustainable water resource management practices.