

Project Design Phase-I
Proposed Solution Template

Date	18 October 2022
Team ID	PNT2022TMID42412
Project Name	Efficient Water Quality Analysis And Prediction Using Machine Learning
Maximum Marks	2 Marks

Proposed Solution Template:

Project team shall fill the following information in proposed solution template.

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Water is considered as a vital resource that affects various aspects of human health and lives. The quality of water is a major concern for people living in urban areas. The quality of water serves as a powerful environmental determinant and a foundation for the prevention and control of waterborne diseases. However predicting the urban water quality is a challenging task since the water quality varies in urban spaces non-linearly and depends on multiple factors, such as meteorology, water usage patterns, and land uses, so this project aims at building a Machine Learning (ML) model to Predict Water Quality by considering all water quality standard indicators.
2.	Idea / Solution description	It is recommended to consider the temporal dimension for forecasting the Water Quality pattern to ensure the monitoring of seasonal change of the Water Quality.
3.	Novelty / Uniqueness	It leverages machine learning to analyze wastewater treatment plant data and provide predictive recommendations so that plants can meet clean water and sanitation objectives at the best-operating costs.
4.	Social Impact / Customer Satisfaction	Service quality and price are mainly influenced by the consumer's perception of water quality and the payment system.
5.	Business Model (Revenue Model)	Estimating water quality has been one of the significant challenges faced by the world in recent decades. This paper presents a water quality prediction model utilizing the principal component regression technique. Firstly, the water quality index (WQI) is calculated using the weighted arithmetic index method.

		Secondly, the principal component analysis (PCA) is applied to the dataset, and the most dominant WQI parameters have been extracted
6.	Scalability of the Solution	An assumption of scale is inherent in any environmental monitoring exercise. Two monitoring objectives which are strongly tied to scale are the estimation of average condition and the evaluation of trends.