

## Project Design Phase-I

### Proposed Solution

#### Title: Efficient Water Quality Analysis and prediction using Machine Learning

Date	19 September 2022
Team ID	PNT2022TMID52728
Project Name	Efficient Water Quality Analysis and prediction using Machine Learning
Maximum Marks	2 Marks

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Safe and readily available water is important for public health, whether it is used for drinking, domestic use, food production or recreational purposes. Better water supplies and sanitation, as well as better management of water resources, can contribute greatly to poverty reduction and economic growth. It is known that contaminated water and inadequate sanitation facilitate the transmission of diseases such as cholera, diarrhoea, dysentery, hepatitis A, typhoid, and polio. Those without access to clean water and sanitation face preventable ones leads to health risks.
2.	Idea / Solution description	The proposed model will predict that the water is safe to drink or not using some parameters like PH value, conductivity, hardness, etc. Various models such as XG Boost, Logistic regression, Support vector classifier, Random forest Classifier are used for training to improvise the efficiency.
3.	Novelty / Uniqueness	To understand what constitutes safe, potable water and distinguish between potable and non-potable water by applying machine learning techniques.
4.	Social Impact / Customer Satisfaction	Water quality monitoring can help researchers predict and learn from natural processes in the environment and determine human impacts on an ecosystem. Poor water quality can pose a health risk for people. Poor water quality can also pose a health risk for ecosystems.

		<p>If drinking water contains unsafe levels of contaminants, it can cause health effects, such as gastrointestinal illnesses, nervous system or reproductive effects, and chronic diseases such as cancer. Thus Water quality testing is an important part of environmental monitoring that helps us to lead a healthy life.</p>
5.	Business Model (Revenue Model)	<p>Assessment of water quality using conventional methods causes losses in economic value, which in turn affects the decision-making capacity for water quality management programs. Therefore, to tackle these issues, it is essential to adopt a potential and cost-efficient approach for quick and accurate assessment of water quality. In our project, the application of machine learning (ML) techniques can be an effective and reliable approach for the evaluation of water quality.</p>
6.	Scalability of the Solution	<p>Objective weighting system-based approaches are more reliable because they consider local variations in a dataset during the computation process. This ML technique is an extension of the artificial neural network method; it has additional complex architectures that make this approach suitable for managing multi-dimensional inputs because of its high model configuration flexibility, greater generalization power, and robust learning capacity.</p>