

## Project Design Phase-II

### Solution Requirements (Functional & Non-functional)

Date	15 November 2022
Team ID	PNT2022TMID21084
Project Name	Project – Efficient Water Quality Analysis and Prediction
Maximum Marks	4 Marks

#### Functional Requirements:

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	<ul style="list-style-type: none"> <li>Registration through Form</li> <li>Registration through Gmail</li> <li>Registration through LinkedIn</li> </ul>
FR-2	User Confirmation	<ul style="list-style-type: none"> <li>Confirmation via Email</li> <li>Confirmation via OTP</li> </ul>
FR-3	Select the water quality testing parameters	<ul style="list-style-type: none"> <li>Chemical contamination</li> <li>Microbial contamination</li> <li>Physical contamination</li> </ul>
FR-4	Physical contamination	<ul style="list-style-type: none"> <li><b>PH</b>-is important when disinfecting water with chloride</li> <li><b>EC</b>-unusually high level may suggest chemical contamination.</li> <li><b>Turbidity</b>-High turbidity decreases water acceptability.</li> </ul>
FR-5	Chemical contamination	<ul style="list-style-type: none"> <li><b>Fluoride(1.5 mg/l)</b>-Fluoride is a naturally-occurring form of the element fluorine, which is sometimes found in groundwater at levels that exceed safe levels.</li> <li><b>Nitrate and Nitrite(50 mg/l)</b>-In most cases, these compounds aren't a serious health risk.</li> <li><b>Arsenic(10µg/l)</b>-The EPA says studies link long-term exposure of arsenic to certain cancers as well as cardiovascular, neurological, and other conditions.</li> <li><b>Chlorine(5 mg/L)</b>-This value is the health-based guideline. Chlorine is often used for water treatment.</li> </ul>
FR-6	Microbial contamination	<ul style="list-style-type: none"> <li><b>E. coli(0 MPN/100 ml)</b>-Provided indication of contamination by fecal coliforms or other harmful bacteria. This is important because fecal pollution is the major cause of water-borne diseases in humans.</li> </ul>

## Non-functional Requirements:

Following are the non-functional requirements of the proposed solution.

FR No.	Non-Functional Requirement	Description
NFR-1	<b>Usability</b>	<ul style="list-style-type: none"><li>To improve usability of data provided to water quality exchange, to monitor nutrient record in water.</li></ul>
NFR-2	<b>Security</b>	<ul style="list-style-type: none"><li>The capacity of a population to safeguard sustainable access to adequate quantities of acceptable quality for sustaining livelihoods, human well-being, socio-economic development, for ensuring protection against water borne population and water related diseases.</li></ul>
NFR-3	<b>Reliability</b>	<ul style="list-style-type: none"><li><b>System adequacy and system security-</b> A hierarchical framework approach to system adequacy evaluation is presented. Adequacy evaluation techniques for each hierarchical level associated with basic probabilistic indices.</li></ul>
NFR-4	<b>Performance</b>	<ul style="list-style-type: none"><li>The presence of certain contaminants in our water can lead to health issues, including gastrointestinal illness, reproductive problems, and neurological disorders. Infants, young children, pregnant women, the elderly, and people with weakened immune systems may be especially at risk for illness.</li></ul>
NFR-5	<b>Availability</b>	<ul style="list-style-type: none"><li>Low levels of rainfall and high temperatures lead to water deficits . When rainfall is low, there is less water available. When temperatures are high, water evaporates and so there is less available to use. Water surpluses are common where rainfall is high and temperatures are lower.</li></ul>
NFR-6	<b>Scalability</b>	<ul style="list-style-type: none"><li>Scaling occurs when water has high levels of minerals like calcium carbonate, which can build-up on surfaces. Slight scaling can be considered beneficial in that the inside surfaces of metal pipes become coated with harmless minerals that act as a barrier to corrosion.</li></ul>