CLAIMS

1. A method for generating at least one geometric freshwater sanitary area within a man-made large recreational water bodies, the water bodies having a surface of at least 4,000 m^2 and a volume of at least 5,000 m^3, wherein the method comprises:

determining at least one geometric freshwater area by mapping the geometric freshwater sanitary area through a coordinated reference system (CRS), wherein an initial reference point (IRP) of the geometric freshwater area is defined and from which the coordinates of the geometric freshwater area are established;

determining the renewal rate of the geometric freshwater area, wherein the renewal rate of the geometric freshwater area is determined as the volume of freshwater that is introduced into the geometric freshwater area in 24 hours compared to its total volume, and the renewal rate is at least 3.5 times per day, based on the following formula:

$$Renewal\ Rate\ (Geometric\ freshwater\ area)\ [day^{-1}] = \frac{Volume\ of\ freshwater\ introduced\ to\ the\ geometric\ freshwater\ area\ [m^3] * [day^{-1}]}{Total\ volume\ of\ geometric\ freshwater\ area\ [m^3]}$$

achieving a Comparative Water Renewal Index (CWRI) for bodies of water that include filtration, wherein the CWRI is calculated as the water renewal rate of a geometric freshwater sanitary area divided by the water filtration rate of a water area that does not include the geometric freshwater referred to as a water area, and is required to be at least 2.5, based on the following formula:

$$CWRI = \frac{Renewal\ Rate\ of\ Geometric\ Freshwater\ Area\ [day^{-1}]}{Water\ filtration\ rate\ of\ bulk\ water\ area\ [day^{-1}]}$$

determining the type of inlet elements used to introduce freshwater into the geometric freshwater area, and determining their Directional Vectors (DVs) according to the minimum volume of water to be introduced per unit of time to achieve the renewal rate of the geometric freshwater area and the CWRI, wherein each of the inlet elements have a water flow of within 0.3 to 36 m^3/h each;

locating the inlet elements and corresponding directional vectors in the geometric freshwater area, wherein the inlet elements and corresponding directional vectors are configured to achieve a homogeneity of less than or equal to 20%, where the homogeneity is determined by averaging the concentration difference of a tracker measured at two depths at three separate locations of the geometric freshwater sanitary area; and;

introducing freshwater through the inlet elements, wherein the physicochemical quality of the water within the geometric freshwater sanitary area complies with the following parameters:

- pH: 7.0 – 8.0
- Fecal coliforms: Absence
- Total coliforms: Less than 5 MPN/100 ml
- Floating oils and greases: Less than 5 mg/L
- Turbidity: Less than 5 NTU
- Iron: Less than 1 ppm
- Manganese: Less than 1 ppm
- True color at pH 7.71 Less than 20 Pt-Co
- Copper Less than 2.0 ppm
- Nitrates Less than 50 ppm
- Zinc Less than 3 ppm

wherein the addition of freshwater through the inlet elements and corresponding directional vectors establishes a flow and direction so that the calculated percentage difference in temperature is less than or equal to 30%, wherein the percentage difference is calculated by taking pairs of measurements at three separate locations of the geometric sanitary area, where at each of the three separate locations the pair of measurements includes a first temperature

measurement and a second temperature measurement taken at a depth difference of 50 cm from the first temperature measurement, and where the percent difference between each pair of the first and the second measurements are calculated and the average percent difference is calculated for the three separate locations; and

achieving a minimum water quality in the geometric freshwater sanitary area that complies with direct contact recreational regulations.

2. The method of Claim 1, further including visual delimitation elements selected from the group including buoys or floating elements, or visual markers located at a boundary of the coordinated reference system.

3. The method of Claim 1, wherein the freshwater comprises water selected from the group comprising: water from a well, water from a natural water body, water from a man-made water body, water from a reservoir, water from natural sources, water from treated sources, water from filtered sources, and combinations thereof.

4. The method according to Claim 1, wherein the freshwater comprises water selected from the group comprising: fresh water with a salinity of less than 500 ppm, brackish water with a salinity within 500-1,500 ppm, salty water with a salinity of more than 1,500 ppm, and combinations thereof.

5. The method of Claim 1, wherein the freshwater that is introduced to the geometric freshwater sanitary area is withdrawn from the bulk water area.

6. The method of Claim 1, wherein at least 80% of the freshwater that is introduced to the geometric freshwater sanitary area is withdrawn from an area outside of such freshwater area.

7. The method of Claim 1, wherein the inlet elements are selected from the group comprising skimmers, floor inlets, wall inlets, gutter systems, over-the-wall inlets, jet inlets, circular inlets, injectors, valves, pipes, and elements that introduce freshwater into the geometric freshwater sanitary area.

8. The method of Claim 1, wherein the directional vectors (DVs) are selected from the group that comprise single vectors, including targeted jet nozzles and multi-vectors, including circular inlets or inlets with multi-directional flows.

9. The method of Claim 1, wherein the inlet elements have different flow ranges and are constructed of different materials depending on the specific parameters of the water body and geometric freshwater sanitary area.

10. The method of Claim 1, wherein the tracker concentration comprises a colorant concentration, radioactive isotope measures, visual inspection assigning a value or category to the concentration of the tracker.

11. The method of Claim 1, wherein the geometric freshwater sanitary area can be determined by a method selected from the group comprising determination through plans, schematics, empirical methods, previously known or defined areas, defined by investigation, defined by reasoning, and/or defined by calculations, and combinations thereof.

12. The method of Claim 1, wherein determining the coordinated reference system (CRS) and/or the initial reference point (IRP) comprises utilizing methods selected from the group consisting of visual inspection, establishing a physical layout of the reference system, and incorporating physical elements positioned throughout the geometric freshwater sanitary area.

13. The method of Claim 1, wherein the directional vectors (DVs) of the inlet elements are adjustable, allowing for adaptability and optimization of the water flow within the geometric freshwater sanitary area.

14. The method of Claim 1, wherein a dispersion rate is defined within the geometric freshwater sanitary area, thereby enabling a high renewal rate of the water volume within the geometric freshwater sanitary area.

15. The method of Claim 1, wherein the homogeneity of the water volume within the geometric freshwater sanitary area is assessed by introducing markers or trackers to visualize or track their movement and eventual exit from the geometric freshwater sanitary area, wherein the markers or trackers are selected from the group consisting of:

dyes, colorants, solutions, substances with measurable residual concentrations, physical elements, radioactive isotopes, and combinations thereof.

16. The method of Claim 1, wherein the Homogeneity Index (HI) is utilized to assess potential stratification related to variations in physicochemical parameters at different depths along the y-axis within the volume of water contained in the geometric freshwater sanitary area selected from the group consisting of: turbidity, salinity, temperature and combinations thereof; or to assess the presence of dead areas.