THE IMPACT OF WASTEWATER TREATMENT PLANT LOCATION ON THE ECOSYSTEM

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Abstract: In civil engineering projects, choosing the right location is crucial, especially when it comes to designing wastewater treatment plants (WWTPs). Numerous studies have highlighted that the choice of location for WWTP facilities is contingent upon a multitude of factors, each of which carries associated risks during and after construction. The evaluation of these factors varies from one location to another and from project to project. An ecosystem represents a geographical region where plants, animals, and various organisms operate as an integrated unit, encompassing not only the biological elements but also the encompassing weather patterns and landscapes. In the context of WWTP placement, several critical factors come into play, including hydrology, land utilisation, dominant wind patterns, prevalent waterborne diseases, and the quality of the receiving water body. The two primary ecological risks commonly associated with WWTP placement are (1) the potential for detrimental impacts on the local ecosystem, and (2) the risk of inadequate distance or positioning concerning nearby settlements. The first risk pertains to the potential for mislocating the treatment facility in a manner that could result in harm to the surrounding ecosystem. The second risk involves the possibility of adversely affecting the local population and impeding connectivity to nearby towns in case such a need arises. In the event of accidents, malfunctions, or miscalculations, there exists a potential risk of altering the organic and nutrient composition within the water body. This, in turn, may result in the depletion of local flora and fauna populations, and in the worst-case scenario, lead to local extinctions. Furthermore, the selection of WWTP locations is linked to socio-economic factors, which can, in turn, shape public opinion negatively. To enhance the scope of this research, an in-depth analysis of specific facility locations and their impact on the ecosystem could provide valuable insights.

Keywords: *Civil Engineering; Wastewater Treatment; Ecosystem; Risk Assessment.*

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