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Universe of Lagoons/Analysis of State and Tribal Lagoon Wastewater Treatment Systems: U.S. Environmental Protection Agency Report

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The United States Environmental Protection Agency (“EPA”) Office of Water issued a May 2022 report titled:

The Universe of Lagoons: An Analysis of State and Tribal Lagoon Wastewater Treatment Systems and Socioeconomic, Environmental Justice, and Compliance Patterns in Small, Rural Communities in the United States (“Report”)

The *Report* describes the methodology EPA used to aggregate state and tribal lagoon wastewater treatment systems and what it denominates the Lagoon Inventory Datasheet.

The data contained in the analysis addresses socioeconomic, environmental justice, and compliance patterns in communities that utilize lagoons. It is based on information gathered in 2020-2021.

The *Report* states that Facultative and aerated lagoon wastewater treatment systems are:

... often utilized by small, rural communities because lagoons are cost-effective, low maintenance wastewater treatment options appropriate for areas with low population density.

Concern, however, is expressed that lagoons are:

... often unable to meet increasingly stringent water quality requirements for pollutants such as ammonia and nutrients, and add-on technologies can be cost-prohibitive for small communities because they lack economies of scale, resulting in higher rates of noncompliance and potentially adverse impacts to human and environmental health.

Information gathered in preparation of the *Report* is stated to have involved:

1. building a dataset of known discharging lagoon systems with NPDES permits that are publicly or semi-publicly owned, in which lagoons serve as the main form of secondary treatment, without more advanced treatment or add-on technologies;
2. analyzing lagoon facility data in conjunction with compliance data (from EPA’s ECHO website), socioeconomic data (from U.S. Census American Community Survey) and environmental justice

data (from EPA's EJSCREEN tool) to characterize lagoon compliance issues and understand demographic and environmental justice patterns in communities that utilize them.

The research effort identified 4,657 publicly or semi-publicly owned discharging lagoon systems, of which 83% were identified as publicly owned treatment works.

One conclusion of the *Report* is that the majority of communities with lagoons are economically disadvantaged. Further, many lagoon communities are stated to have demographic characteristics consistent with rural populations, which include:

- High reliance on manufacturing sector jobs
- Low undergraduate and postgraduate educational attainment
- Low broadband connectivity

Lagoon communities with environmental justice concerns (i.e., environmental justice environmental indicators with values about the 80th national percentile) were found to be more prevalent in communities with higher values for demographic indicators of social vulnerability including:

- People of color
- Low income
- Less than high school education

These were stated to be concentrated in southeastern states.

A copy of the *Report* can be downloaded [here](#).