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Greedy Reduction Algorithm as the Heuristic Approach in Determining the Temporary Waste Disposal Sites in Sukarami Sub-District, Palembang, Indonesia

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Abstract

Waste is one of the problems in Palembang, Indonesia. The amount of waste in Palembang increases proportionally to the population yearly and can adversely affect the community. Therefore, we determine the optimal temporary waste disposal site (TWDS) to optimize the problems. The set covering model is the proper model for solving the location and allocation problem. In this study, data on the distance between each TWDS is needed in the set covering modeling. The novelty in this research is developing the ρ -median problem model, which is formed from the optimal solution of the set covering location problem (SCLP) model. Palembang consists of 18 sub-districts, of which the Sukarami sub-district has the highest population density. This study discussed the determination of strategic TWDS in the Sukarami sub-district using the SCLP model, the ρ -median problem, and a

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heuristic approach, namely the greedy reduction algorithm in solving the model. Based on the solution of the ρ -median problem model with LINGO 18.0 and the ρ -median problem solved by the greedy reduction algorithm, only three strategic TWDS were found for the Sukarame sub-district. The study results recommend a review of the existing TWDS and particularly the addition of a TWDS in Sukodadi and Talang Betutu villages, respectively. © 2022, Research Center of Inorganic Materials and Coordination Complexes, FMIPA Universitas Sriwijaya. All rights reserved.


Author keywords

Greedy Reduction Algorithm; Set Covering Location Problem; TWDS Location; ρ -Median Problem

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


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