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DEVELOPING AN OPTIMAL MODEL FOR LOCATING SANITARY LANDFILL BY ANP METHOD (CASE STUDY: ILAM CITY)

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Abstract

Locating sanitary landfills is one of the most significant environmental issues in the residential area. The aim of this study is finding the optimal location for the landfill in Ilam city in Iran. The current landfill is located near the rivers that supply water to the Ilam Dam. Inadequate landfill causes contamination of groundwater resources. Based on the field survey, using GIS software and expert opinion, 4 regions were proposed for the landfill. The main criteria, environment, hydrology, access roads and population centers were taken into consideration. Sub-criteria such as groundwater depth, the distance from springs, wells, and aqueducts, vegetation cover, surface water resources, animal species habitats, distance from protected areas, prevailing wind direction and distance from main roads were considered. The criteria were weighted by a questionnaire among experts. Ranking of the criteria, the coefficient of each criterion and pair-wise comparison matrix tables were determined with acceptable consistency by Analysis Network Process (ANP) method using super design version 2.8. Results showed that region 1 with a weight of 0.419 and inconsistency rate of 0.05, according to the studied criteria and sub- criteria was the most suitable option. The weighting order was obtained for the options 1,2,3,4 in order 0.419, 0.274, 0.160 and 0.147. Therefore, concluded in terms of the importance and appropriateness of the landfill option 1>option 2> option 3> option 4. The results of this study were concluded considering environmental criteria for landfill location is essential. Landfills can harmful effects on their surrounding and influence on public health.

Keywords: environmental criterion, ilam, inconsistency, landfill, optimal location

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