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Feasibility study of the implementation of an evapotranspiration basin with the help of the ash box as preliminary treatment

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1 INTRODUCTION

In rural areas and in most developing countries, access to sanitation services is still considered precarious (VICQ & LEITE, 2014). According to the Brazilian Association of Sanitary and Environmental Engineering (ABES), the lack of adequate sanitation has contributed negatively to the population's health. The United Nations Children's Fund (UNICEF, 2019) points out that the lack of service, can account for approximately 88% of child deaths from diarrhea, in addition, it can cause typhoid fever, cholera, bacterial intestinal infections and hepatitis (TOKARNIA, 2019).

2 OBJECTIVE

Dimension the size of an Evapotranspiration Basin (BET), calculating its economic viability together with the help of the ash box, enabling an adequate and sustainable treatment for the black sewage; furthermore, apply and copy the data from an environmental perception questionnaire for individuals who do not have the conventional treatment and still use septic tanks.

3 METHODOLOGY

- BET sizing - approximately 1m deep, with areas of 2m² per user.
- Budget - Table based on SINAP (2019), including materials and services rendered, estimated for a 3-person household.
- BET Elaboration.
- Application of the environmental perception questionnaire.

4 DEVELOPMENT

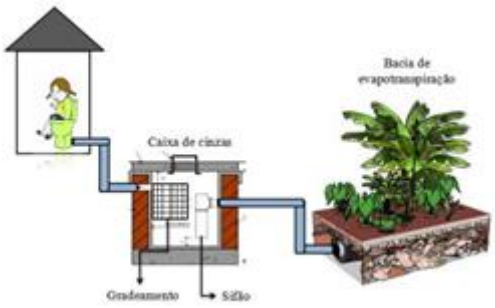
- Environment Perception Research

In the survey, 66.7% of the interviewees affirmed their knowledge of inadequate sewage disposal in the region, and 33.3% believe that this incorrect disposal does not exist. From the same public interviewed, 77.8% were willing to invest financial resources in the replacement of the sewage treatment system of their residence, if it was degrading the soil and the water resources. The indexes reported that 85.4% of the participants would be willing to spend up to R$ 3,000.00 on a sustainable individual treatment system if there was no sewage collection in their residence.

- Economic feasibility

Projetos Analisados	Município	Ano	Custo total do projeto	Pessoas atendidas	Custo por pessoa
Projeto 1	-	2019	1.403,51	3	467,84
Projeto 2	Rio Verde – GO	2016	700,00	2	350,00
Projeto 3	Planaltina – DF	2012	2.619,68	6	436,61
Projeto 4	Itabira – MG	2014	2.000,00	4	500,00
Projeto 5	Iranduba – AM	2018	1.056,00	4	264,00

- Elaboration



Translation:
Projetos analisados: analyzed projects
Município: municipality
Ano: year
Custo total do projeto: total cost of the project
Pessoas atendidas: people attended
Custo por pessoa: cost per person
Projeto: project
Caixa de cinzas: ash box
Gradeamento: griding
Sifão: siphon
Bacia de evapotranspiração: evapotranspiration basin

5 CONCLUDING REMARKS

With the present work, it was possible to estimate an average for the financial projection in places interested in promoting the installation of the system, and the cost of the system per person served ranged from R$ 264.00 to R$ 500.00. It is important to emphasize that, according to the perception of the population interviewed by the authors, the estimated cost of a more sustainable treatment system was consistent with the values of the BET system raised in the study. This information shows that the costs of the BET projects are in an adequate range for the significant majority of the interviewed people,

because with the maximum value of R$ 3,000.00, established by the research, it would be possible to serve a residence with about seven residents.

REFERENCES

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