A Study on River Conservation and Management using the Information of water environment and GIS

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1. Introduction

The maintenance of drainage promotes, and the water quality of the large river basin is improved (Kurosawa et al., 1999). However, it has been understood that a small basin where the pollution density has risen by a point load of drain and an artificial flowing quantity change exists, too, as the maintenance of drainage advances from a local observation of the Abukuma river basin and the influence that it has on the main stream is large. Then the drainage maintenance advanced, the pollution load was calculated for the Shakadou river basin in the class A river Abukuma river basin and the upstream region where the diffusion rate of sewerage that was the main branch, and the problem in the basin water quality management of the future was examined. As a result, it gropes how to maintain and to reproduce a more excellent water environment.

2. Study Area

The Abukuma river originates the source in mt. Asahi flows into the Pacific Ocean agricultural area and some city regions in the Nakadouri area. It through the narrowed area in the Abukuma valley after northing, and is a class A river of the length of river channel 239km and 5,400km^2 in the drainage area. Moreover, a typical aspect of the Abukuma river branch was shown, and the Unit Basin Value Method was examined for the Shakadou river basin where a lot of local observation points existed.

3. Methods

To understand the change during the twelfth a year all times and water qualities from June, 2005 to May, 2006 at the frequency of one degree per the upstream region and about 80 points of the south from Koriyama city of Abukuma river basin. It was received to have begun to differ from a local observation in two near points in shape to place the outlet in the rural community sewerage about a clear water quality, and set up the logger in another point where the influence of the drain of the rural community sewerage had been received. It was able to be read that a point load had risen because of the drain of facilities because of the result.

The Unit Basin Value Method that calculated the loading dose was practiced for the Shakadou river basin in consideration of the basin characteristic of a small basin in a large basin. The object of the calculation of the load limited COD, classified the generation factor of the pollution load into three kinds stock raising, life, and the farmland, and analyzed the pollution load. The value of the drainage maintenance indicator by the Ministry of Construction was used about the load amount basic unit of the life system and the stock raising system, and the basic unit used by Kurosawa (1999) was quoted, modified, and used for the farmland system. Amount of pollution COD load in Shakadou river basin.

4. Result

The existence also of a small basin where the pollution density had risen by a region where a point load from facilities hung and an artificial flowing quantity change, and largeness the influence on the main stream became clear though it was understood that a respect total loading dose decreased from the result and the consideration seasonal change of water quality.

5. Conclusion

The plan to be going to adjust the diffusion rate of sewerage in the basin to roughly 100% by 2020 hangs in the Abukuma river basin. Maintenance that puts such a water circulation in view will be hoped for in the future because it is expected that the influence of facilities increases.

Fig.1 Abukuma river basin

Fig.2 Calculation result of the amount of load