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Sharing water: managing water use conflict and building relationships, the case of the city of Brazlândia - Descoberto Basin

Keywords: water sharing; allocation practice; benefits sharing.

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MULTIPLE USES OF WATER

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- The city of Brazlândia, located in the Descoberto Basin, has approximately 54,000 inhabitants. The city is supplied by the Capão da Onça, Barrocão and Bucanhão streams.

- Approximately 25% of the population of Brazlândia live in the countryside and stands out for being one of the largest horticultural producers in the Federal District. Some of the farmers in the region collect the water needed for their production from Bucanhão, Barrocão and Capão da Onça streams and from its springs and tributaries.

CONFLICT

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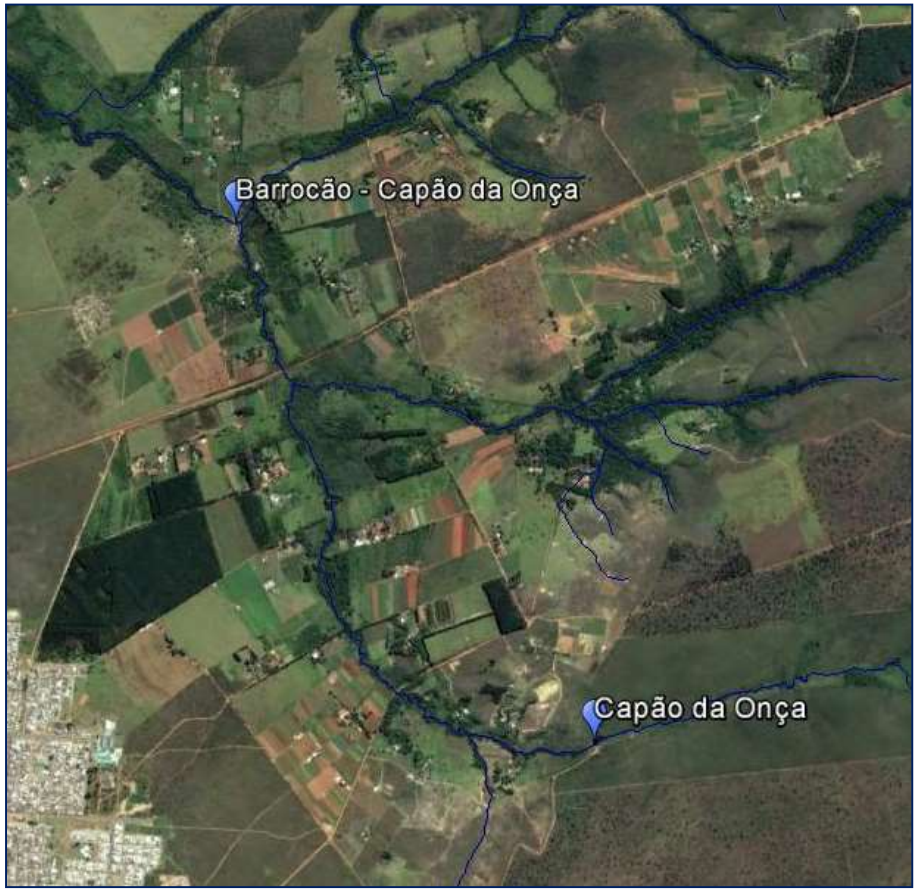

Figure 1 - Water catchment points of the Concessionaire, to supply the city of Brazlândia.

Figure 2. Surface and underground catchment points identified in the region.

NEGOTIATED ALLOCATION OF WATER

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- In 2016, the Federal District faced the worst water crisis ever recorded in its history. The Descoberto River Dam, the main reservoir of water supply for human population, reached levels lowers than 20% of its storage capacity. As a result, conflicts over water use have been established in several regions, mainly where the use for agriculture competes with the use of water for human supply.

- Water allocation is the establishment of rules for the use of water resources in order to carry out its distribution among users, for a certain period of time, negotiated between the government, stakeholders' representatives and users.

- In the Brazlândia region, the conflict over the use of water and the interruption of supply to the city has happened frequently in recent years. Knowing that, in 2015, Adasa created the Water Enhanced Sharing Project for the region. This project intends to implement water allocation actions in the basins that present conflicts over water, and establish parameters lower than those determined by law.

METHODOLOGY

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- The Water Resources Enhanced Sharing Project has as a basic premise that the Regulatory Agency has knowledge over the water users in the basin, their location and their use of water - quantity, days and catchment schedules - and that there will be a subsequent formation of a monitoring group to follow the streams' flow by micro basin. The project, ideally, should follow several steps.

- Initially, a project management commission is formed, with representatives from Adasa, the concessionaire (if a user of the basin) and the rural development company (Emater) as a representative of farmers, who use water for irrigation.

- Campaigns are carried out to register the authorizations for each region, according to planning, in order to know the uses of water in the basin. The registrations are sent to the technical area responsible for the analysis and release of authorizations, in Adasa, that evaluate them and grant the right to use water.

METHODOLOGY

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- After registration campaigns, meetings are to be held with all the users of each region, to level the knowledge of users about water availability in the basin, to present data on rainfall, and to present ways to rationally use water in agriculture.

- In the first meeting with users of each region, a committee is set up to follow up the actions, including in this committee some farmers.

- The monitoring committee mainly meets during times of water scarcity, at which Adasa and Caesb show the data on the flow in streams of interest for human consumption and irrigation; based on that data, water allocation proposals are made.

- The proposal validated by Adasa and by the monitoring committee is then communicated to all the users of the basin.

- With the continuous monitoring of river flows after the allocation, if the rainy season delays its start causing an extension of the shortage period, the meetings can be resumed to discuss new proposals for allocation, which are more restrictive for users. Consequently, this should ensure minimum water levels in water bodies in order to meet their multiple uses.

DISCUSSION

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- With these campaigns, it was possible to quantify and qualify the types of interventions that exist in this sub-basin. Thus, we identified along the streams: 26 users, in the Capão da Onça Rural Center; 13 in the Bucanhão Rural Center; and 13 in the Barrocão Rural Center.

- Hence, it was found that the Bucanhão and Barrocão Rural Centers had only small users; but, in the Capão da Onça Rural Center, eight major irrigation users who have catchment points in the Capão da Onça stream were identified. Because of this, these users have become the studied population.

- Since the flow of the three streams was monthly monitored, and based on the information from the concessionaire that the minimum water flow rate arriving at the dam to enable catchment, with a single motor pump in continuous operation, was 80 L / s (eighty liters per second), it was possible to determine a month, during the dry season, to start the allocation process.

DISCUSSION

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- Thus, from the monthly monitoring of the total flow rate of Capão da Onça, Bucanhão and Barrocão streams directed to the catchment point of the concessionaire, it was decided that the start of the allocation process would take place in August, as the flow rate of 97 L/s (ninety-seven liters per second) was sufficiently close to the limit value of 80 L/s (eighty liters per second).

	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER
FLOW (L /s)	242	129	111	97	84	86

- Discussed allocation proposals also had the purpose of avoiding conflicts of catchment schedule to prevent the concurrent collection, which could result in reduced water availability, and affect the catchment operation by the concessionaire.

- However, due to the scenario of water scarcity and the lack of rainfall in September, it was necessary to conduct a new allocation strategy discussion with the users. Therefore, this second time, the negotiated allocation aimed to reduce the use and to reorganize certain times due to the occurrence of supply interruption peaks at 10 am, 4 pm and 11 pm.

DISCUSSION

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USER	TIME USED TO COLLECT FROM THE STREAM	TIME ALLOCATED TO COLLECT FROM THE STREAM August 3, 2016	TIME ALLOCATED TO COLLECT FROM THE STREAM September 16, 2016
User 1	MORNING: 6 am-10 am	MORNING: 7 am-10 am	MORNING: 7 am-10 am
	AFTERNOON: 1 pm-5 pm	AFTERNOON: 1 pm-4 pm	AFTERNOON: 1 pm-4 pm
	NIGHT: 6 pm-10 pm	NIGHT: 6 pm-10 pm	
User 2	MORNING: 6 am-7:30am	MORNING: 6 am-7:30am	MORNING: 6 am-7 am
	AFTERNOON: 1 pm-5 pm	AFTERNOON: 1 pm-4 pm	AFTERNOON: 1 pm-4 pm
User 3	MORNING: 6 am - 8 am	MORNING: 7 am -9 am	MORNING: 7 am -9 am
	AFTERNOON: 1 pm-3 pm	AFTERNOON: 2 pm-4 pm	AFTERNOON: 2 pm-4 pm
User 4	NIGHT: 6 pm-8 pm (Reservoir)	NIGHT: 6 pm-8 pm (Reservoir)	MORNING: 6 am-10 am (Reservoir) They use the same reservoir
User 5	NIGHT: 6 pm-8 pm (Reservoir)	NIGHT: 6 pm-8 pm (Reservoir)	
User 6	MORNING: Tomato farm irrigation at any time	MORNING:9 am -10:30 (Tomato farm irrigation)	MORNING:9 am -10:30 (Tomato farm irrigation)
	MORNING AND AFTERNOON: Twice a week, irrigates lemon orchard	MORNING AND AFTERNOON: Irrigate the lemon orchard on Tuesdays and Wednesdays	MORNING AND AFTERNOON: Irrigate the lemon orchard on Tuesdays and Wednesdays
	NIGHT: 6 pm - 8 pm (Reservoir)	NIGHT: 6 pm - 8 pm (Reservoir)	NIGHT: 6 pm - 8 pm (Reservoir)
User 7	NIGHT: 6 pm - 8 pm (Reservoir)	NIGHT: 6 pm - 8 pm (Reservoir)	NIGHT: 6 pm - 8 pm (Reservoir)

RESULTS

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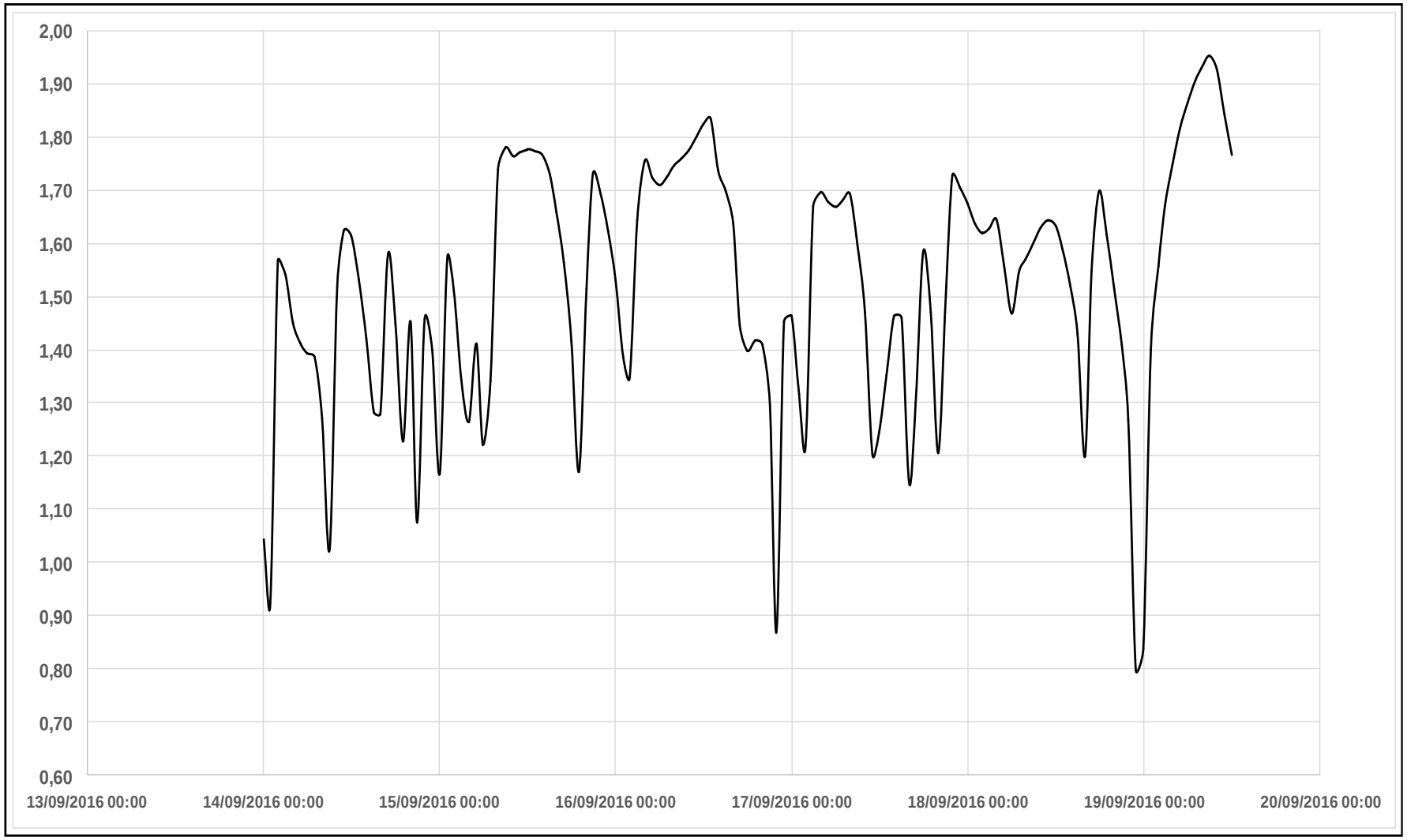

Chart 1 - Height (quota) in meters of water level in catchment dam in the period of September 14-20 (chart provided by Caesb).

FINAL CONSIDERATIONS

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- The actions and proposals for shared use were developed through discussions and negotiations between water users and Adasa, decentralizing the decision-making process and empowering stakeholders with social participation in the management of water resources.

- It is important to emphasize the importance of the involvement of institutions who work in the basin, such as the Rural Development Company and water users. The negotiating power of these organizations is fundamental to the progress of the Project in its beginning and during negotiations.

- Finally, notwithstanding the need for further developing the methodology applied, especially in respect to technical criteria, we can infer that the knowledge obtained with this experience can be used in other parts of the Descoberto Basin during the dry season. Thereby, it would be possible to increase the water availability of the tributaries of Lake Descoberto (reservoir responsible for supplying 60% of the population of Brasilia) and ensure the multiple uses of water.