

BRAZIL

Flood Damage at Goyaz Velho

This report considers the damage to Goyaz Velho, as a result of the flooding of the Vermelho River on 1 January 2002. It is based on a site visit by a group that included the honourable Representative and Superintendent of the 14th Region of IPHAN, Dr. Salma Paiva. The conclusions presented are those that require a larger discussion with the inter- and multi-disciplinary team co-ordinating the rescue and restoration of the areas afflicted by the flood that took place during New Years Eve.

The flood caused major damage on account of several factors, mainly related to environmental features:

- absence of continuous forestation of woods and treatment of the springs of the Vermelho River;
- lack of reforestation of the woods bordering the Vermelho River;
- silting-up of the river drainage basin;
- substantial, atypical and continuous rainfall (approximately 15–16 hours of heavy and uninterrupted rains from 31 December 2001 to 1 January 2002);

- gradual reduction of the outflow box of the Vermelho River, in the urban area, mainly near the Square of the Antiga Rodoviária (Old Bus Station); and in other areas, such as the district 'Bairro da Carioca' (these areas are mentioned as they were visited on 10 January 2002);
- absence or insufficient periodical cleaning of the Vermelho River, mainly in the spots where debris and litter normally accumulate through river movement.

Following the above, we suggest the following list of priorities for discussion:

1. Immediate Measures (duration: maximum 90 days)

- clearance of the outflow box of the Vermelho River, by the demolition of all constructions that have been made over the bed and 'val' (outflow box of the river);
- consolidation of the masonry of the quay, which was broken and disaggregated in many spots;
- inclusion of an amendment in the Regulator Plan of the town, prohibiting construction on the outflow box of the river, within the Municipality (County);
- cleaning of the river, by taking away the sand dunes, debris and litter found in all its extensions.

2. Prospective Measures (parallel to item 1)

- An archaeological research programme should be undertaken to identify the construction line of the masonry of the quay. This should start from the first concrete bridge, where the masonry emerging from the ground seems to have its finishing damaged, as if it had been demolished for some new activity (the knowledge what will arise from this research will be of fundamental importance for the restoration project in the area of the old Bus Station).
- There is a need for the elaboration of the restoration project of the docks, starting from the point mentioned in the previous item, and the negotiation of the area of the outflow box of the river where it is presently dammed up.
- Elaboration of the restoration project for the areas of collapsed buildings and of the buildings to be reconstructed is required.
- There is a need for archive rescue, including the archaeological material of museums and cultural centres (Cora Coralina's house and others).

Measures for Restoration

Civil Engineering Area

- consolidation of the quay and of the damaged structures
- demolition of the unwanted constructions
- urban and infra-structure project mediation
- cleaning of the river
- protection of elements of the rainfall impounding boxes
- reconstruction of the traditional bridges
- reconstruction of the collapsed bridges, as suggested by IPHAN.

Building after flood damage

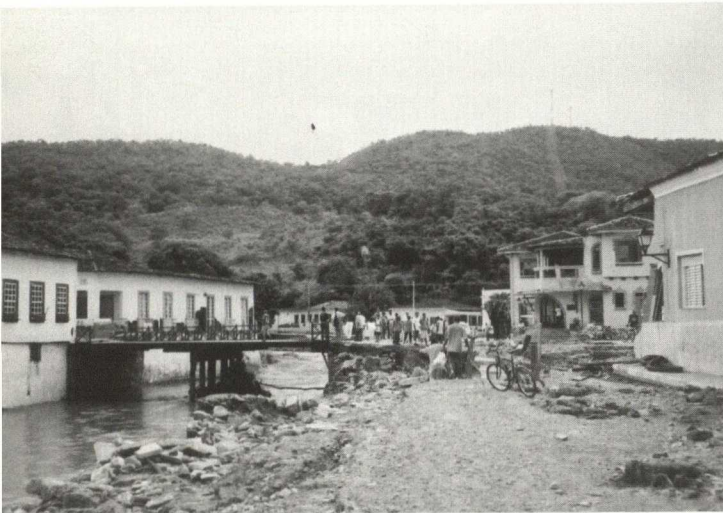




Dom Cândido Street and Anhaguera
at the back



Moretti Foggia Street



Lapa's Bridge, which resisted the flood

Reconstruction and Restoration

- monument: Cross of 'Anhangüera';
- archives – preventive measures and restoration; rescue services in action by the IPHAN specialised technicians and local volunteers;
- urban cleaning (presently taking place) and cleaning of the buildings;
- painting.

Environment Protection and Preservation

This is to be achieved under the responsibility of the specialised institutions that are also responsible for specific law-abiding.

Museums and Cultural Institutions

It is necessary the protection project to be executed by continuing the present excellent work of rescuing, foreseeing and preventing

Anhaguera Cross foundation



damages from future accidents, including those arising from rain-fall infiltration in roofs or covering roofs: for example – planning the insertion of double ceilings, acclimatisation of the technical reserves, etc.

Urban Paving

Considering the extent of the damage that has occurred, it is foreseen that the stones returned by the river and deposited at the 'Carioca' district are in sufficient quantity to be used for the restoration and reconstruction. Light poles must be repaired, as well as other destroyed or damaged equipment.

Tourist Infrastructure

Following the event, it will be in the interests of the town to strengthen its tourist infrastructure and visitor assistance through the constant presence of a Fire and Rescue Detachment, as well as the creation of a Special Police unit, telephone and internet public services, emergency utilities and ambulances etc. Accesses must be improved and protection installed for the rain impounding boxes. It is also necessary to analyse commercial activities and diversify them in order to meet and improve the high tourist season requirements, mainly the storage aspects.

Infra-structure of Health Services and Equipments for Assistance

This is already referred to in the item above. There is a need for a special study of the hospital, and the possibility of transferring equipment to a higher ground level as a preventative measure, and/or the transference to more places in case of future accidents. Ambulance capacity in new strategic points of the city must be increased.

Conclusion

Based on the above, it is possible to verify the urgent need for immediate removal of all hindrances from the river bed and its 'val' (outflow box). The improvements are essential, foreseeing the city's security through the prevention of major impacts in the event of new floods.

We must point out that, from the first flood registered in 1839 until a new flood in 1950, there was a lapse of 111 years. However, from 1950 to 2001 – an interval of 52 years – two further floods caused great damage to the city and its inhabitants. Therefore, it is logical to reason that future floods will occur, unless the necessary and immediate environmental protection and preservation measures are taken: clearance of the river from illegal constructions and litter that, by holding its waters, reduce its flow capacity and result in overflow from its course. At the same time, there is a need for the establishment of preventive measures regarding the monuments, paving, improved infrastructure, the removal of debris on the river, and the other steps and actions recommended in this document.