

BELIZE STANDARD

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BELIZE STANDARD FOR HEALTH AND SAFETY OF ARCHAEOLOGICAL RESERVES AND PARKS

**BBS
BELIZE BUREAU OF STANDARDS
Third Floor, Diamonds Building, Constitution Drive
P.O. Box 430
City of Belmopan
Belize, C.A.**

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**BELIZE STANDARD FOR HEALTH AND SAFETY OF ARCHAEOLOGICAL
RESERVES AND PARKS**

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Belize Tourism Board (BTB)

REPRESENTING

Independent Consultant

Seasports Belize

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Belize National Tour Guide Association

Independent Consultant

National Institute of Culture and History
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Ms. Lenny Ayuso
Belize Tourism Board

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BELIZE STANDARD FOR HEALTH AND SAFETY OF ARCHAEOLOGICAL RESERVES AND PARKS

0 FOREWORD

0.1 This specification was developed to address Health and Safety requirements for Archaeological Reserves and Parks in Belize in an effort to ensure that visitor experience to these sites will be enhanced through the implementation of these standards. It is expected that future infrastructural and maintenance enhancements, as well as the services being provided within these sites, will be guided by these standards.

0.2 In preparing this standard, information was derived from the following publications:

- United States Department of the Interior (1988). *National Park Service – Sign Manual*. Washington, DC: United States Department of the Interior;
- United States Department of the Interior (1988). *National Park Service Trails Management Handbook*. Washington, DC: United States Department of the Interior;
- Leicester City Council (2000). *Vehicle Parking Standards: Citywide Guidance*. Leicester, United Kingdom: Leicester City Council;
- *Park Standards and Policy Guidelines for Archaeological Reserves* – Institute of Archaeology, Belize National Institute of Culture and History (October, 2012);
- *Belize Building Standards* – The Belize Chamber of Commerce and Industry, Belize City, Belize (2003).
- *Nohoch Che'en and Actun Tunichil Muknal Archaeological Reserves Tourism Operational Manual* – Institute of Archaeology, National Institute of Culture and History (October, 2012);
- *Tourism Standards Draft Guidelines for Sites and Attractions* - Discover Dominica Authority (2009);
- *Caricom Regional Code of Practice: Tour Guides* – Caribbean Regional Organization for Standards and Quality (2010);
- *Caricom Regional Standard: Specification for Tourist Accommodations* - Caribbean Regional Organization for Standards and Quality (2010); and
- *Caricom Regional Code of Practice for Inbound Tour Operators* - Caribbean Regional Organization for Standards and Quality (2010).

- 0.3 All specifications for building and construction are in reference to the Belize Building Act (Belize Building Act Chapter 131, Revised Edition 2003).

1 SCOPE

This standard provides the minimum requirements for Health and Safety at Archaeological Reserves and Parks, which includes terrestrial and cave sites. It provides Health and Safety guidelines to individuals and enterprises, including community - based and tourism organisations, when visiting archaeological parks and reserves in Belize.

2 TERMS AND DEFINITIONS

- 2.1 **“Approved”** means the process of officially agreeing or confirming to codes and ordinances, standards and regulations.
- 2.2 **“Archaeological Reserves”** means a legally declared area by the Minister responsible for the National Institute of Culture and History (NICH). These areas may include but are not limited to cultural and natural resources including archaeological sites, archaeological parks, and caves.
- 2.3 **“Capacity Management”** means the process of ensuring that acceptable visitor load at any one time is in conformity with carrying capacity to ensure sustainability and preservation of the site.
- 2.4 **“Carrying Capacity”** means the maximum number of people at any given time that can use the site without causing an unacceptable deterioration in the environment and without an unacceptable decline in the quality of the visitor’s experience.
- 2.5 **“Caves”** means archaeological cave sites utilized for rituals and ceremonies by the ancient Maya and/or used as campsites by earlier Paleo-Indian and Archaic human populations.
- 2.6 **“Caving Activities”** means specialized adventure and recreational activities undertaken in cave sites situated within archaeological reserves and parks including guided tours, kayaking and cave tubing.
- 2.7 **“Competent Authority”** - means any agency or organization that is legally responsible for one or more of the following:
- a) Water supply and waste water disposal
 - b) Sewage and garbage disposal
 - c) Environment
 - d) Emergency preparedness plans
 - e) Public utilities
 - f) Waste disposal
 - g) Sanitation

- 2.8 **“Culture and Heritage”** In this context means all Mayan and historical sites.
- 2.9 **“Diverse Abilities”** In this context refers to persons with physical disabilities.
- 2.10 **“Gradient”** means the ratio of the rise over the run. In other words, an elevation gain of 0.61m (2 feet) in 20 horizontal feet represents a 10% gradient.
- 2.11 **“Management”** means the responsibility of the daily operation and protection of the archaeological parks and reserves by the Institute of Archaeology, National Institute of Culture and History and the Ministry of Tourism and Culture.
- 2.12 **“Manmade”** means all modern facilities which have been built or developed to enhance the visitors’ experience.
- 2.13 **“Natural Resources”** means the environment that includes flora and fauna of a destination and other natural phenomena, and related geographical features such as caves, waterfalls and rivers.
- 2.14 **“Park Manager”** means the employee of the Institute of Archaeology who has day to day operational authority over the management of an Archaeological Reserve.
- 2.15 **“Park Ranger”** means the employee of the Institute of Archaeology who assists the Park Manager with the day to day operations of the archaeological reserves and parks.
- 2.16 **“Sanitary Facilities”** means toilets, urinals, privies, lavatories, showers, utility and sinks, that ensures safe and proper disposal of waste.
- 2.17 **“Service Building”** means a structure that is used to support the daily operations of a facility or business.
- 2.18 **“Switchback”** means any place where the alignment of a trail traverses a slope in one direction and then abruptly "switches back" toward the opposite direction. Switchbacks are often used to run a trail up a steep slope in a constrained location.
- 2.19 **“Tourism Destination”** means an area or site officially designated as travel destination and equipped as such.

3 REQUIREMENTS

3.1 Policy Requirement

It is a policy of the Institute of Archaeology (IA), National Institute of Culture and History (NICH), Ministry of Tourism and Culture (MoTC) that all Archaeological Reserves and Parks shall comply fully with the standards set out in this document. Failure to comply with any of the standards may result in disciplinary or legal action.

3.2 Liability

The very nature of Archaeological Reserves and Parks and related caving activities carry potential health and safety risks. Activities at these sites may involve climbing, swimming, cave tubing, kayaking etc. In order to mitigate risks - the following shall be observed:

3.2.1 All parties conducting tours at Archaeological Reserves and Parks shall be in possession of all appropriate licenses, permits and insurance, as required by relevant regulations.

3.2.2 Signage at the entrance of the Archaeological Reserves and Parks shall state in a prominent place that the Institute of Archaeology is not liable for injuries or accidents that may occur due to any activity undertaken at the Reserves and Parks.

3.3 Accommodations for People with Diverse Abilities

Where an Archaeological Reserve and Park advertises services to accommodate people with diverse abilities, details shall be prominently displayed via signage of the particular facilities that are in place or available, including the provision made for private parking, access, pathways, water points, toilets, washing points and showers. This shall also be highlighted in any online or print advertising associated with the Reserve.

4 SITE AREA

4.1 Site Boundaries

Where applicable and for security purposes, the boundaries of the archaeological reserve shall be clearly demarcated with proper signage, for example by fences, hedges or any other suitable material.

4.2 Building Construction

To ensure the protection of culture and natural resources, no permanent or semi-permanent commercial structures, such as cabins sheds or habitable buildings, shall be erected on any Archaeological Reserves and Parks without permission from the Director of the Institute of Archaeology on clearance from all other relevant Competent Authorities.

4.3 Accumulation of Refuse

All areas shall be kept free from accumulation of refuse. The parking areas and grounds shall be well maintained and kept free from debris and overgrown vegetation.

4.4 Security Lighting

Security lighting shall be provided in public areas of the Reserves and Parks and areas used for maintenance.

5 ENTRANCE AND BUILDINGS

5.1 Names and Dates of Operations

The name of the Archaeological Reserves and Parks, dates and hours of operation, both opening and closing, and “last admission times” (where they apply), shall be legibly and conspicuously displayed by signage at the entrance of the Archaeological Reserves and Parks.

5.2 Parking

5.2.1 There shall be adequate parking areas for visitors and staff. The standard is that there shall be one parking space for every 10 employees and one parking space for every 50 visitors. Notices pertaining to the liability of the Reserves and Parks in relation to parking of vehicles shall be properly and clearly exhibited in the parking areas via signage.

5.2.2 All parking lots shall have at least one space designated with the proper international signage for persons with diverse abilities. Such parking spaces could include spaces for different types of vehicles such as coach buses, small minibuses, private vehicles etc. Such designated parking spaces shall not be less than 4.27 m (14 feet) wide by 5.79 m (19 feet long).

5.3 Oil, Noise and Air Pollution

All efforts shall be undertaken to reduce oil, noise and air pollution on the parking lots.

5.4 Visitor Centre

All visitor centres shall be constructed in accordance with the Belize Building Act of 2003 including relevant facilities for people with diverse abilities (such as a handicap entrance and toilet facilities). Visitor centres shall be fully equipped with print and other forms of interesting and relevant information for visitors, including information for people with disabilities and education, health and safety information for the Reserves and Parks.

5.5 Accessibility for Persons with Diverse Abilities

- a) At every entrance there should be, where permitted, a 0.91 m (3 feet) by 1.22 m (4 feet) space placed to afford opening and closing of door;
- b) Minimum width of sidewalks or walkways shall be five feet;

- c) Longitudinal gradient shall not be more than five percent;
- d) Transverse slopes shall not be greater than two percent;
- e) Door way shall be a minimum of 91.44 cm (36 inches) wide; and
- f) A clear space of 1.52 m (5 feet) by 1.52 m (5 feet) shall be provided for wheel chair to pivot 180 degrees.

5.6 Food Service Activities

All food service activities at Archaeological Reserves and Parks require the relevant food handler's permits, licenses and certificates of inspection.

6 PATHS, TRAILS, STAIRS AND RAILS

6.1 Dimensions

Trails shall be of a width in relation to the level of visitation to the site but shall not be less than 1.22 m (4 feet) wide, with a minimum of 0.61 m (2 feet) on either side to allow for maintenance of encroaching vegetation. The minimum does not apply where obstruction prevents the application of this standard. The following trail widths shall apply where practical:

- a) 0 - 250 visitors per day - 1.22 m (5 feet) minimum (single file in both direction);
- b) 250 - 500 visitors per day – 1.83 m (6 feet) minimum (double file in one direction, single in the opposite direction);
- c) 500 - 1000 visitors per day – 2.44 m (8 feet) minimum (double file in both directions);
- d) > 1,000 visitors per day – 3.05 m (10 feet) minimum (double file in one direction, triple file in opposite direction);
- e) Minimum height of 3.05 m (10 feet) to avoid crossing branches or other foliage.

6.2 Construction Materials

The material used in the construction of paths and trails shall conform to the surrounding environment, be environmentally friendly and safe to walk upon.

6.3 Design of Trails

6.3.1 Gradient

The linear gradient of a trail shall not be more than 10%.

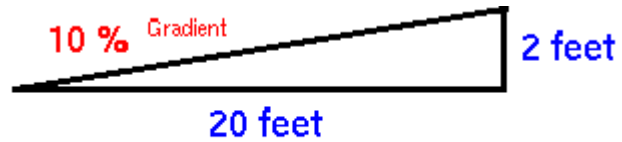


Figure 1

The figure below shows two proposed trail routes to the top of a hill. Although Trail A stays within a gradient of 10%, it is the poorer route because it travels perpendicular to the contours. When a trail runs perpendicular to the contours, water runs down the middle of the trail, causing trenching, even at a 10% gradient. The only way to get water off the trail is for the route to **traverse** the natural slope (Trail B), because then there is always a lower side of the trail. When there is a lower side of the trail, it becomes a simple matter to redirect water across and off the trail, rather than allowing it to cut a channel down the trail's centre line.

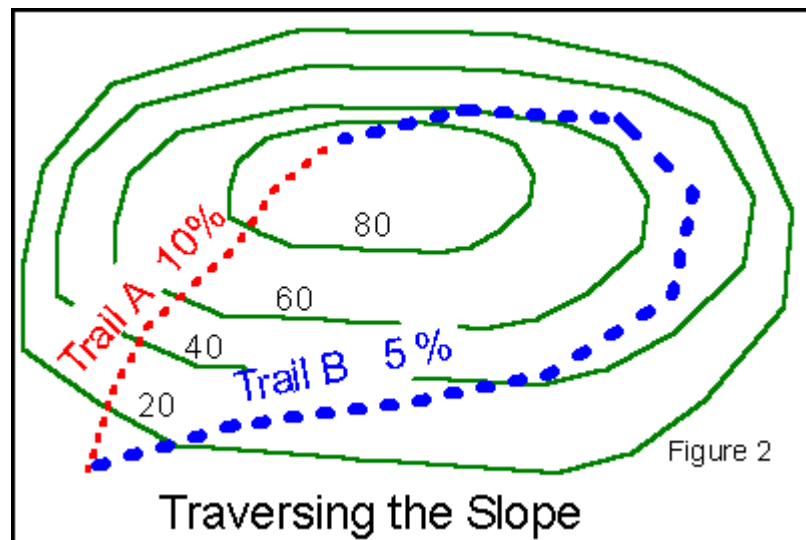


Figure 2

6.3.2 Outslope

A well-designed trail shall be constructed to have a 3% to 4% cross-slope to get the water off the trail efficiently and effectively. It will always be easiest to construct an out-sloped trail if the original trail alignment traverses the natural slope as in Trail B, above.

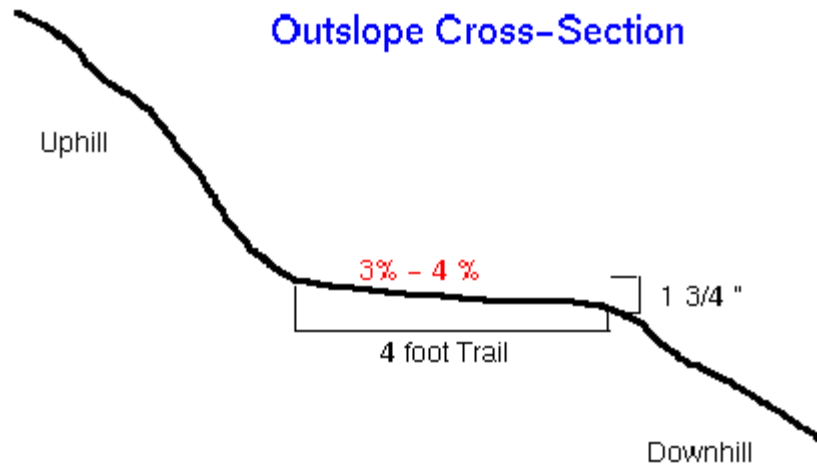


Figure 3

6.3.3 Switchbacks

Although switchbacks are often the only solution to the problems of rock outcrops and steep slopes, they should be avoided where possible.

6.4 Trail Signage

6.4.1 There shall be adequate and appropriate signage to ensure safety of users and provision of information. Signage shall include directional, informational and warning/hazards signs. Signs shall be comprehensive, directional and informative. To be effective, signs must:

- a) Command the attention and respect of the user;
- b) Convey a simple and clear message; and
- c) Give adequate time for proper response.

6.4.2 Signs shall be placed at trailheads and junctions of trails. Signs at trailheads and junctions shall identify the trail by name and the distance to major points along the trail. If the trail is wheelchair accessible, the proper international symbol shall be incorporated on the sign.

6.4.3 Interpretative and Informational signs can also be placed along the trail. They can be used to point out interesting flora and fauna along the trail. Such signs shall be made of routed pine and with orange lettering on a brown background.

6.4.4 Warning signs shall be placed along the trail when the need arises to advise visitors about dangerous areas along the trail. Such signs shall be made of routed pine and with orange lettering on a brown background.

6.5 Walkways and Foot Bridges

- 6.5.1 Walkways, foot bridges or other safe means of passage shall be provided in common use service areas. For designing bridges and elevated walkways with a span less than 6.1 m (20 feet), use the maximum loading anticipated during normal use plus a safety factor of one and a half times its maximum weight.
- 6.5.2 Use control and the safety of the users shall be incorporated into the design of every trail, walkways or foot bridges. Where it is appropriate because of the site and intended use, adequate directional and warning signs, handrails, gates, fencing and other safety devices shall be incorporated. Where needed, protection should be provided from slides and falling rocks.

6.6 Paths and Trails Maintenance/Safety

Paths and trails shall be checked monthly (and after inclement weather) to ensure that there are no dangerous holes, dips or other obstruction that are not easily seen. Where applicable, guard rails shall be provided on paths and trails to ensure the safety of users.

6.7 Hand/Guard Rails

- 6.7.1 If there is a slope or gradient of more than 30%, a guard rail shall be installed.
- 6.7.2 Hand rails are designed to prevent a person or groups of persons from injury or death if the height of the structure is such that this may occur. It shall be made of a suitable material that provides structural safety to function for what it is intended. Hand rails shall be provided to stairs, trails, ramps, and walkways where appropriate.
- 6.7.3 A minimum height of 91.44 cm (36 inches) and maximum of 101.6 cm (40 inches) measured from the walking surface at the front edge of the thread to the top of the hand rail or in lined with the riser where this applies shall be used for the construction of hand rails. They shall be more than 1.83 m (6 feet) wide and contain a 10% longitudinal gradient.
- 6.7.4 Hand rails shall be fitted with intermediate parallel rail or horizontal balustrades spaced not more than 15.24 cm (6 inches) apart if the rail is located where:
 - a) The cross slope on the immediate sides is greater than 5 degrees;
 - b) It is greater than 30.48 cm (12 inches) above the nearest surface on which it rest.

6.7.5 Hand rails shall be adequately anchored to ensure that it is safe to hold onto without detachment but should be able to withstand a minimum of 50 lb-ft (75 kg-m).

7 WATER SUPPLY AND WASTE WATER DISPOSAL

7.1 Potable Water Supply

There shall be an adequate supply of safe potable water provided in accordance with regulations and recommendations from the relevant Competent Authority. The volume supply standard is 151.42 litres (40 gallons) per person per day. If the water is being supplied by a well, the construction of the well must be preapproved by the relevant Competent Authority. All plumbing shall be installed in accordance with Belize’s Building Codes.

7.2 Waste and Non-Potable Water

Waste water shall be managed in accordance with the National Prescribed Standards under the Environmental Protection (Effluent Limitations) Regulations and the Pollution Regulations. As much as possible, treated waste water should be recycled. Non-potable water sources should be separate from drinking water points, and should be clearly marked ‘NOT DRINKING WATER.’ (Water and Sewerage Act, Chapter 222, Revised Edition 2000)

8 SANITARY FACILITIES

8.1 Toilets

8.1.1 Sufficient male and female toilets to meet peak demand shall be provided with signs indicating separate male and female facilities. The standard established by the relevant Competent Authority is indicated in the table below. Toilets with external walls shall have an external opening comprising not less than 25% of the floor area, or, if internal, appropriate mechanical extract ventilation. Toilets shall be kept clean, with seat covers and lids firmly in place.

Public Sanitary Facilities

Appliance	For Male Customers	For Female Customers
Water Closet or Toilet	1 for up to 150 males plus one for every additional 150 males of part thereof	1 for up to 12 females plus one for every 13 to 30 females plus 1 for every additional 25 females
Urinal	2 for up to 75 males plus one for every additional 75 males of part thereof	nil

- 8.1.2 There shall be at least one toilet specially constructed for use by persons with diverse abilities. Such toilet compartments shall carry on the door to the compartment the international sign indicating that such a compartment has been specially constructed for use by persons with diverse abilities.
- 8.1.3 Toilet fixtures for persons with diverse abilities should be placed so as to facilitate the turning of a wheelchair.
- 8.1.4 Hand rails of not less than 2.54 cm (1 inch) and no more than 3.81 cm (1½ inches) in diameter shall be provided on both sides of the water closet in toilets for persons with diverse abilities and mounted 86.36 cm (34 inches) above and parallel to the floor.
- 8.1.5 Toilet seats for persons with diverse abilities shall be 45.72 cm (18 inches) to 60.96 cm (24 inches) off the floor. They should be equipped with:
 - a) hand operated flushing controls that can be reached by persons in a wheel chair; and
 - b) back support.
- 8.1.6 Doors to toilet facilities for people with diverse abilities shall always open outwards and be equipped with self-closing hinges or door closers.
- 8.1.7 Vertical and horizontal grip rails shall be installed and be readily accessible from toilet equipped for persons with diverse abilities.

8.2 Wash Basins

- 8.2.1 Depending upon the level and pattern of visitation, there shall be a minimum of two wash basins for male toilets and two for female toilets, situated within close range of the toilets, and provided with potable water.
- 8.2.2 Wash basins designated for persons with diverse abilities should be placed at a maximum of 86.36 cm (2'10") with a clear space of at least 68.58 cm (2'3") by 91.44 cm (3'0") under the basin. The wash basin should be equipped with faucet handles of the lever type without spring handles.
- 8.2.3 The bottom edge of a mirror should be not more than 91.44 cm (3'0") above the floor for wash basins for people with diverse abilities.

8.3 Maintenance of Sanitary Facility

8.3.1 Where possible, industrial-type toilets should be installed. Toilets shall be kept clean, with seat covers and lids firmly in place. Each sanitary facility shall be provided with:

- a) Locks and fitted hooks on all toilet doors;
- b) Urinals, as well as cubicles, for male convenience;
- c) Toilet paper holders, with toilet paper;
- d) A soap dispenser, or soap bar, paper towel holders or hand dryers; and
- e) Waste paper baskets.

8.3.2 A record of regular inspection by management shall be available at each sanitary facility. The sanitary facilities shall be maintained so as to minimize any offensive odours or health hazards such as pest infestation. Satisfactory provision shall be made for grey water drainage, either by discharging to a public sewer, private sewer or sewage treatment works or to a septic tank, in a manner approved by the relevant Competent Authority.

8.4 Employees Washroom Facility

Where possible, an employees' washroom facility should be available and provided with:

- a) Clean and functional toilets;
- b) Wash basins, with potable water;
- c) Lockers in good working condition;
- d) An adequate supply of toiletries; and
- e) A waste bin/disposal unit.

9 WASTE DISPOSAL

9.1 Sewage Disposal

All sewage shall be disposed of via sewage treatment system approved by the Department of Environment and all other relevant Competent Authority.

9.2 Other domestic liquid wastes shall not be discharged or otherwise disposed of on the surface of the ground or beach or into any well, cave, open ditch, river, stream, lake or reservoir, but is to have its separate treatment system installed

9.3 Garbage Disposal

It shall be the responsibility of all tour operators, tour guides and visitors to remove any garbage that they generate such as empty water bottles, food packaging, etc. or to properly dispose of the garbage. All waste shall be treated and disposed of in a manner to prevent the occurrence of nuisance from odour, pests, flies and vermin and to discourage breeding of such pests.

10 REQUIREMENTS FOR SAFETY AND SECURITY

10.1 First Aid and Communication Link

Emergency and safety measures shall be in place at all times, including an approved first aid box (equipped for outdoor high risk activities) and working, effective communication links (radios and telephones) with the relevant authorities. All Park Managers and Rangers shall be trained in Cardiopulmonary Resuscitation (CPR) and First Aid. A yearly re-certification course is mandatory.

10.2 Electrical Wiring and Equipment

All electrical wiring and equipment shall be installed and maintained in accordance with the provisions of the relevant Competent Authority. Solar panels and portable generators that are used at all sites shall be inspected regularly.

10.3 Cylinders for Liquefied Petroleum Gases

10.3.1 The handling, filling, storage and location of cylinders containing Liquefied Petroleum Gases (LPG) on the site shall be in accordance with BZS 23: 2012 - Belize Standard Specification for Filling, Handling, Storage, Transportation and Location of Portable Cylinders for Liquefied Petroleum Gas.

10.3.2 Cylinders shall be inspected, tested and re-qualified in accordance with BZS 22: 2012 - Belize National Standard Specification for Inspection, Testing and Requalification of Portable Containers for Liquefied Petroleum Gas.

10.4 Warning Signs

Warning Signs shall be posted to draw attention to any steep paths, cliffs, overhanging rocks or trees, poisonous plants, dangerous animals or any other hazard to users to the park. Warning signs shall also be placed on any damaged property, especially rails or steps, if they cannot be repaired immediately or if repairs are being undertaken.

10.5 Security Services

Where possible, security service must be provided at the major sites during opening hours to ensure that visitors are protected from harm, harassment or molestation. All Park Managers and Rangers shall be trained as special constables.

11 REQUIREMENTS FOR EMERGENCY PREPAREDNESS

11.1 Emergency Preparedness Plan

Each site shall develop an Emergency Management Plan according to prevailing hazards that are identified. A completed copy of this plan shall be submitted to the relevant Competent Authority. This plan shall be disseminated to each park manager and ranger and shall be trained in its implementation.

11.2 Evacuation Procedures

Evacuation procedures shall be in place for both natural, medical and security emergencies as part of the Archaeological Reserve's and Park's Emergency Management Plan. If guests are not evacuated and they remain on the Archaeological Reserve, special arrangements shall be made to ensure the guests' safety. All reserves and parks shall relay their damage assessment (physical and human) to the Director of Archaeology, for further dissemination to NEMO or other relevant authorities after a disaster or emergency has occurred.

12 CAPACITY MANAGEMENT

The carrying capacity of the following sites shall be as follows:

- a) Altun Ha – 2,000 daily visitors;
- b) Xunantunich – 1,500 daily visitors
- c) No Hoch Cheèn – 2,500 daily visitors;
- d) Lamanai – 2,000 daily visitors;
- e) ATM – 125 daily visitors;
- f) Lubanntun – 1,500 daily visitors;
- g) Nim Li Punit – 1,500 daily visitors;
- h) Blue Creek – 125 daily visitors; and
- i) Barton Creek – 300 daily visitors.

13 SITE MONITORING AND MAINTENANCE

13.1 Management Plan

The Institute of Archaeology/NICH Management shall ensure each Archaeological Reserve and Parks develops and implements a management plan based on the management plans' standards and criteria outlined by the Forestry Department of Belize for Protected Areas, the Environmental

Compliance Plans of the Department of Environment and other relevant Management Plans, such as the National Protected Areas System Plan, the NICH Site Management Plans, etc.

13.2 Important Elements of the Plan

The Management Plan shall incorporate a Monitoring and Maintenance component which shall include, but be not limited to, repair and general upkeep of:

- a) General aesthetic appearance;
- b) Entrance gates, gate-houses and fences;
- c) Paths and trails;
- d) Steps, benches and rails;
- e) Concrete and metal constructions, and any other appropriate materials;
- f) Sewage Waste Treatment Systems and Facilities which include toilets, septic tanks, water catchments, gutters, storm water drainage and other collection systems;
- g) Electrical maintenance, including an annual check by a qualified electrician; and
- h) Roofs, floors (including wooden floors, vinyl and ceramic tiles, carpets), painting of interior and exterior walls, and interior and exterior signage.
- i) Solid Waste Management and Disposal

13.3 Management Plan Training

Archaeological Reserve and Parks Managers and Rangers and all other staff shall be trained to properly implement the management plan once the plans have been developed and accepted by the Institute of Archaeology/NICH.

14 REQUIREMENTS FOR MANAGEMENT AND STAFF

14.1 Staff Presence

All Archaeological Reserves and Parks, when open for business, shall have at least two staff members present to whom visitors can be referred for the purposes of obtaining information, registering any complaints and who are authorized to give instructions to all visitors to the Reserve and Park.

14.2 Staff Facilities

Separate washrooms, changing facilities and appropriate dining areas shall be provided for staff, the size of which should be adequate to the number of employees. The reserve and park shall be staffed by at least one manager and an assistant manager and these individuals will be adequately trained to maintain the appropriate standards of service to visitors. Staff should be suitably attired, well groomed and readily identifiable with name tags.

15 ADDITIONAL REQUIREMENTS FOR CAVES

The Institute of Archaeology is responsible for the monitoring and management of cave tourism in Belize; hence all health and safety measures and standards must be in place to protect and enhance visitors' experiences.

15.1 Tour Guide Licensing and Special Training

The Institute of Archaeology requires that all tour guides and tour operators involved in cave tourism will, in addition to the standard tour guide license obtained from the BTB, receive additional specialized training in order to be licensed and registered to conduct tours relating to any or all types of caves. Cave tourism is a unique and specialized adventure and recreational activity. In order to maintain international safety standards, specialized training and certification in swift water rescue must be completed for those cave sites that involve traversing water to ensure that Belize is adhering to internationally accepted safety criteria.

15.2 Equipment

All tour operators shall industry standard equipment required for their guests when conducting cave tours at Archaeological Reserves and Parks. Regular inspection of equipment shall be done periodically based on the need to ensure that all equipment remains in good working condition.

15.2.1 Type of Equipment

Equipment required to carry out any cave tour must include:

- a) Life Jackets (US Coast Guard Type I, II or III for all caves with water such as ATM, Barton Creek, Blue Creek and Noh Mul Archaeological Reserve (Cave's Branch);
- b) Tubes (for cave tours at ATM, Barton Creek, Blue Creek and Cave's Branch);
- c) Flash Lights
- d) Extra Batteries
- e) Ropes
- f) First Aid Kits and
- g) Caving Helmets

Batteries must be replaced immediately if flashlights are dull, dimmed or do not provide adequate light. Batteries shall be disposed of in proper garbage containers and shall completely removed from the cave site.

15.2.2 Demonstration of Equipment

Prior to entering the cave, tour guides shall demonstrate to visitors the proper use of all equipment that will be used while touring the cave. All safety and liability policies shall also be explained to visitors before entering the cave.

15.2.3 Minimum Requirements for Equipment

The following are the minimum requirements for cave tubing equipment to be used at relevant Archaeological Reserves.

a) Certified Caving Helmets (technical specifications)

- i. Ergonomic dome shape;
- ii. Adjustable suspension system;
- iii. Headlamp clips;
- iv. Fiberglass or hardened plastic with interior insulation.

b) Tubes (technical specifications)

- i. Heavy duty gauge 30 PVC;
- ii. Double welded to avoid blow-outs;
- iii. Preferable with safety chamber;
- iv. Tube size for adults: 104.14 – 111.76 cm (41–44 inches);
- v. Tube size for children: 78.74 – 83.82 cm (31-33 inches);
- vi. Rubber in the tubes

c) Headlamp (technical specifications)

- i. Four LED;
- ii. Must be waterproof with adequate lighting;
- iii. Extended battery life;
- iv. Extra batteries;
- v. Adjustable strap.

d) Life Jackets (technical specifications)

- i. Wrap around lockable straps;
- ii. Vertical adjustment;
- iii. Sleeveless;
- iv. US Coast Guard Type I, II or III.

- e) **Ropes** (Diameter: 10.1 mm; Lengths: 60 & 70 m; Type: single rope; Weight: 66 g/m; UIAA falls: 7; Impact force: 8.2 kN; Elongation: - dynamic: 33.6 %, - static: 6.7 %; % sheath by weight: 42 %)
- f) Adequate communication equipment – Hand held radios;
- g) First Aid Kits for high risk activities – This should include:
 - i. First Aid Guidance Notes;
 - ii. First Aid Scissors;
 - iii. 20ml Eye Wash Pod;
 - iv. 1,25 Micropore Tape;
 - v. 5 x 5cm Non Adherent Dressings x 2;
 - vi. Size E Tubular Support Bandage x 1 (Leg & Knee);
 - vii. 7.5cm Conforming Bandage;
 - viii. No 7 Finger Bandage;
 - ix. No 8 Medium Bandage;
 - x. No 16 Eye Bandage;
 - xi. Triangular Bandage;
 - xii. Latex Finger Cots x 2;
 - xiii. Resusciate;
 - xiv. 30GM Cetrimide Antiseptic Cream;
 - xv. Safety Pins x 11;
 - xvi. Alcohol Free Wipes x 6;
 - xvii. Yellow Clinical Waste Bag;
 - xviii. Fabric Plasters x 10;
 - xix. Waterproof Plasters x 10;
 - xx. Blister Plasters x 6;
 - xxi. Splinter Forceps/Tweezers;
 - xxii. Pair of Medium Vinyl Gloves x 1 (Size can be changed if required);
 - xxiii. Emergency Whistle;
 - xxiv. Emergency Penlight;
 - xxv. Emergency Foil Blanket; and
 - xxvi. 6" Emergency 12 Hour Lightstick.

15.3 SAFETY GUIDELINES FOR CAVE TOURS

- a) All tour guides shall have a backup source of light and batteries for their guests in accordance with the Tour Group Ratios (see 15.6.1).
- b) No one shall be allowed to explore cave passages by themselves or deviate from the prescribed cave routes.
- c) Proper clothing and footwear shall be worn in caves in order to avoid cuts, slips, trips and falls.

- d) Everyone venturing into any cave system shall be debriefed about the dangerous nature of caves and how to properly conduct themselves inside caves for their own safety.
- e) All tour guides and tour operators shall ensure that they inform their guests about the physical nature of this activity and should stress that their guests must be in good physical condition to reduce chances of accidents.
- f) All persons participating in adventure cave tubing shall wear a life jacket at all times during the cave tour. Children must be under their parents/guardians supervision at all times, provided they meet the requirements to do cave tubing.
- g) Tour guides shall have the responsibility to properly supervise and control guests during caving activities.
- h) Tour guides shall use the linked technique to float their guests through the cave. Free floating is not allowed.
- i) Everyone entering any cave system shall wear a caving helmet in order to prevent head injuries.
- j) Safety ropes shall be brought along in the event that anyone gets injured or needs assistance.
- k) Every cave expedition shall include an emergency bag containing medical supplies, blanket, extra batteries, candles, matches, lights, snacks, water and dry clothes.
- l) Prior to leaving for a cave expedition, a time shall be established for the return of the group with an officer of NICH at the point of entry.
- m) All tour operators and guests shall take every precaution not to damage the integrity or in any way deliberately alter the natural environment of the Cave Systems.
- n) No smoking is allowed within the caves. and
- o) Tour guides shall ensure that their guests are in close proximity and are not wondering around. Tour guides must always be in control of their tour group.

15.5 Food and Alcoholic Beverages

15.5.1 Food Consumption

In order to reduce the amount of waste being generated as well as to maintain the aesthetic value of our caves and park trails, the Institute of Archaeology encourages tour guides to limit food consumption in the

caves and on trails and to remove all plastic water bottles taken on the cave tours and trail hikes.

15.5.2 Alcoholic Beverages

The Institute of Archaeology does not accept responsibility for any accident on the site due to the consumption of alcoholic beverages by any visitors.

15.6 Ratios and Intervals

15.6.1 Tour Group Ratios

Cave tour groups shall be limited to a maximum of 8 persons per tour guide for safety purposes and will also be guided by the BTB Tour Operators Regulations as it relates to cave sites.

15.6.2 Tour Group Intervals

Tour guides and tour operators shall take the responsibility to maintain appropriate time intervals between groups (at least 15 minutes between tours) in caves involving water so as to prevent overcrowding and conflicts when entering the water and during the tour.

15.7 Noise Levels

Tour guides shall be responsible and have consideration for other visitors at the site. Tour guides must strictly discourage loud noise (i.e. shouting) during the trail hike or during the cave tours. Loud noise usually causes wildlife to abandon the park, thus reducing the overall visitor's experience. Loud noise can also cause confusion among tour guides and visitors.

15.8 Site Closure and Water Level

15.8.1 Archaeological Sites may be declared "closed" under the below conditions:

15.8.1.1 For Caves: erosion, security threat, major accident(s), natural hazards, water quality, contamination;

15.8.1.2 For Maya temples: erosion, security threat, accident, natural hazards.

15.8.2 The unpredictable nature of Belize's rivers makes it almost impossible to give any tour operator a 24-hour lead-time as to what the river condition will be. Hence, the Institute of Archaeology will continuously monitor river level gauges, weather reports and contacts upriver to keep the cave site open and operational as long as possible within an acceptable safety margin.

- 15.8.3 In the event of any excessive rains that can produce flash flooding, caves will be closed and will remain closed until the Park Manager declares the “ALL CLEAR TO RESUME ACTIVITIES”.
- 15.8.4 Once the site has been declared closed, the Park Manager shall immediately notify all ticketing centres about the status of the river, and visitors will have to be diverted to other destinations. Tour Operators and Guides may call the Cahal Pech Archaeological Reserve at 802-4206 from 6:00 am every morning to 6:00 pm to check on river conditions and to determine whether caves are open.
- 15.8.5 The Institute of Archaeology shall install additional signage/signs at the site to inform visitors of the park rules and regulations and current water conditions and warnings.
- 15.8.6 The Institute of Archaeology shall put in place a mechanism where tour operators and tour guides can get daily updates on the status of the sites to check on the condition of the river and to determine whether caves are open. All archaeological sites designated for tourism activities shall be fully equipped with radios and telephones where cellular service is available.

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