www.accesopanam.com
apa@accesspanam.com

PATAGONIA WASTE MANAGEMENT REPORT 2016

Introduction

The Chaltén Massif in the Santa Cruz Province of Argentina is becoming increasingly popular to climbers. The area is known for the inspiring Fitz Roy ridgeline and the impressive Cerro Torre. Climbers from all over the world come to El Chaltén during the southern hemisphere summer (Dec-Mar) to try to climb vertical alpine granite spires that either within Los Glaciares National Park or in its immediate surroundings. Hikers and backpackers are drawn to the area in search of the many incredible trails leading to pristine lakes and amazing scenery.

Figure 1 - Laguna Capri and the Fitz Roy massif

The ever increasing popularity to travel and visit beautiful landscapes and amazing culture has benefitted the economy and increased the allure of Parque Nacional Los Glaciares, but the park now faces an issue of over use from day hikers, backpackers, and climbers. One main issue they face is waste management. Over the past few seasons, the park has created a temporary solution to solve this problem by creating pit toilets at Capri Campground, Poincenot Campground, Mirador Fitz Roy, and others. With the current system, a new hole must be dug each season at each site. The waste does not degrade fast enough to make it a sustainable option and drains into the water systems creating a water clarity, biological hazard. In some locations, such as Capri, toilet paper and solid human waste can be easily found around many nearby bushes.

In order to address this issue, Acceso PanAm, with the support of Toilet Tech and Parque Nacional Los Glaciares designed a project aiming at creating human waste management solutions for Patagonia by building one test toilet and researching the results obtained at the Chaltén Massif in the Santa Cruz Province of Argentina, Patagonia. The goal was to find a simple, inexpensive option to manage waste in a location that is cold, remote, and has no septic systems or transport via helicopter sling loads

The Project

In attempts to help solve the waste management issue in the Park, a collaborative effort from El Parque Nacional Los Glaciares, Access PanAm, and Toilet Tech built an urine diverting vermi-composting toilet at Laguna Capri. Capri is one of the most popular destinations in the park, if not the first one, because it is the closest attraction to town (4 km), and thus, it is both a day and overnight destination for hikers and backpackers. The campground sits on the northeast margin of a small glacier lake. After discussing it throughoutly with the Park and careful consideration, we chose this location because of the greatest number of users, ease of location for maintenance, the large amount of visible waste in the area, and materials already on site to help build this toilet.

Figure 2 - The permanent volunteers

The conception of the project began in February 2015, when Rolando Garibotti put Steffan Gregory in contact with Acceso PanAm. Acceso PanAm has been considering the need of this project for a few years, but lacked the resources and the people to run it. Steffan Gregory brought the motivation and the ability to bring people together to carry out the project in El Chaltén. The project took 10 months of planning, fundraising, and organization of a six-person team to help implement this unit. After that, four permanent volunteers flew down to Argentina to spend three months immerse in the project. This team included Steffan Gregory, as project coordinator, Alan Thorne, as carpenter and unit designer, and Ethan Newman and Rachel Mangan, as volunteers. Between December 2015 and February 2016, the permanent team was joined by Kika Bradford, Acceso PanAm's Executive Director and Geoff Hill, PhD, CEO of Toilet Tech.

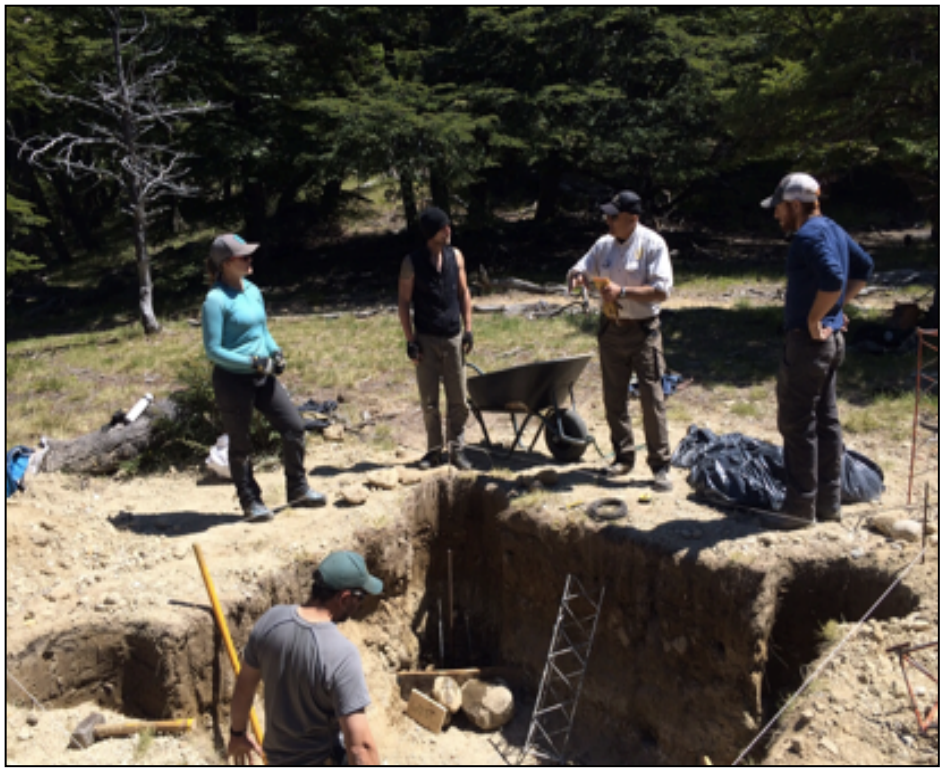


Figure 3 - Digging the Foundation: the four volunteers and Alejandro Caparrós, the Chief of the National Park

The team landed in Argentina on December, the first month of the project, and promptly started and working. Motivation was high, so including travel, the team volunteered the first 10 days in a row they were in Argentina. This time was spent coordinating with Parque Nacional Los Glaciares about site location, site survey and inventory on project resources and material. Moreover, the team purchased most the materials needed for the construction, which was a challenge on itself, considering the location of El Chaltén.

In the middle of December pre-fabricating was done at the PNLG shop and the site at Laguna Capri was simultaneously selected. The eight foot by eight foot by four foot (8 x 8 x 4 ft.) deep foundation was dug and cement work was completed by January 1st.

Acceso PanAm and PNLG decided on Capri for due to its accessibility to both day hikers and overnight backpackers. Also, the location struck a balance between being far enough away from town to warrant its installation, but close enough to maintain and build. This was a big consideration for the project due to the projects short timeline and small crew that carried the majority of the materials on there own to the site, by hand. Los Glaciares Staff and a handful of climbers in Chaltén helped with some very significant carries that were the reason the project stayed on schedule.

After a month of crappy weather, January brought some excellent weather windows. The team had just finished a large push to finish the toilet's foundation so, some time off was in order. Alan, Ethan, and Steffan made an attempt at the West Face of Cerro Torre during the first week of the month. With the help of Kika Bradford the team was able to assemble the majority of the structures' base, walls, roof, and rear entry hatch.

By the end of the January, the team had already built the entire structure and waited for Geoff Hill to provide the finishing touches and install the technical system. He arrived on the last week of January and after seven days of hard work, the urine diversion system was installed and functional.

The last portion of the construction time was in the month of February. The team was able to take some personal time to climb and hike during the first week of the month.

Figure 4, 5, and 6 - Carrying loads to Capri (L), building walls (C), and the roof and hatch (R).

On a good weather window, Steffan and Geoff hiked up to Piedra Negra to climb Guillaumet and to begin discussing waste management options for that climbing base camp. As stated on the project proposal, the long-term project was divided into two steps; the first one, designing and testing a test piece in El Chaltén, was the scope of first year/season. The second step, on future years, is to create the best possible waste management solution for popular climbing base camps of the El Chaltén massifs, including Piedra Negra. This weather window gave us the opportunity to show Geoff, the expert on toilet solutions, the Piedra Negra context and characteristics, including its local environment, water supply, base camp scene, and user group.

Figure 7 - Piedra Negra Climbing Basecamp

Upon their return, the team collected visitor toilet use data (see table) and prepared to pass the toilet over to the park. Geoff Hill provided training and documents on how to care for the unit with specific advice for El Chaltén and the materials challenges in the area.

As part of our outreach efforts, Kika Bradford, Rachel Mangan, and Geoff Hill made presentations to the National Park, its volunteers, and had several meetings with park staff. With the support of Esteban Degregori, Acceso PanAm's Patagonia Regional Director, Acceso PanAm and the team met with the community members of El Chaltén to

Figure 8 - Meeting with the town folks: climbers, mountain guides, members of the El Chaltén environmental commission

The team volunteered 55 of the 77 days they were in Argentina. They each hiked well over 75 miles and 24,000 feet of elevation gain, and in the process carried 3,000 pounds of materials. They consumed at least 1,000 empanadas and 24 containers of Dulce de Leche. In all they volunteered 2,500 person hours. Combined with the work of Kika Bradford, from Acceso PanAm, and Geoff Hill, they devoted well over 3,000 person hours.

The end result of these miles and hours is a high-quality urine diverting vermin-composting toilet. A mix of beauty and function round out this unit. Though, all units like this still will need maintenance and the largest success of this project was finding a dedicated individual to care for the toilet. Aristides Aieta, a park employee, not only allowed the project to take place and opened his home to the crew but is also motivated to maintain the unit. Aristides' extensive background in building, combined with his creative mind makes the perfect recipe for a long lasting structure and system.

With the toilet complete, the National Park pleased with the completed product the team was back to the States. This experience was beyond words, beyond dreams and couldn't have gone better. The National park, which receives more the 100,000 visitors a year, now has a system in place that may help it endure.

Figure 9 - Before and After

APA Toilet Useage Data

Month	Date/Time	Number of Uses	Uses Per Hour (Approx)
Feb	February 7th 10am-4pm	35	6
	February 8th 10am-2pm	15	4

APA Toilet Useage Data Projection

Month	Date/Time	Number of Uses	Uses Per Hour (Approx)
March	March Projection	480 per month	4 *(5 days a week, at 4 uses per hour, from the hours of 10am-4pm)*

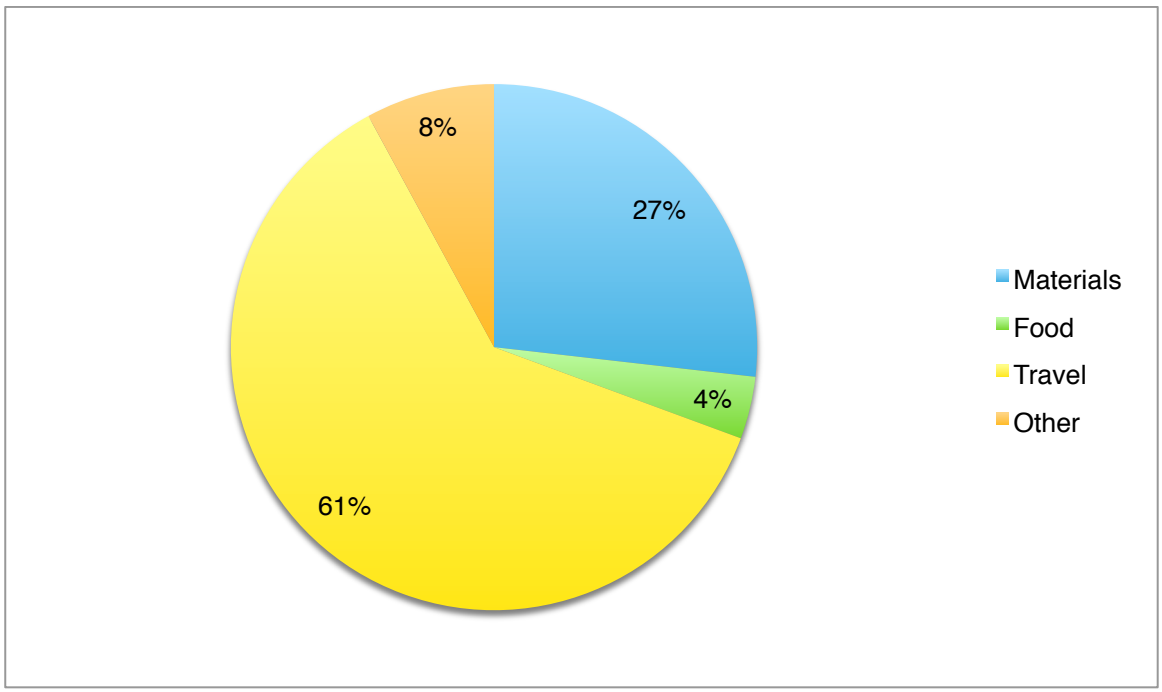
Project Support and Team

The Patagonia Waste Management project, an Acceso PanAm initiative, was given gracious support from Patagonia Conservation Grant, Black Diamond Equipment, Toilet Tech Solutions (TTS), Parque Nacional Los Glaciares, American Alpine Club and Deep

Creek Coffee Company. This project would have not happened with out the monetary and volunteer donations for all of these various companies. Rolando Garibotti also played a vital role in many aspects of the project: he was the first liaison between the team and Argentina culture, he helped to buy materials, introduce the team to key people, and sharing ideas and his profound knowledge of the area. The Gregory Family, personally, donated precious resources for the project as well.

Also the incredible volunteer hours donated by the PWM Access PanAm team in El Chaltén: Steffan Gregory, Rachel Mangan, Ethan Newman, and Alan Thorne. Kika Bradford and Geoff Hill PHD has vital roles traveling to Chaltén to support the team as well as the project with their skills and stoke.

Finances: Quick Look



www.accesopanam.com
apa@accesspanam.com

This first season focused on implanting a test version of a urine diversion / vermicomposting toilet in one popular wilderness campground in Los Glaciares National Park, El Chaltén, Argentina.