

**Final Report**  
**Chile Planning Project – Summer 2016**

**Florida State University**  
**Emergency Management and Homeland Security Program**  
**Tierra Amarilla, Atacama de Chile, Chile**



## **Summary of Project**

In Summer 2016, four students in the Emergency Management and Homeland Security Program participated in a unique opportunity to make a positive impact on vulnerable populations in the Atacama Desert in Chile.

The EMHS Program at Florida State University offers exemplary students the chance to work in an international environment in the field of emergency management. For its Summer 2016 project, the EMHS Program partnered with Candelaria Mining Company in Tierra Amarilla, Chile and the University of Chile in Santiago. Over the course of 5 days, students led trainings in disaster preparedness and, in particular, training community members on a communication plan designed specifically for the Tierra Amarilla community. Students designed the plan themselves and ultimately found their project to be a resounding success with project partners and participants. Community members stated that they felt better equipped to communicate with friends and family regarding the dangerous hazards and effects of natural disasters.

EMHS became initially involved in this project in the aftermath of an extreme flooding event in the Atacama Desert in March 2015. Although it is the driest place on earth, severe rains caused uncharacteristic conditions in the region, leading to the flooding of several populated areas. Tierra Amarilla, a town of about 11,000 residents, was impacted by this disaster, and many survivors lost loved ones, their homes, and possessions. In a disaster of this magnitude, it is often difficult to communicate with those affected. FSU EMHS faculty and staff advised students on the development of the communication plan for Tierra Amarilla, bearing in mind the physical and technological constraints of communication in the region.

This project was largely successful due in part to the dedication from partners in Chile. Without their significant logistical support, our students could not have completed this project so efficiently.

## **Project Partners and Participants**

The Florida State University Emergency Management and Homeland Security Program had the fortune of partnering with two locally based organizations/institutions for the duration of their project. This project could only have been a success through the profound efforts of the FSU EMHS researchers and its partners.

### **Candelaria Mining Company**

Throughout the entirety of this trip, the FSU EMHS Program maintained hand-in-hand with the Chilean mining company 'Candelaria'. Candelaria had already established a strong relationship with the community of Tierra Amarilla prior to the creation of this project, making them a valuable asset. Candelaria provided all of the resources that the FSU EMHS Staff would need for this project, including: transportation, contacts, conference rooms, and even food and beverage at times. The staff at Candelaria was very welcoming and very eager to participate in the project from its inception. Due to the efforts and resources provided by Candelaria, the project was able to have successes that it wouldn't have otherwise.

### **University of Chile**

In addition to Candelaria, the FSU EMHS Staff partnered with the University of Chile for this project. Specifically, they partnered with a professor from the University of Chile, who was an extremely valuable colleague and asset to the project. Through collaborating with this professor, the FSU s& Candelaria staff was able to develop contacts, and gain access to parts of the Atacama region where the FSU staff desired to go, but had no means (i.e. Los Loros, Nantoco). This professor also helped bridge any gaps that were present between the FSU staff and the residents of Tierra Amarilla. Through the efforts of this professor, any miscommunications and any confusion that arose due to differences in culture were quickly quelled.

## **EMHS Faculty, Staff, and Student Researchers**

### **FSU Emergency Management & Homeland Security Program:**

The EMHS Program of Florida State University is housed under the College of Social Sciences and Public Policy. The EMHS Program was responsible for the creation and execution of this project, and through months of effort and preparation, was able put together a staff (consisting of student researchers and EMHS employees) that was charged with creating, developing, communicating, and executing this plan. Project leaders Rob McDaniel, Judith Cuadra, Abby Kinch, and Bobby Duggleby were accompanied by four exceptional student researchers to aid the staff in their duties. These students included:

**Catherine Barrios** received her Bachelor of Science in International Affairs and Political Science from Florida State University in 2016. She is currently working on completing her Master's degree in Public Administration with a concentration in Emergency Management at Florida State University. She expects to graduate in 2018.

**Marcus Berges** received his Bachelor of Science in Criminology and Psychology from Florida State University in 2014. Marcus also received his Master of Arts degree in International Affairs from Florida State University in 2016.

**Alexa Escobar** received her Bachelor of Social Sciences in Psychology from the Florida State University in 2014. She is currently working on the completion of her Master's degree in Public Health Administration with a concentration in Emergency Management. She is expected to graduate in Spring of 2017.

**Daniel Rojas** received his Bachelor of Science in International Affairs and Political Science from Florida State University in 2016. While attending Florida State, Daniel was the director of an international NGO called Global Peace Exchange and the president of an organization that educated students on ways to combat human trafficking. Daniel also received the EMHS Certificate.

## **Country and Community Profile**

### **Chile**

Chile is a long, narrow country stretching along the South American Western coast. Chile borders Peru, Bolivia, Argentina & the Drake Passage. The Capital of Chile is Santiago and the national language is Spanish. The population of Chile is approximately 18,006,407 and their ethnicity is made up of European, Mestizo, and Native American. Chile is located in the fire belt of the Pacific Ocean, making the country susceptible to a broad range of volatile seismic movement. The earthquakes are a product of the continental plate and the Nazca tectonic plates converging. Volcanic activity is also a common phenomenon in Chile, and has been the cause of past national emergencies. Furthermore, since Chile is on the Pacific coast, it is strongly affected by the phenomena known as el Niño, causing floods and landslides throughout the country.

Chile is home to the Atacama Desert that is located in the northern region of Chile. The Atacama Desert contains high levels of mineral wealth, principally copper, and therefore a highly mined area. Southern Chile is rich in forest and open land, twisting peninsulas, labyrinths and canals.

Chile is considered one of South America's most prosperous countries. It leads in developments, state of peace, economic freedom and globalization.

### **Tierra Amarilla**

Tierra Amarilla is a commune located in the province of Copiapo, which is part of the Atacama Region of Chile. Tierra Amarilla is located in the valley of the Copiapo River and extends along the Copiapo River and the Andes mountain chains on either side. Significant localities adjacent to Tierra Amarilla that were integral to the project consisted of Nantoco and Los Loros. These localities along with the commune are on a major road known within the commune as Miguel Lemeur Avenue. A major city in proximity to Tierra Amarilla to the Northeast is the region's capital, the city of Copiapo. Copiapo is located just within 15 kilometers of Tierra Amarilla. The climate in this commune is arid and desert-like. There are few instances of precipitation. The temperature varies due to the altitude and can be extreme in some cases during the winter season. The most significant industries that have been historically part of

this region and also found specifically in Tierra Amarilla are copper mining and grape agriculture.

According to the Chile National Library of Congress, the total population of the commune in the official 2002 census was 12,888 people, which was projected to increase to 13,948 people in the 2012 census projections. The total population of Tierra Amarilla lives in over 2,000 homes. Tierra Amarilla is also home to the Colla indigenous group. As of the 2002 census, there were 3,198 people of Colla ethnicity in the country with 56% living within the Region of Atacama.

Tierra Amarilla is home to various mining companies, such as this project's partner called Candelaria Mining Company, and local mining groups known as Pirquineros. Candelaria is just one of several mines located in the Atacama region under ownership of the Lundin Mining Corporation and Sumitomo Metal Mining. Candelaria has been mainly involved for over 15 years with the mining of copper ore, gold and silver in both open pit and underground mines. Candelaria opened up a Community Office in Tierra Amarilla in 2014 for the purpose of strengthening dialogue and relationships between Candelaria Mining Company and the residents of the commune. The office offers valuable resources open to the community, such as a free internet in the computer lab and various educational and informative workshops dealing with the company and the community at large. This office has been integral in reaching out to the community and working in conjunction with the FSU EMHS team during the duration of the project.

In March 2015, Tierra Amarilla was greatly affected by heavy rains that caused severe floods and landslides throughout the region. Since Tierra Amarilla is located between two mountains, the rainfall caused the landslides to directly hit the town. The main road was blocked off by mud which made it extremely difficult to evacuate or receive assistance. The People in Tierra Amarilla also experienced, damage to infrastructure, power outages and in some instances injury and loss of life among other devastation.

## Timeline

Date	Task
May 10	<ul style="list-style-type: none"> <li>• Identify hazards and vulnerability</li> <li>• Set up community Facebook page</li> <li>• Complete IRB application</li> </ul>
May 17	<ul style="list-style-type: none"> <li>• Collect demographic information</li> <li>• Assign regions to research team</li> </ul>
May 24	<ul style="list-style-type: none"> <li>• First level – Retrieve contact information/confirmation for primary, secondary and tertiary nodes</li> </ul>
May 31	<ul style="list-style-type: none"> <li>• Alert – Complete decision to warn and triggers</li> </ul>
June 7	<ul style="list-style-type: none"> <li>• Warning – Complete decision to recommend protective action</li> </ul>
June 14	<ul style="list-style-type: none"> <li>• Second level – Retrieve contact information/confirmation for primary, secondary and tertiary nodes</li> </ul>
June 21	<ul style="list-style-type: none"> <li>• Third level – Retrieve contact information/confirmation for primary, secondary and tertiary nodes</li> </ul>
June 28	<ul style="list-style-type: none"> <li>• Complete protective actions, mass care, and SITREP</li> </ul>
June 30	<ul style="list-style-type: none"> <li>• Complete contact map and plan.</li> </ul>
July 1-29	<ul style="list-style-type: none"> <li>• Practice plan presentation</li> </ul>
July 30-31	<ul style="list-style-type: none"> <li>• Travel from Florida, USA to Atacama region, Chile</li> </ul>
August 1	<ul style="list-style-type: none"> <li>• Introduce team and project to leaders of Candelaria to receive feedback and verification of commitment</li> <li>• Go out into different sectors of the community to talk to community members and invite community leaders to workshops</li> <li>• Social meeting with community members</li> </ul>
August 2	<ul style="list-style-type: none"> <li>• Lead three informational workshops at 9:30am, 11:30am, and 5:30 pm</li> <li>• In between workshops, call more community leaders and invite them to participate in our workshops</li> </ul>
August 3	<ul style="list-style-type: none"> <li>• Lead five informational workshops at 9:30am, 11:30am, 5:30 pm, 7:30, and 9:30</li> </ul>
August 4	<ul style="list-style-type: none"> <li>• Activate the communication chain to carry out a simulation and analyze strengths and weaknesses</li> <li>• Explain results of simulation to Candelaria representatives and give a closing presentation with all of our reports and results.</li> <li>• Deliver all necessary materials and reports to Candelaria</li> </ul>
August 5	<ul style="list-style-type: none"> <li>• Community reunion and departure meeting with representatives of Candelaria</li> </ul>
August 6-7	<ul style="list-style-type: none"> <li>• Return back home to USA</li> </ul>
August 15-19	<ul style="list-style-type: none"> <li>• Complete project report</li> </ul>

## **Goals and Objectives**

The Florida State University Center for Disaster Risk Policy (CDRP), in partnership with the Chilean mining company, Candelaria, conducted a research project in the community of Tierra Amarilla, Atacama Region, Chile. The project commenced at Florida State University after the project team was selected on May 10, 2016. The field work in Chile began on August 1, 2016 and lasted until August 4, 2016.

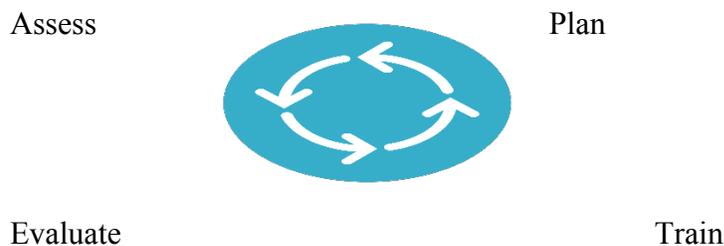
The project's objective was to increase the resiliency of local networks within Tierra Amarilla in an effort to better prepare the community for any disasters that may occur in the future. The reason the community of Tierra Amarilla was chosen for this project was due to the devastation that occurred at the beginning of March 23, 2015 due to excessive rainfall. The heavy rainfall led to floods and landslides across the region of Atacama that caused severe damage to the infrastructure and resulted in casualties of people in the community. The CDRP team's goal was to better prepare the community for future disasters of similar magnitude. The team traveled to Tierra Amarilla with the intention of helping the community adequately plan, prepare, exercise and implement an emergency alert plan as a pre-disaster strategy.

Candelaria Mining Company is a critical component to this project and its success due to the close relationship and influence they possess with the community members in Tierra Amarilla and the valuable resources they offer the community. The Candelaria Community Outreach division worked with the CDRP by contacting significant stakeholders that are essential to the success of the project.

The ultimate goal of the CDRP in conjunction with the Candelaria Mining Company is to reduce Tierra Amarilla's vulnerability to damages comparable to the March 2015 disaster and save as many lives in the community as possible.

## Methods and Materials

The FSU Emergency Management and Homeland Security Department initially visited the region and met with individuals from Tierra Amarilla and a mining company named Candelaria. After their initial visit, the team realized that the community had strong leaders, but lacked a basic neighborhood communication system. Once the team flew back to the United States, they hired four student researchers to first, assess the situation and do background research. After the first step, the researchers began to develop a plan and communicate on a daily basis with the leaders of Tierra Amarilla. It allowed for the researchers to get a stronger understanding of their needs and the focal points that needed to be addressed in the plan. The third step in the process was to travel to Tierra Amarilla and begin to train the community leaders. The first three days of the visit were focused on training the trainers, which meant training the staff members from Candelaria and also training the community leaders. On the final day, the team performed a simulation and then evaluated the plan with the staff from Candelaria. The FSU team left Candelaria with every single material needed for the plan to continue and potentially grow.



## Materials

- The information was presented to Candelaria staff members, Community leaders and a local fire department Chief
- Materials included printed plan procedures, multiple posters with the actual plan, infographic posters explaining the plan, maps, and certifications
- Pens, USB drives, paper, markers and binders
- Following every class session, every community leader was presented with a certification for completing the training program
- Candelaria received all of the materials that were brought by the FSU team

# Tierra Amarilla

## Cadena de Teléfono

Para preparar a la comunidad para un evento de desastre es necesario implementar un sistema de aviso de emergencia en Tierra Amarilla. El propósito del sistema de advertencia de peligro es para alertar a la comunidad lo mas pronto que sea posible en caso de cualquier situación de peligro potencial o activos en la zona.

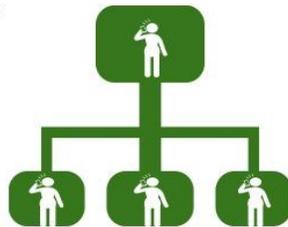
### Paso 1 - Alerta de Peligro

La primera persona de contacto será advertido de un próximo peligro por un miembro seleccionado de la empresa Minera Candelaria. Y será asignado a ponerse en contacto con tres líderes de la región por teléfono.



### Paso 2 - Comienza la Cadena

Se asignará una persona de contacto encargada de activar la cadena telefónica para que se ponga en contacto con tres o cinco personas por teléfono. Y así sucesivamente hasta que toda la comunidad este alertada.



### Paso 2A - El Sustituto

En caso que algún contacto no conteste el teléfono, se debe llamar a su sustituto para que continúe con la cadena de teléfono.



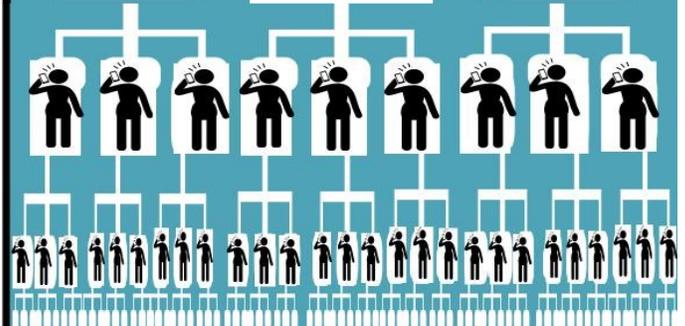
Lider del Norte



Lider Central



Lider del Sur

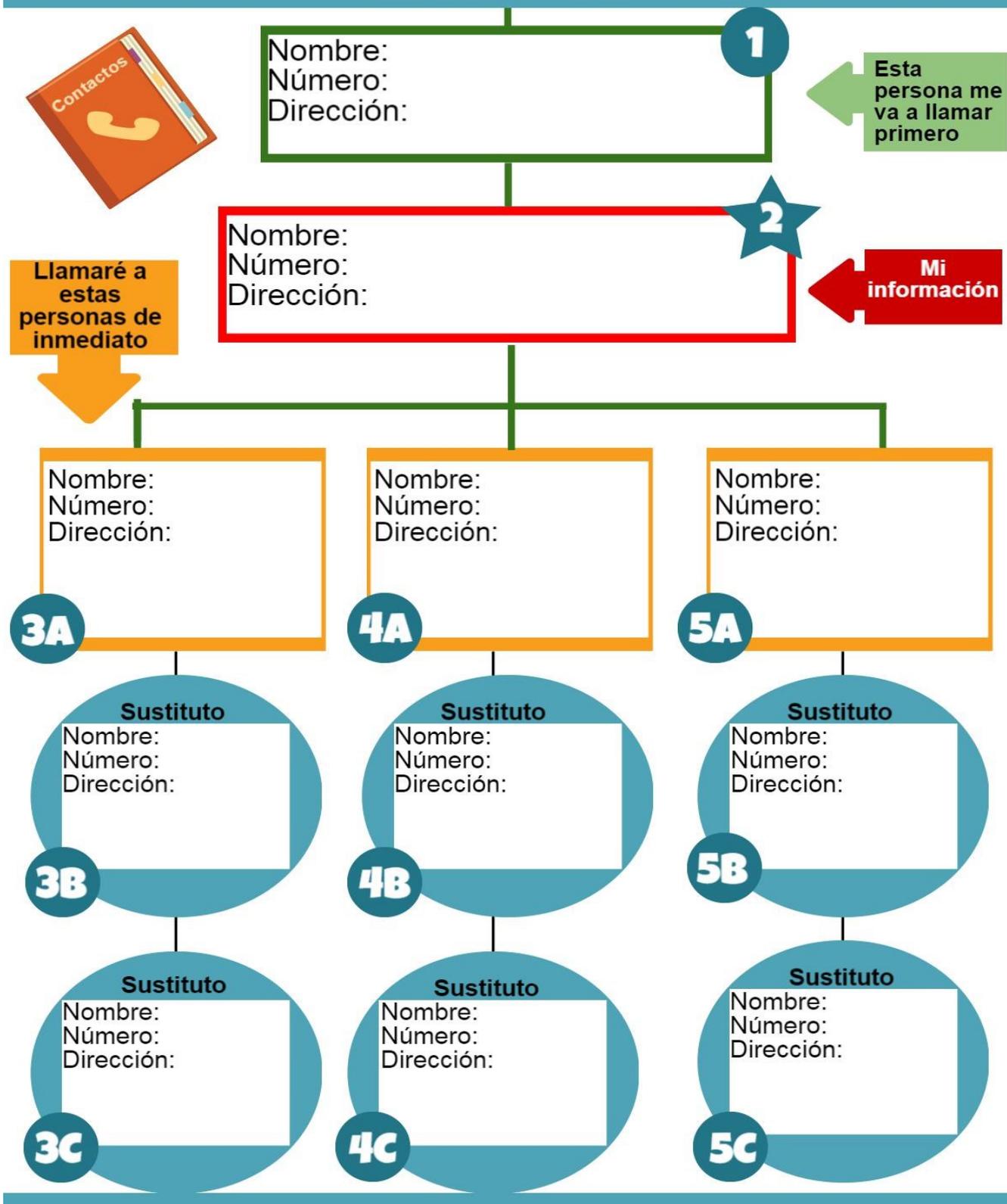


### Paso 2B - Cara-a-Cara

El próximo paso es tratar de alertar en persona o cara a cara a todos los contactos que no respondieron al teléfono. En persona o cara a cara significa ir a la casa de esa persona y darles el mensaje personalmente.



# Cadena de Teléfono Personal



## Photos



